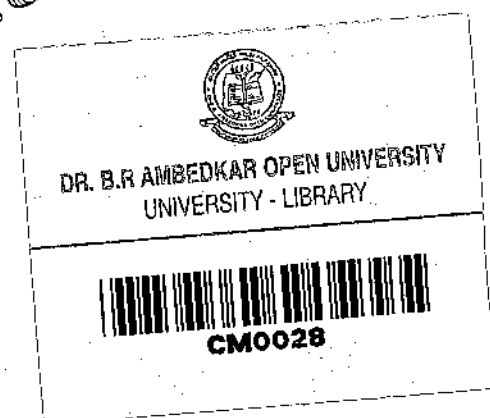
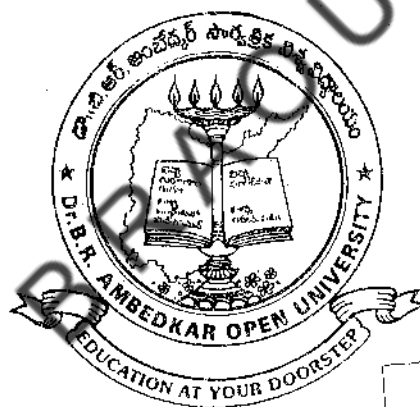


DOCUMENTATION AND INFORMATION SYSTEMS AND SERVICES



Dr B.R. AMBEDKAR OPEN UNIVERSITY
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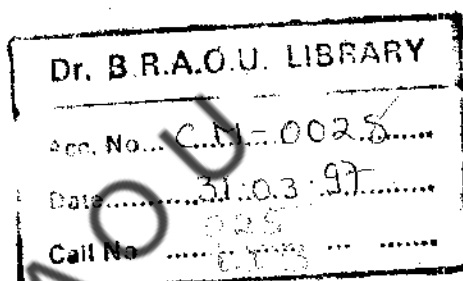
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COURSE 6 : DOCUMENTATION AND INFORMATION SYSTEMS & SERVICES

India has attained the ninth position among the industrially advanced countries of the world which is no mean achievement considering that it has to reckon with teeming millions, rampant illiteracy and wide spread poverty. This achievement has been made possible by our scientists and the Central Government's policy of encouraging science and technology. We are the only nation in the Third World, which has made advance in space technology. If we have to keep pace with the other advanced countries our scientists should be given all facilities including that of making available to them up-to-date information about the progress of science and technology in the other parts of the world.

It is in this sphere that the libraries and documentalists can play a crucial role. The volume of scientific literature so far produced is estimated to be 20 to 30 million titles. Documents are produced in several media, in the form of books, journals, reports, films, tapes and in microforms and machine readable forms. It is to help researchers who would otherwise have to spend considerable time on searching for information that documentation techniques have come to be developed. Indeed, it has now become the responsibility of information scientists to solve the problems of providing the scientist with the right information without loss of time.

The objective of this Course is to acquaint you the techniques of documentation which is now a major function of all special libraries in our country. Keeping in view the needs of the users of the library and documentation centres, the Course is drawn up according to the services to be rendered to the clientele. The only drawback is that only a few libraries have the necessary resources and equipment and it is hoped that it will overcome in the Eighth plan period.

The syllabus for the sake of convenience has been divided into blocks and units. Each unit generally covers a specific area of the subject. The units are prepared by specialists in accordance with a format so designed as to enable you read and understand them without much difficulty. Units begin with aims and objectives followed by an introduction to the content. Self check exercises given in the text are intended to test your comprehension of the subject.

CONTENTS

Block/Unit No.	Title	Page No.
BLOCK - I :	NATURE OF DOCUMENTATION	5
Unit-1 :	Documentation : definition, concepts and trends	7
Unit-2 :	Nature, types and characteristics of documents - Primary, Secondary, Tertiary, Non-documentary sources	18
BLOCK - II :	DOCUMENTATION SERVICES	29
Unit-3 :	Current awareness service; selective dissemination of information.	30
Unit-4 :	Indexing and abstracting services	47
Unit-5 :	Literature search and information retrieval services	60
Unit-6 :	Translation services	74
Unit-7 :	Document delivery services	86
BLOCK - III :	DOCUMENTATION TECHNIQUES	96
Unit-8 :	Indexing techniques (i) Chain Indexing (ii) Thesaurus (iii) Uniterm (iv) Citation index (v) Popsi (vi) PRECIS (vii) KWIC	97
Unit-9 :	Abstracting techniques	121
Unit-10 :	Reprography and micrography	133
Unit-11 :	Use of computers in information storage and retrieval	153
BLOCK - IV:	DOCUMENTATION/INFORMATION - CENTRES AND SYSTEMS	172
Unit-12 :	Information centres - types and functions.	174
Unit-13 :	Data banks and databases; on-line services.	184
Unit-14 :	National documentation centres : INSDOC, NASSDOC, DESIDOC	201
Unit-15 :	Information systems and Networks : National & International -NISSAT, NIC, UGC Information centres, INFLIBNET; AGRIS, INIS DEVSIIS etc.	220

BLOCK I - NATURE OF DOCUMENTATION

Traditionally, libraries have been fulfilling the basic function of collecting every kind of publication, organising them and holding them ready for use. The need for provision of documentation and information services has arisen after the Second World War mainly due to the exponential growth of information and complexities of information sources. Documentation aims at provision of information contained in the documents rather than documents themselves.

This block consists of four units. The first unit introduces the definition, concepts and trends of documentation, while the second unit deals with the nature, types and characteristics of documents. Based on the characteristics and use documents can be grouped into three major categories - primary, secondary and tertiary. Each of these categories is described with examples in the second unit of this block.

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UNIT I - DOCUMENTATION : DEFINITION, CONCEPTS AND TRENDS

Contents

- 1.0 Aims and Objectives
- 1.1 Introduction
- 1.2 Evolution of Documentation
- 1.3 Definitions
- 1.4 Need and Advantages of Documentation
- 1.5 Facets of Documentation
 - 1.5.1 Documentation Work
 - 1.5.2 Documentation Service
- 1.6 Development of Documentation in India
 - 1.6.1 Technological Development and Documentation
 - 1.6.2 National Information System
- 1.7 Summing Up
- 1.8 Model Answers
- 1.9 Assignment
- 1.10 Recommended Books

1.0 AIMS AND OBJECTIVES

This unit introduces you to the concept of documentation. It traces the evolution of documentation as a distinct discipline and its development in India.

After a study of this unit you will be able to :

- understand how documentation has emerged as a discipline distinct from library science;
- get an idea of the scope of documentation through a series of definitions;
- appreciate the advantages of documentation activities; and
- distinguish between documentation work and documentation service.

1.1 INTRODUCTION

The term "Documentation" means different things to different people. In the early times it took to mean citation of a written source in support of a statement or an argument. A manufacturer exporting goods to a foreign country may prepare export documentation. Here documentation means the producing of all the certificates and proofs required by various authorities like customs, bankers, insurance agents, the government, etc. A computer programmer may prepare a 'documentation' manual for a software package. This involves the preparing of a manual which will help the programmer to understand the programme in such a way that he can make changes or improvements, if needed.

But for librarians and information professionals documentation is a general term for the process of collecting, organising, retrieving and disseminating recorded information. Paul Otlet was the first to use the term, "documentation", in 1905 as understood by the librarians today.

In this unit a brief account of the evolution of documentation as a distinct discipline is given. A number of authoritative definitions of the term are discussed to bring out the scope of the field concerned. The purpose served by documentation activities is explained. Two important facets of documentation, viz., documentation services and documentation work are also explained.

1.2 EVOLUTION OF DOCUMENTATION

Traditionally, libraries have been fulfilling the basic functions of collecting all kinds of publications and keeping them in readiness for use. Over a period of time there have been many changes in the environment affecting the library activities. Some of these are discussed below.

After World War II there was been a phenomenal growth in literature. The volume of scientific literature and as a result, that of scientific information, have been increasing in geometric proportions. Therefore said to be doubling once in every 10 to 15 years. The present stock of scientific and technical literature may be of the order of 20 to 30 million titles.

Secondly, there have been dramatic changes in the type of documents produced. A large number of primary and secondary periodicals have appeared. Several agencies have started disseminating their research findings through reports literature. Industrial concerns have flooded the market with trade catalogues. Several hundred ad hoc reports and publications have been released by governmental agencies or departments. In short, the readers and librarians have faced with the problem of gray literature. Therefore, the emphasis shifted from mere books to journal articles and reports literature and other newer forms flooding the libraries.

Thirdly, research activity which was earlier confined to the four walls of academic institutions like colleges and universities has spread to industries, government laboratories, private associations, etc., also. Several social science research organisations have also sprung up. It was no

longer just the basic or fundamental research confined to academic interests only. Research has become more applied, purposive and result-oriented. Time frames and cost estimates have become the order of the day. The volume of research activity and the amount spent on research also have increased manifold.

As a consequence of changing environmental pressures, the research workers need information as quickly as they can obtain it. They need to be kept informed of what is happening. The emphasis has shifted from the locating of mere books or documents to the locating of information as also from the form to contents. No matter in what form it is present the researcher would insist upon getting the required information in the shortest possible time.

As has been stated earlier, libraries have been concerning themselves with traditional activities like acquisition, classification and cataloguing of books and monographs. Their tools like book classification and cataloguing were inadequate when periodical articles and reports had to be tackled and more so because the emphasis shifted from document to information contained in the document. Information dissemination has received greater attention than document storage and delivery.

It has also been noticed that libraries and librarians have not been alert enough to realize and respond to the change in demand made by the user community. The scientists themselves have set out to solve their problems in their own ways. New indexing methods were found. Specialized current awareness services and retrieval techniques were developed. Abstracting and indexing bulletins came into existence. All these activities carried out by a community other than the librarians needed a name. Hence this distinctly different discipline called "documentation" has emerged. The workers in this area styled themselves as documentalists or information scientists.

Documentation centres in supra juxta or infra position to their companion libraries have sprung up to fulfill the newer needs of the changed environment. Some libraries have also quickly adapted themselves and started providing documentation services. The Americans use the term "Information Science" for it. 'Informatics' is the preferred term in Russia and Eastern Block countries, i.e., where the term, "Documentation", is used in west European countries.

There have been two opinions about documentation. One school of thought maintains that documentation is a mere extension of library science or librarianship. There are others who feel that documentation has taken off from library science and recognize it as a growing vital science. Of late however we see that such differences are narrowing. Hence the inclusion of information science as a part of librarianship courses in India and elsewhere also. In this unit we shall be using the terms documentation, information science, Informatics etc., interchangeably.

Self-Check Exercise -1

List briefly the changes leading to the emergence of documentation as a separate discipline.

- Note: i) Write your answer in the space provided below:
ii) Compare your answer with the model answer given at the end of this unit.

1.3 DEFINITIONS

Now let us look at some definitions given by eminent authorities for the term, "documentation", so that we may get an idea of the scope of the discipline.

Documentation has been defined in FID statutes as "Collection and storage, classification and selection, dissemination and utilisation of information of all kinds". Here the emphasis is on information and not on books.

In 1945, the ASLIB adopted for the *Journal of Documentation* this definition: "Recording, organisation and dissemination of specialised knowledge, or in other words, documentation means collecting, organising and providing micro-thoughts to scientists and research scholars". In this definition the focus is on the researcher or the specialist.

While, according to the *American Documentation* (1945, 6, 254) it is "the art of facilitating the use of recorded, specialized knowledge through its presentation, reproduction, publication, dissemination, collection, storage, subject analysis, organisation, and retrieval". Ralph R Shaw defines it as "any process connected with identification, recording, organisation, storage, recall, conversion into more useful forms, synthesis and dissemination of intellectual content of print or an other recorded material". The definitions of American Documentation and Shaw are too broad in scope.

Paul Otlet brought out the first text-book on documentation in French called *Treatise de Documentation*. He defined it as a "process by which are brought together, classified, and distributed, all documents of all areas of human activity". According to J.H. Shera, Documentation is "the group of techniques necessary for ordered preparation and communication of recorded specialised knowledge in order to give maximum accessibility and utility to the information contained".

Bradford, who is, perhaps, the first author in the English speaking world to write a complete text on documentation defines documentation as "the art of collecting, classifying and making readily accessible the records of all kinds of intellectual activities".

Ranganathan's definition of documentation is based on his well known work, Five laws of library science. According to him, documentation is:

- i) The promotion and practice of bringing into use of nascent micro-thought by specialists (Law 1)
- ii) Pin-pointed (Law 2)
- iii) Exhaustive (Law 3)
- iv) Expeditious (law 4)
- v) Continuously increasing (Law 5), since there is an ever-increasing cascade of nascent micro-thought on an ever multiplying number of specialised subjects, communicated through innumerable reports and periodical articles.

There are as many definitions of documentation, as there are proponents of it. But they agree that the impetus for the new discipline is the desire and the need for the bibliographical organization of enormous output of literature for its effective utilization.

Taking an overall view of the above mentioned definitions, certain common factors emerge. These are: all types of documents are to be taken into consideration; the specialist or the scientist has distinct and different information needs to be satisfied; "putting information to work" is to be emphasized; emphasis is again on micro thoughts embodied in micro documents such as reports and journal articles, and timeliness is equally important.

1.4 NEED AND ADVANTAGES OF DOCUMENTATION

The mission of an information service is to expedite utilization by its population of users of the information and knowledge within its collection or file of documents. Documents may be in the form of books, reports, periodicals, letters, films, cards, tapes, disks, micro-forms or in any type of medium of midst the vast amount of information continuously being produced and with all the complexities, the researchers have to spend a considerable part of their time in searching for information. Several studies have been reported as to how much time scientists spend on reading and how there has been a wastage of effort and time in searching through the enormous amount of literature to locate documents pertaining to their fields of interest.

As the number of research workers increases and as the volume of literature mounts up, it is no longer possible for the individual researcher to scan the entire range of information sources to retrieve the information required. Researchers cannot remain complacent and ignore their information needs. In the present day context of over abundance of information, they

would not even know what they are missing. Researchers have to keep themselves abreast of the progress in their fields and related fields. They are in need of constant stimulus. They have to guard themselves against unintended repetition of work, since besides physical strain they may run the risk of missing relevant documents among the vast mass of recorded material. It thus becomes the responsibility of information scientists to solve the complex problems of providing right information to the right users at the right time.

Information needs are specific to individuals. They depend on the functions of the users (scientist, manager, teacher, researcher, etc.), on the level of his knowledge and experience (beginner, experienced professional), on the breadth of his interest profile (detailed information about a narrow field as opposed to general information about a broad discipline), and on the character of his field of interest (discipline oriented, i.e., monothematic or mission oriented, i.e., poly- or interdisciplinary themes).

Often, the needs of a professional person (or an organisation) change considerably depending on his immediate activity; the needs different types and volumes of information when starting on a new field of research cannot when seeking a solution to a very specific problem, as also when preparing a lecture or when writing a text book. A documentalist needs to be conversant with these varying needs of the user community.

1.5 FACETS OF DOCUMENTATION

According to Shera, the essential task of documentation may be described as matching the two patterns:

- a) The pattern of all scholarly activities in which the primary graphic records play a part; and
- b) The pattern of intermediary services which transmit the primary recorded materials from the scholar - as - producer to the scholar - as - user.

Ranganathan says that documentation activity is impossible unless backed by every facet of library activity - from document selection through acquisition, accessioning, classification, cataloguing, circulation work, reference service, and maintenance work to every detail of library management - developed to a higher pitch of efficiency. He recognises two distinct facets of documentation activities:

- 1) Documentation work; and
- 2) Documentation service.

1.5.1 Documentation Work

It includes the process of preparation of documentation lists, including abstracts or annotations and preparation of Abstracting and Indexing Journals. It involves the following work:

- i) Acquisition of periodicals and other forms of micro literature;
- ii) Selection and marketing of the items to be included in the documentation list;
- iii) Indexing or cataloguing of the selected items;
- iv) Classification and arrangement;
- v) Provision of author title subject index;
- vi) Compilation of the list.

Some documentation lists contain abstracts or annotations.

1.5.2 Documentation Service

It includes:

- i) Supply of documentation lists, such as Current Awareness Service, Selective Dissemination of Information;
- ii) Reprographic services (Document delivery service);
- iii) Translation service;
- iv) Preparation of ad hoc bibliographies on demand;
- v) Abstracting and indexing of articles for the user in the fields where the existing abstracting and indexing services are inadequate;
- vi) Literature search and preparation of reading lists;
- vii) Reference service.

We thus see that documentation comprises two distinct set of activities one of which activities is concerned with the analysis of literature and its organisation, while the other with the search and location of information and that finally it would lead to the provision of information or the delivering of the documents bearing the information. The first group of activities is considered as active or anticipating documentation and the second group as passive (as it is generally in response to a specific request).

Documentation involves application of some new technologies or new application of some old techniques. In the field of active documentation, indexing techniques and application of computer technology are very important. Similarly, reprography and application of computer and electronic media play important roles in the field of passive documentation.

Self-Check Exercise-2

(a) Enumerate the advantages of documentation activity.

Note: i) Write your answers in the space given below.

ii) Compare your answers with the model answer given at the end of this unit.

(b) Name the two facets of documentation. What differentiates one from the other?

1.6 DEVELOPMENT OF DOCUMENTATION IN INDIA

As already seen in section 1.2, documentation involves the work of analysing and indexing of articles. Another characteristic of this activity is that it has always been conceived on a large scale and is almost universal in its scope. Although there are still differences on the question of exact relationship of documentation with other subjects and activity like librarianship and bibliography, there is near unanimity as to what constitutes documentation services and activities. The term, "documentation", was accepted in most of the countries by the middle of this century.

1.6.1 Technological Development and Documentation

Since the Fifties documentation and information work have been influenced by many developments. As documentation has helped in many technological developments, the new technologies in their turn have influenced many documentation activities. Developments in the field of reprography have considerably facilitated document delivery services. But the advent of computers has brought about a quantum change on the documentation scene. Documentalists have been attracted by the computer mainly for two reasons, namely, the enormous speed of handling of data and the ability of the computer to provide the answer in the form of a printout.

Apart from the above mentioned two special appeals, computer applications seem possible in respect of the routine and repetitive jobs of library and documentation work.

After the Second World War, with the establishment of the Division of Documentation, Bibliothèques et Archives (DBA) of the Unesco, there has been a further spread of the term in different countries through the various activities of the Division. A number of national documentation centres were established with the assistance of the Unesco during 1950-1960, e.g., INSDOC (Indian National Scientific Documentation Centre), PANSDOC (Pakistan National Scientific Documentation Centre), and THAILOC (Thailand Documentation Centre).

In India impetus for the provision of documentation and information services arose only after the country attained independence. However, universities and research organisations established in the early part of the century towards providing information services to the academicians and research workers. Systematic documentation was undertaken in some special fields before the Fifties. The Forest Research Institute took up the documentation of literature of Forestry and allied subjects. Similarly, the Central Board of Irrigation took up documentation of literature on irrigation in 1936. The National Institute of Science of India (now INSA) started in 1935, the *Indian Science Abstracts* abstracting scientific articles published in India. This was discontinued in 1940. The Indian Standards Institution Sub-Committee on Documentation (EC 2) set up in 1947, is, perhaps, the earliest body to take interest in the promotion of documentation activity in the country. It was only after the country attained independence and with the establishment of the Indian National Scientific Documentation Centre in 1952 documentation and information services in the modern sense began to take shape in the country. Dr. S.R. Ranganathan was largely responsible for the development of documentation in India.

1.6.2 National Information System

India has a national centre of information or documentation in science and technology, medicine, agriculture, defence, science, patents, standards, small industries, social sciences, etc. These have evolved over the three decades after independence and some of them are firmly established and are well-known nationally. These national information centres are mission oriented and are responsible for organising and providing service at the national level for large sectors of national endeavours. The planners for documentation facilities realised that the time was ripe to think of integrating different agencies and facilities, and bring about a well-knit national information system. The National Committee on Science and Technology recommended the establishment of NISSAT (National Information System for Science & Technology) during the Fifth Five Year Plan. Now sectoral information centres exist in area like foods, drugs, leather, chemicals, textiles, etc. (Details of these activities are given in the Unit-15 of this course.)

Self-Check Exercise-3

Name some of the important national documentation centres in India.

- Note: i) Write your answers in the space given below.
ii) Compare your answers with the model answer given at the end of this unit.

1.7 SUMMING UP

In this unit you have learnt the changes in social environment which have caused the emergence of a new discipline called documentation. A study of some definitions has also helped us to find out certain commonalities among them. Advantages of the activities to the scientist have been noted. Two facets of documentation have been differentiated. A quick look into the development of documentation in India has been undertaken. The trend of the development of a well-knit national information system, NISSAT, in the Eighties has been briefly touched upon.

1.8 MODEL ANSWERS

- 1) i) increase in the volume of literature;
ii) changes in production of different types of documents like journal articles and reports;
iii) increased research activity and spreading of research activity to non-academic areas.
- 2) (a) Advantages of documentation: Documentation
- helps scientist to keep himself abreast of current developments;
 - helps him to cope with increasing literature by cutting down the time spent on it;
 - takes into account the user -- his profession; his level of knowledge and understanding ability; his current needs, etc. Therefore, the service is tailor made to be of special use to the individual user;
 - avoids duplication of research efforts.

- 2) (b) Documentation work and Documentation Service are the two facets of documentation, according to Dr. S.R. Ranganathan. Documentation work involves the intellectual work of interpreting the contents of the document, say through the preparation of documentation list etc. Documentation service involves demand oriented activities in dissemination of information such as photocopying, translation, literature search, and reference service.
- 3) INSDOC, NASSDOC, DESIDOC, SENDOC, etc.

1.9 ASSIGNMENTS

1. Consult as many sources (books, journals) as possible and find out other definitions of documentation not given in the text.
2. Write a report (1000 words) on a documentation/information centre in your locality.

1.10 RECOMMENDED BOOKS

- 1) ANDERLA, G. *Information in 1985 - A Forecasting Study of Information Needs and Resources*. Paris: OECD, 1973.
- 2) GUHA, B. *Documentation and Information: Services, Techniques and Systems*. 2nd ed. Calcutta: World Press, 1983.
- 3) MIKHAILOV, A. I. and Giljarevskij, R.S. *An Introductory Course on Informatics/Documentation*. The Hague: F.I.D., 1971.
- 4) RANGANATHAN, S.R. (ed.). *Documentation and Its Facets*. Bombay: Asia Publishing, 1963.
- 5) SHERA, J.H. *Documentation and Organisation of Knowledge*. London: Crosby Lockwood, 1966.
- 6) MUKHERJI, A.K. *Fundamentals of Special Librarianship and Documentation*. Calcutta: IASLIC, 1969.

UNIT 2 - NATURE, TYPES AND CHARACTERISTICS OF DOCUMENTS

Contents

- 2.0 Aims and Objectives
- 2.1 Introduction
- 2.2 Information Services and Sources of Information
- 2.3 Categories of Information Sources
 - 2.3.1 Characteristics of Documents
- 2.4 Primary Literature
- 2.5 Secondary Literature
 - 2.5.1 Access Sources
 - 2.5.2 Review Sources
 - 2.5.3 Reference Sources
 - 2.5.4 Bibliographical Databases
- 2.6 Tertiary Literature
- 2.7 Non-documentary Sources of Information
- 2.8 Summing Up
- 2.9 Model Answers
- 2.10 Assignments
- 2.11 Recommended Books

2.0 AIMS AND OBJECTIVES

In this unit we shall introduce you to three documentary sources of information. We shall also discuss another sources of information - non-documentary in nature.

After studying this unit, you will be able to

- enumerate the types of queries handled by an information centre;
- appreciate how a thorough knowledge of information sources is necessary to answer queries;
- mention the different types of document sources and give example and characteristics of each type; and
- describe non-documentary sources of information in brief.

2.1. INTRODUCTION

In the earlier unit you have learnt what documentation is. Activities that go under documentation work and documentation services were described. In this unit, the basis of all such activity is discussed. The documents are of three types: primary, secondary and tertiary; and characteristics of each type and examples are given. Some non-documentary sources of information needed for efficient rendering of information service are also discussed. A thorough knowledge of information sources is a basic pre-requisite for offering information services.

2.2 INFORMATION SERVICES AND SOURCES OF INFORMATION

An important activity in a modern library, documentation or information centre is the provision of information on demand, i.e., the answering of inquiries for information of one kind or another. Such a service, depending upon the response provided is known by different names: technical inquiry service; reference service; question-answer service; reader's assistance service and literature search service.

Some inquiries can be for a simple fact, e.g., address of an institution, or manufacturer of a given equipment, or population of a country. Such inquiries can be answered in a few minutes, if the right source of information is consulted. On the other hand, there are detailed inquiries. A typical example of an inquiry which is more difficult to answer is: "What are the figures of production of oilseeds in India for the last five years and the export and import data of oilseeds?" Such an inquiry may require consultation of more than one source of information in order to provide the answer, as the inquirer is looking for facts.

A third level of inquiry is for information that is not necessarily factual (i.e., for facts). It is for ideas, thoughts or concepts. An example of such an inquiry is: "What was the reaction of the middle class Indian to education for women in pre-independence India during this century?" The inquirer obviously requires to know of the writings of social scientists and historians on the subject. The answering of such an inquiry would entail the searching of the literature about that period, and possibly extraction or summarization of relevant portions of the literature. The answer to such an inquiry may take from a few hours to several days.

Another kind of inquiry often received in libraries is not for facts or concepts but for references to literature dealing with a specific subject. Such an inquiry is usually received from researchers and post-graduate students. Here again, one is required to search the literature on the subject of the inquiry in order to provide a response in the form of a bibliography or a list of references.

It can be seen that in order to answer inquiries of various kinds, it is necessary to be well-conversant with the sources of information so that the appropriate sources of information may be consulted and searched to provide suitable responses.

2.3 CATEGORIES OF INFORMATION SOURCES

Every document is a source of information. However, it is not possible to be conversant with all documents even in a narrow field because of the already existing large volume of literature and because of the ever increasing growth of it on the field concerned. In order to cope with the growing mass of literature and to facilitate the searching for information, the literature of a subject field gets organised into well-defined categories of literature or types of documents. It is as though the literature of any field was made up of different levels of documents, each with distinct characteristics. The literature of the field is said to be structured.

According to the sources of generation, literature can be grouped into three broad categories - primary, secondary and tertiary. The literature of every subject field may be said to be structured into the three types of documents. The extent to which the structuring takes place varies from subject to subject. However, this classification is not necessarily mutually exclusive, as there is to a certain extent overlapping of some of their features.

2.3.1 Characteristics of Documents

According to S.R. Ranganathan, the universe of documents can be grouped into different categories on the basis of their physical form, nature of presentation, publication characteristics, purpose, information content, level of treatment, etc. Books, journals, reports, patents, maps, microforms, etc., are examples of different physical forms. Nature of presentation can vary - it can be description, graphical, tabular statements, or even codes.

Publication characteristics can refer to the publication process - whether it is a one-time publication (like books and monographs), or whether it is meant to be published on a continuing basis (serial publications). Serial publications could be regular or irregular. Regular serial publications, which have definite frequency, are called periodicals. They include journals, magazines, newspapers, yearbooks, etc.

Again, the publications may be grouped by the level of target audience - children, adults or neo-literates. In the technical field, the publication can be for beginners, or for literates or for researchers. In respect of this characteristic we can group publications according to their being intended for limited circulation (limited and restricted audience) or for universal distribution. The second category of documents are generally available through normal trade channels and are called published documents. The first category which includes personal diaries, laboratory notebooks, confidential reports, are not meant for wider circulation, and are called informal documents (or sometimes unpublished documents, as generally they do not undergo formal publication procedure).

Yet another criterion for grouping could be the physical media of the publication. Although print-on-paper is the generally accepted medium of communication now-a-days, of late two new kinds of media, viz., microforms and electronic media, have been gaining importance.

These are called non-paper media. Besides these two, there is a third category - audio-visual media.

Whatever be the media, the other characteristic of paramount importance is the information content in them. According to the sources of generation of information, the documents carrying them are classified as primary, secondary and tertiary literature.

Self - Check Exercise-1

Mention briefly the characteristics different categories of documents.

Note: i) Write your answer in the space give below.

ii) Compare your answer with the model answer given at the end of this unit.

2.4 PRIMARY LITERATURE

Primary sources of information or primary literature are those in which newly generated information is to be found. Most journal articles are examples of primary literature. In the fields of science and technology, for instance, the journal articles often contain the first and only published records of research and development and accounts of new applications of science and engineering to technology and industry. Primary sources also include new data or new interpretations or analyses of known facts or ideas.

Primary literature is generated as a result of the work of researchers and other creative individuals in all fields of knowledge. The function of primary literature is to communicate new or nascent information, thoughts, or findings to fellow researchers or fellow professionals (peers) all over the world.

Primary literature occurs in different forms. Journal articles, technical reports, conference papers, patents, standards, theses, trade catalogues, social science survey reports, market reports, field data, test reports, computer programmes, music scores, etc., are examples of the different forms in which primary literature occurs.

A major characteristic of primary literature of any field of knowledge is that there is very little internal organisation in the mass of primary literature of any field. If, for instance, it

is required to search for information, in any field, it would be difficult to locate the information by consulting directly the primary sources themselves.

The more prolific a field of study, i.e., the more the research or creative work done in a field, the larger will be the output of primary literature in that field. Not only will the volume of literature be high but the variety of forms in which the primary literature occurs will also be large. The volume and the variety of forms in which primary literature appears makes for the difficulty of locating information directly in the primary literature.

Over the years, in order to make primary literature more easily accessible, there has come into being secondary literature sources.

2.5 SECONDARY LITERATURE

Secondary literature, as the name suggests, contains material derived from or referring to primary sources. Secondary literature is the result of the processing of information contained in the primary sources. Secondary sources are created mainly to aid in the search for information occurring in primary sources and hence the secondary sources of information are organised according to a definite plan so as to make them easily searchable.

Secondary sources of information can further be subdivided into the following types:

- * Access Sources
- * Review Sources
- * Reference Sources
- * Bibliographical database

2.5.1 Access Sources

Access Sources are those which index primary literature and generally include abstracts or annotations of primary literature documents.

Indexing and abstracting journals (e.g., *Chemical Abstracts*, *Psychological Abstracts*) are example of access sources. Bibliographies with or without annotations are another example of access source. Abstracting journals are generally the products of professional bodies or learned societies. Let us examine a typical abstracting journal to understand its features.

Each entry in an indexing or abstracting journal refers to a primary literature item (e.g., journal article) together with, in most cases, an abstract which briefly contains the essential information of the primary literature item. All the entries in a typical abstracting journal are grouped together by broad subject or by a general or special scheme of classification. Such an arrangement of the entries facilitates browsing in the abstracting journal. Further, each issue

of a typical abstracting journal includes an author index and subject index. The author index contains entries arranged alphabetically by name of the authors of the primary literature items. Using the author index it is easy to search for all primary literature items written by a given author. The subject index, on the other hand, facilitates the search for information or for reference dealing with specific subjects. Depending upon the subject covered by the abstracting journal it may include other indexes. For instance, an indexing journal in Chemistry could also have a formula index.

Abstracting and indexing journals are issued periodically and the general practice is to provide indexes to each issue of the abstracting journal. Further, the indexes (author and subject) are cumulated at various intervals such as quarterly, half-yearly and annually. Further more, cumulations are also done. Biannual, quinquennial (once in 5 years) and decennial (once in 10 years) cumulations are also issued.

It can be seen abstracting journals by virtue of their helpful grouping of references and abstracts of primary literature items as also of their author and subject indexes enable the searching of information contained in primary literature. The cumulated indexes enable the searching of several years of primary literature.

2.5.2. Review Sources

Another kind of the secondary source of information, is survey of the primary literature of a specific subject (e.g., biochemistry, entomology, librarianship) during a given period (e.g., annually)

The purpose of the review is to highlight significant advances made in the field during the period under review, to determine the general trend of research in the area of study, to possibly predict or forecast the directions of research in that field, and to focus attention on unresolved problems and issues in the field.

Publications with titles such as "Advances in", "Annual Reviews of" and "Progress in" are review sources.

Review of primary literature in a field of knowledge is done by one or more acknowledged specialists in that field. It can be seen that review sources enable researchers in a given field of study to become quickly aware of the primary literature in that field and to identify those items of primary literature that must be studied in-depth to gain a better understanding of the progress made.

2.5.3 Reference Sources

Reference Sources are the conventional reference material such as encyclopaedias, dictionaries, directories, data-books, recipes, formularies, year books and the like. These are

called 'Reference Sources' because they are seldom read from cover-to-cover but referred to so as to ascertain a fact or get some information about a place, person, thing or phenomenon (i.e., earthquakes). Reference sources are available in great variety covering one or more subject areas. The arrangement of information in reference sources also varies from one work to another and is dependent upon the subject or aspect of the subject being dealt with. A wide variety of indexes are also used in reference sources. Apart from the general reference sources, each subject has its own kind of general and special reference sources. It is absolutely essential that documentalists should have an intimate knowledge of the important reference sources in the subject areas of interest to the organisation of which the library or the documentation centre is a part.

2.5.4 Bibliographical Databases

Bibliographical Databases as secondary sources of information made their appearance during the late 1960's. Computers began to be used by the producers of indexing and abstracting services to process the increasing numbers of bibliographic items. Such bibliographic databases are used for information retrieval also. Therefore, the machine-readable version of the printed abstract journal made its appearance as a product in its own right. The machine-readable version or database, however, has features which are not available in the printed version.

While the printed version has mainly two indexes, viz., author index and subject index, the database permits access to the bibliographic items (reference and abstracts) through a variety of approaches. It is possible, for instance, to search for the data by means of the institutional affiliation (place of work) of the author, journal title, coden, language, and level of the item, year in which the article was written, or any combination of one or more of these. In addition to the subject indexes and the terms that are used in the printed version, the database is searchable with the help of many more index terms and classification or group codes. In some cases it is possible also to search for a specific combination of words in the title, abstract, etc., of the bibliographic item.

The computer-readable database can be searched locally, i.e., in a computer centre of a particular organisation or remotely, i.e., using a computer that is not necessarily within one's own organisation but outside it. Remote searching has become possible because computers can be linked to users through telecommunication links such as telephone lines. The computer-readable database has completely revolutionised the searching of bibliographic information. The costs of computer time and storage, and that of telecommunication links with remote computers are on the decline because of technological changes that are taking place. There is no doubt that in the years to come, the computer-readable database will be a predominant source of information.

2.6 TERTIARY LITERATURE

As a general rule it may be said that in a given subject field, the increase in the number of secondary sources increases with the increase in the number of primary sources of information. It is usual for a subject to grow through both fragmentation (i.e., breaking up into specialities and sub-specialities) and coalition (i.e., merger with other disciplines). The growth of the number of secondary sources normally is intended to cater to the literature of specialities and that of coalesced subjects.

In some fields the volume of secondary sources of information itself has reached gigantic proportions leading to the development of another class of literature which may be called 'tertiary literature'. Tertiary literature products refer to primary and/or secondary sources. The bibliography of bibliographies, union catalogues of periodicals, and guides to literature are examples of tertiary literature.

Text books are also tertiary sources of information in the sense that they contain information digested from both primary and second sources. The writer of the text books assimilates the facts and concepts and restates their principles, facts and concepts in a manner suited to a particular audience (e.g., high school students, postgraduate students).

Products of tertiary literature are extremely useful to a person who is searching for information in a subject with which he has no familiarity at all. Tertiary literature would lead him to both secondary and primary sources to search for the information more efficiently than otherwise. The tertiary literature source enables a searcher to see at one place the range of sources available in the speciality and subject. Tertiary literature products can also be used to become familiar with the various sources of information in a particular subject.

The tertiary literature products for a given field may be few in number and hence permit browsing in order to find out useful secondary and primary sources of information. Some tertiary literature products (e.g., guides to literature, "how to find out" books) carry brief annotations describing secondary sources thereby enabling a library to acquire useful secondary sources of information.

Most tertiary literature products are well-organised and provide access to the broad subject, titles or names of organisations.

As we proceed from primary sources of information to secondary and tertiary sources of information we are proceeding also from poorly organised to well-organised sources of information. In searching, therefore, it is better to proceed from tertiary and secondary (well-organised) to primary (poorly organised) sources of information.

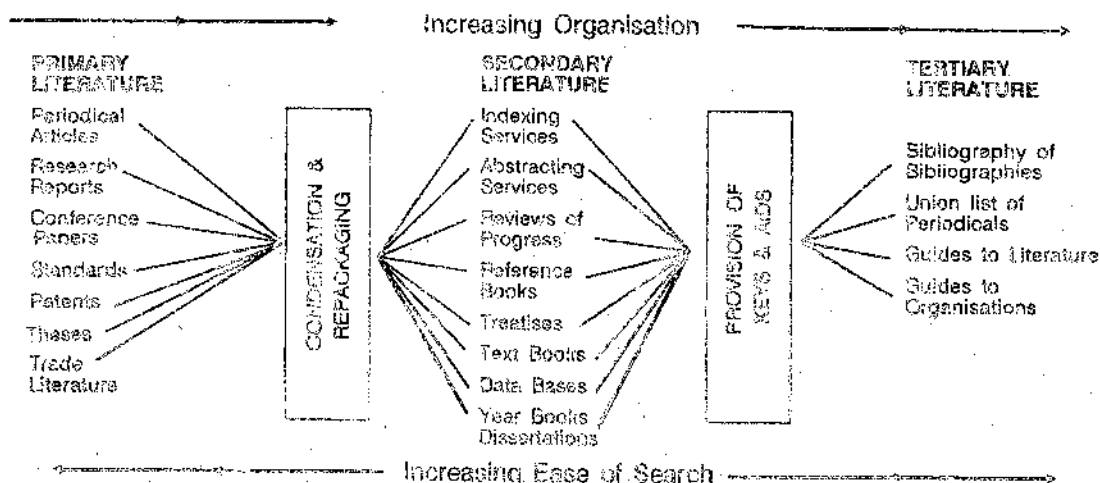


Fig. 1: The inter-relationship of the different categories of information.

Self-Check Exercise-2

(a) Name the three categories of literature sources. Give two examples for each.

Note : i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

(b) Describe briefly bibliographic databases.

2.7 NON-DOCUMENTARY SOURCES OF INFORMATION

Libraries and information centres now-a-days hold not only conventional books and periodicals, sources so far described, but also several non-documentary sources. A list of these is given below:

- Audio cassettes
- Video cassettes
- 16mm/35mm films and filmstrips
- Overhead transparencies
- Microfiche
- Computer tapes, floppy disks
- CD-ROMs
- Sheet music

In the case of non-documentary sources the nature of the contents of the 'document' does not differ from one source to another; only the container is different. The information is provided in a different physical format so as to realize the advantages of space, cost, storage, transportation, etc. However, these items need specialised training in the handling of the equipment associated with each. For example, a thorough knowledge of audio or video tape recorders, record players, audio-visual equipments like film projectors, overhead projectors, Slide projectors, microfilm readers or reader-printers, etc., is needed.

Now-a-days complete catalogues and multi-volume books and reference materials are made available in CD-ROM format. To use them a good knowledge of the use of computers is necessary.

Self-Check Exercise-3

What special problems are posed while using non-documentary sources of information?

Note: i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

2.8 SUMMING UP

In this unit you have learnt about different types of document sources. A thorough understanding of the nature and type of documents is essential to render efficient information service. The characteristics of queries answered and their intimate relationship with the type of the document has been explained. It has also been seen that in the case of non-documentary sources of information a good knowledge of the use of equipments used in conjunction therewith is necessary.

2.9 MODEL ANSWERS

- 1) Documents may be grouped according to different characteristics like
 - a) Physical form (e.g., books, reports, patents);
 - b) Nature of presentation (e.g., graphical, descriptive);
 - c) Publication characteristics (e.g., books, serials);
 - d) Purpose
 - e) Level of treatment (e.g., books for children, adults or neo-literates)
- 2)
 - (a) Primary literature (e.g., *Journal of Documentation*, *Indian Journal of Chemistry*).
Secondary literature (e.g., *Indian Science Abstracts*; *Chemical Abstracts*).
Tertiary literature (e.g., *Guide to Literature in Chemistry*)
 - (b) Bibliographic databases are machine readable versions of printed abstracting or indexing periodicals. As the data is held in machine readable form it allows searching in far more complicated ways than the printed versions allow. Search by author, title, coden, author's affiliation, subject, year or any combination of these is possible.
- 3) The information staff answering queries using non-documentary sources need to be conversant with the equipment used in conjunction with the material containing the information. For instance, use of CD-ROM requires the user to handle computers.

2.10 ASSIGNMENT

- 1) Go to the nearest academic or special library and examine carefully as many of the above mentioned forms of primary literature as possible. Prepare a descriptive note of each of the types of documents. Write down even the most obvious characteristic. Note down the common features and the differences in the different types of primary literature.
- 2) Examine carefully any one issue of any abstracting journal available in a library close to you. Note down all the features that enable you to search for references pertaining to a given subject. In the absence of the abstracting journal how would you have gone about finding references pertaining to a subject?

2.11 RECOMMENDED BOOKS

- 1) ASHWORTH, W. (ed) *Handbook of Special Librarianship and Information Work*. 5th ed. London: ASLIB, 1982.
- 2) HANSON, C.W. *Introduction to Science Information Work*. London: ASLIB, 1971. (Chapters 7, 8 & 9)
- 3) CHATTERJEE, Amithabha. *Elements of Documentation*. Delhi: Sterling, 1983. (Chapter A)

BLOCK II - DOCUMENTATION SERVICES

There are five units in this block (Unit 3 to 7). The first unit deals with the information services offered by the libraries and documentation/information centres. The two major ways of information service, viz., Current Awareness Service (CAS) and Selective Dissemination of Information (SDI), are described in this unit.

In Unit-4, we study indexing and abstracting services. We also explain you briefly some of the information products of indexing and abstracting services that are published by international and national agencies.

Unit-5 described the literature search and information retrieval services. Use of proper strategies and techniques of literature search helps in providing right information.

In Unit-6 we explained the importance of translation service in libraries and the international and national agencies offering translations of articles published in various languages.

The last Unit of this block (Unit-7) covers the document delivery services.

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UNIT 3 - CURRENT AWARENESS SERVICES & SELECTIVE DISSEMINATION OF INFORMATION (S D I)

Contents

- 3.0 Aims and Objectives
- 3.1 Introduction
- 3.2 User's Approaches to Information
- 3.3 Role of Libraries and Information Centres
- 3.4 Characteristics of Current Awareness Services
- 3.5 Designing a Current Awareness Service
 - 3.5.1 Types of Current Awareness Services
- 3.6 Basics of SDI
 - 3.6.1 What is SDI?
 - 3.6.2 SDI and Retrospective searching
- 3.7 Components of SDI
- 3.8 Functional phases of SDI
- 3.9 Manual SDI
- 3.10 SDI and New Technologies
- 3.11 Summing Up
- 3.12 Model Answers
- 3.13 Assignments
- 3.14 Recommended Books
- 3.15 Glossary

3.0 AIMS AND OBJECTIVES

In this unit we shall describe in detail two very important documentation services - Current Awareness Service and Selective Dissemination of Information (SDI). On persual of this unit you should be able to

- explain why modern libraries and information centres need to generate current awareness services and selective dissemination of information service; and
- discuss the various features of these services to enable future library professionals get an idea how the services could be generated.

3.1 INTRODUCTION

Information today is considered to be one of the most vital resources for success and development. In a highly competitive modern world, knowledge of the new developments in the field in which one chooses to be active has become one of the prerequisites for success. Hence, it has become imperative for people working in various capacities, involved in various activities and professions to update their knowledge to take right decision at the right time. The need to know, or sometimes the urge to know what is new may be as a result of a person's self-interest to keep himself abreast of the developments in areas concerned or necessitated by the activity he is involved in, for instance, research activity.

Literature is one of the primary sources of information and traditionally libraries and information centres have been responsible for identifying, collecting, and organizing a wide variety of information resources. Besides maintaining and enriching these vast resources, they have a more important role which is that of ensuring that these resources are optimally utilized by their users. To ensure this, they need to design and develop appropriate information systems and services. By generating current awareness services the libraries/information centres attempt to inform their users regularly the new developments in their areas of activity.

3.2 USER'S APPROACHES TO INFORMATION

Before discussing such aspects like the need for current awareness services the characteristics and the way they could be designed and generated, it is essential to examine the types of information needs and the user's approaches to information.

A user's information need often depends on the purpose for which he is seeking information. So, the users approach to information is in various ways. In his day to day activities he may seek information like the melting point of a chemical, the population statistics, or the address of an organisation. Such approach is identified as 'Everyday approach'. At another point of time, for instance, while initiating a project the user may like to do a comprehensive survey of literature on the topic of the project. Sometimes, having confronted a problem, the user may

like to examine all the literature discussing the problem. Such an approach is termed 'Exhaustive approach'. Besides these two approaches, a user may be interested in keeping himself abreast of new developments, new methods, new technologies, new theories, in his area of activity. This will help the user to update his knowledge as well as come across items of information which may give him useful insights, or help him modify his strategies. Such an approach is termed 'Current approach'.

Current awareness services attempt to satisfy the 'Current approach' of the users.

3.3 ROLE OF LIBRARIES AND INFORMATION CENTRES

First, the libraries/information centres should ensure that information contained in the vast information sources could be put to effective and timely use and secondly to disseminate quickly the information on new developments instead of waiting for the user to personally discover it. Generally, an active professional always uses several channels for getting informed about new developments which include meetings with the peers at conferences and professional gatherings, and personal scanning of literature.

The ever increasing volume of literature, and the emergence of a wide variety of information sources like books, periodicals, reports, patents, theses and information sources available on magnetic media make it extremely difficult for the user to keep track of the new developments reported in the literature. Generally, an active professional scans few core periodicals in his area and may miss several useful items published in journals belonging to other areas. This happens due to the adoption of interdisciplinary approaches to the study of subjects on an increasing scale. Moreover, the majority of the users do not have adequate time to personally scan the literature and discover useful material. In other words, libraries and information centres should help minimise the time spent by the user on personally scanning literature to know of the new developments. They should study and understand their clientele's needs, identify the relevant sources, and inform the user periodically what is new in his area so that his time is optimally utilized.

Self Check exercise -1.

Why libraries/information centres generate Current Awareness Services?

- Note: i) Write your answer in the space provided below
ii) Compare your answer with the model answer given at the end of this unit.

3.4. CHARACTERISTICS AND DESIGNING OF CURRENT AWARENESS SERVICES

CAS has the following characteristics:

- It endeavours to alert the users as regards the recent developments in their areas of interest as early as possible;
- It does not attempt to provide answers to specific queries; and
- It is expected to serve as a browsing tool to help the user to get an idea of what is new in his fields of interest.

The service could also include an abstract describing the contents of each item. Sometimes a digest of new developments written by professionals may be published as a newsletter.

Some of the factors which need to be considered while designing a current awareness service include:

- the needs of the target audience i.e. the user groups;
- the choice of source like the type of literature such as periodicals, patents and reports, to be covered;
- the degree of detail that could be included in respect of each item;
- the frequency or periodicity which needs to be kept up in generating the service;
- the layout and the presentation.

The degree of detail to be included in respect of each item has to be decided after assessing the priorities, the volume of input to be processed, the number of professionals available for generating the service. Though one of the aims of the Current Awareness Services is to inform quickly another aspect is that he should have adequate information to be able to assess the usefulness of the item to him.

3.5 TYPES OF CURRENT AWARENESS SERVICES

Depending on the contents and layout, the following types of CAS are recognised:

3.5.1 Contents by Journal Service

The periodicals are considered to be one of the primary channels for communicating new developments. The contents page of a periodical indicates the topics discussed in the issue. It is assumed that the users generally scan a few core journals published in their fields to keep abreast of the new developments. Hence, this mode of Current Awareness Service

involving generation of a product consisting of copies of contents pages of periodicals is considered useful and adequate.

The advantage of the service is that it can be generated easily and quickly, as it does not involve any intellectual effort. The disadvantage is that the users may not be able to decide from the title of the article whether the material would be useful, more so when the title is vague and even misleading.

3.5.2 Current Awareness Lists

In this form of service the new literature is regularly scanned and potentially useful items of information are identified. The essential bibliographic details of the item are recorded. The items dealing with the same area or topic are grouped together. The items are listed in the form of a bulletin. The articles are listed and arranged by broad or narrow subjects. The articles, if classified by subject, can be arranged in a classified order. The topics or the broad groups may sometimes reflect the homogeneity of the interests of the users in the organisation. Whatever be the arrangement, it should be easily browsable. An abstract may be included to help the user assess its utility.

The advantage of this form of service is that it can be tailored to the user's needs through proper selection of relevant items and the slanting of the abstract with the required information.

3.5.3. Research-in-Progress

Research activity in a field points to the directions in which the discipline may probably expand. Knowledge of the research activities being undertaken by others in one's area of interest provides the researcher with valuable information. The information could be useful to the researcher while initiating a new project. Sometimes the project information may also result in changing the course of his research activity.

This service attempts to bring out information on new research projects, and progress made in ongoing projects. The details generally included in such a service are the name and address of the laboratory where the research project is being undertaken; names of the principal and associate researchers, funds and sources of funds, duration of the project, and special equipment in use, if any and a narrative description of the project and its progress. Besides the topic, the information such as the names of researchers and institutions, the names of funding sources would be of interest and usefulness to the researcher.

3.5.4 Newspaper Clipping Service

News papers themselves function as current awareness tools in the areas of public interest especially politics, business, social information, culture etc. The coverage varies from local, regional, national to international news. Some of the newspapers devoted to specialised topics like business, commerce, economics, finance are of immense value as they carry the latest information and data. These are highly sought after in government departments, financial and business organisations. Information contained in newspapers is mostly factual and sometimes transient and hence needs to be disseminated quickly taking minimum time for production. One of the most popular methods is the organizing of the clippings. Various dailies are scanned and news items of interest to the users are cut out and pasted on to a sheet. The clippings can be arranged broad subject-wise or topic-wise. Though these are some of the types of Current Awareness Services which are popular, new products and services performing the current awareness function could be imaginatively designed and generated based on the choices of the users and the information needs of an organisation.

Self Check exercise -2

What are the types of Current Awareness Services?

- Note: i) Write your answer in the space provided below
ii) Compare your answer with the model answer given at the end of this unit.

3.6 BASICS OF SDI

3.6.1 What is SDI

Selective Dissemination of Information service is a service designed to meet the specific needs of users so that they get to know a high proportion of relevant material. The service with its various components attempts to remain sensitive to the changing interests of the recipients of the service.

SDI and Current Awareness Service are not the same as they serve different purposes. Current Awareness Service is like a browsing tool, aimed at wider audiences, in which all the items included need not necessarily be and most often are not relevant to all. Current Awareness

Service thus has got a try-to-find-it orientation. Extra efforts have to be put in by the individual user to discover what is relevant to him. SDI attempts to provide the individual, or sometimes a small group of users working on a project with only those items of information the relevance of which is high.

Basically SDI emphasises the use of computers, the efforts to find the appropriate user for a particular item of information and, more importantly, keeps track of the changing interests of the user and informs him of the new developments suitably.

The application of computers to Current Awareness Services was first thought of by Hans Peter Luhn who suggested a method for generating S.D.I. Luhn has defined SDI as "that service within an organisation that concerns itself with machine assisted channeling of new items of information from whatever source to those points within the organisation where the probability of usefulness, in connection with current work or interest is high".

The following terms used in the definition need to be understood. The term, 'machine assisted', means the use of computers, 'new information' means information of recent origin, 'Whatever source' means that the source of information may be within the organisation and outside it, 'usefulness is high', - means that it should ensure that only highly useful information reaches the appropriate user, 'current work or interest' means what is based on present work or activity.

3.6.2 SDI and Retrospective Searching

SDI is not the same as retrospective searching. In a retrospective search, a user makes a request for search on a topic. Based on the topic requested, the relevant databases and indexes are searched for, i.e., the user requirement sparks off a search to find out the relevant documents.

In a SDI service, based on the contents of the document, the system identifies the appropriate users who have shown interest in the contents discussed, i.e., a document sparks off a search for finding the right user.

Having understood the purpose of the SDI, the various components of SDI may be examined. The components are: i) Document database, ii) User profiles, iii) Matching, and iv) Notification, Feedback and Modification.

3.7 COMPONENTS OF SDI

Document database file : The document database comprise characteristics of each document which include bibliographic information and the subject content. The terms denoting the subject content are the index terms chosen from a standard vocabulary, generally a subject thesaurus. The document database, also termed a 'document profile' is found in a computer

readable form. The database is maintained on a computer and constantly updated with information on new documents.

User profiles file : For each user or sometimes a group of users an interest profile is maintained. This is also found in a computer readable form. The user profile is built on the basis of the characteristics the user is presently interested in. The profile consists of terms identified as representing the users' subject interests. The same standard vocabulary which has been used for representing the subject content of the document is used for translating the user's interest into profile terms. This ensures proper matching between user interest characteristics and document characteristics.

Matching : A computer program matches the documents characteristics with the characteristics of each user profile. The items are selected for each profile based on the matching of characteristics.

Notification, Feedback & Modification - The selected items are notified to the user along with a built-in feedback mechanism. Based on the feedback received the user profiles are modified to suit the changing interest of the user.

The role of the intermediary, usually the librarian/information officer is very crucial for the success of the service as spelt out below:

- The intermediary should be knowledgeable about the way the characteristics are identified and stored in the database and later matched;
- The intermediary, based on the comments received should carry out the necessary modifications in the user profile;
- The intermediary should interact with the user intelligently so as to elicit information on his changing interests and preferences to make the service highly selective and personalised.

Self check exercise-3

What are the components of SDI?

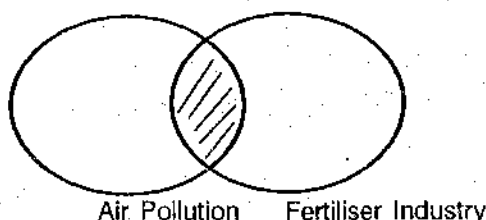
Note: i) Write your answer in the space provided below

ii) Compare your answer with the model answer given at the end of this unit.

3.8 FUNCTIONAL PHASES OF SDI

3.8.1 Selection

During the selection phase the document characteristics are matched with the characteristics mentioned in the user profile. This can be made clear with the help of an example. Suppose a user is interested in the new documents dealing with air pollution caused by the fertiliser industry. In the database there may be several documents dealing with these aspects. These document groups could be represented as Venn diagrams.



The computer program looks for documents the subject descriptions of which include the vocabulary relating to air pollution and those documents the subject descriptions of which include the vocabulary relating to fertiliser industry. It selects only those documents the subject description of which covers both the concepts.

The shaded portion represents the documents which discuss both these concepts and hence relevant to the user's interests.

3.8.2 User Profiles

The most significant component of the SDI services is the user profile as it involves proper understanding of the user's needs. The user interests may include subject as well as non subject information. The user may be interested in the work of certain authors and institutions in which case the profile should include their names. The subject interests need to be identified based on the same standard vocabulary or subject thesaurus which has been used for describing the documents for inclusion in the database.

The methodology of constructing a user profile consists of several steps. The user is asked to present a statement of his interests elaborating the topic and defining the concepts where necessary, and also mention the related areas in which he is interested. The statement helps in understanding the scope and context of his requirement to some extent. The user is also requested to list a few references which are highly relevant to his work. This also helps in understanding his areas of interest which he may not have explicitly stated. Another important information sought is whether he would like the output to be highly precise or comprehensive. This information helps in structuring the profile suitably. It also gives insight into his information searching patterns and behaviour. All this information can be obtained by asking the user to respond to a standard questionnaire.

3.8.3 Notification

In the selection phase the user profiles are matched with the document database. Only those bibliographic items which satisfy the search expression are put out for each user.

After the selection of items a notification or a report has to be generated which includes the items. The details included for each item should be adequate enough to provide sufficient information to the user to understand the usefulness of the item. It is always advisable to include an abstract. The computer generates the notification which includes bibliographic details of the item and an abstract.

3.8.4 Feedback and modification

Another important feature of the SDI is a built in feedback. Generally, two copies of the notification are generated. One copy is retained by the user and the other designated as feedback copy includes for each item an enquiry sent to the user requesting him/her to furnish information regarding the relevance of the item notified. Sometimes the user has to make a choice of responses provided by the feedback. Besides these standard responses the user can add some more comments. Based on the responses, the usefulness of the service can be evaluated. If a user responds that a high proportion of the notifications are not relevant, the intermediary needs to examine why it is so. The intermediary needs to examine the profile of the user, the choice of vocabulary and carry out the necessary modifications for increasing the proportion of relevant material. Sometimes if the user's interests have changed and if the present interests have not been incorporated he may receive items which are not relevant to his current interest.

Through proper analysis of the feedback, the intermediary can keep in touch with the users' information needs and changing interests and maintain the usefulness of the service.

The SDI service provides ample scope for the intermediary to interact with the users, an opportunity for providing highly personalised and selective service. This interaction also helps in acquiring useful and relevant information sources and building up a database which could meet the information needs adequately.

3.9 MANUAL SDI

Though the provision of SDI service is usually associated with the application of computers, it can be provided by manual methods also. The manual method is particularly suitable where the library clientele size is small and when the periodic input of documents is low.

With the manual method it may not be possible to deal with complex search expressions, selection of items by a variety of choices like names of peers, organisations, etc. At the same time it can adequately meet subject approaches. Manual methods, it may be argued, are preferable in that the service obtained by interposing a human mind between the raw primary material

and the user may prove to be better than that obtained by any other method, since the selection is not just based on keywords but is made through the association of concepts, ideas and all possible facets related to individual interests".

The components which have to be created and maintained are the same as those by the computer method except that they are organised differently.

3.9.1 Creation of a document database

The database could be created from the primary sources received in the library/information centre. These may include journals, reports, patents etc. The primary sources need to be scanned, and items of relevance selected, indexed and abstracted.

The database could be build by scanning, abstracting and indexing services covering the material relevant to the areas of activity of the organisation. Sometimes this may involve scanning more than one secondary source. The advantage of secondary sources is their wider coverage while but the disadvantage is the non-availability of document found intersting in the library when needed.

3.9.2 User profiles

User profiles could be prepared comprehensively by covering all the subjects the user is interested in. Other approaches like names of persons and those of institutions which are easy to handle in a computer based service are generally not included in that based on mannual methods. The names of journals the user normally scans, the names of journals the user considers to be substandard may be included to avoid alerting the user on the contents of the journals.

The following are some of the methods used for building user profile:

- 1) The maintaining of two types of cards, or files or sheets. One is the user card bearing information not only on subjects he is interested in, his preference, etc., but also on the department he is working in and the date of the last revision of information on his interests. The other is the keyword card which bears the name of the topic and the names of the users who are interested in the material on that topic.
- 2) The maintaining of a list of feature headings/subject headings selected from the abstracting and indexing services and indicating against each heading the names of users. Similarly, a list of the names of the users with the feature headings/subjects of their interest mentioned against each name is maintained.
- 3) The maintaining of the subject interests in the form fo Boolean logic search expression.

Self Check exercise-4

Explain briefly any one method by which the user profiles could be constructed in a manual SDI?

- Note :
- i) Write your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

3.9.3 Selection of documents

As the manual method is recommended where the number of users is small, it is possible for the librarian/information officer when he sees a new item to recollect the name of the user who may be interested in it. In such cases the customer card could be checked for confirmation. The selection process may become all the more methodical by identifying the topic of the new item, locating the word index card and noting down the names of the users who have expressed interest in that topic. The term in the user profile is matched with the name of the topic on one-to-one basis. All the items selected may not be relevant as only one aspect of interest has been taken care of. The selected items need to be further screened to identify more relevant items.

Another method suggested for manual SDI is to use optical coincidence cards. The user profile can be maintained as a search expression. Whenever the SDI system is operated the cards satisfying a particular search expression manipulated to retrieve the item numbers of relevant documents. The cards arranged in item number sequence bearing details of the document are picked up, duplicated and sent to the user. One of the disadvantages mentioned in this regard is that the space available for optical coincidence is limited.

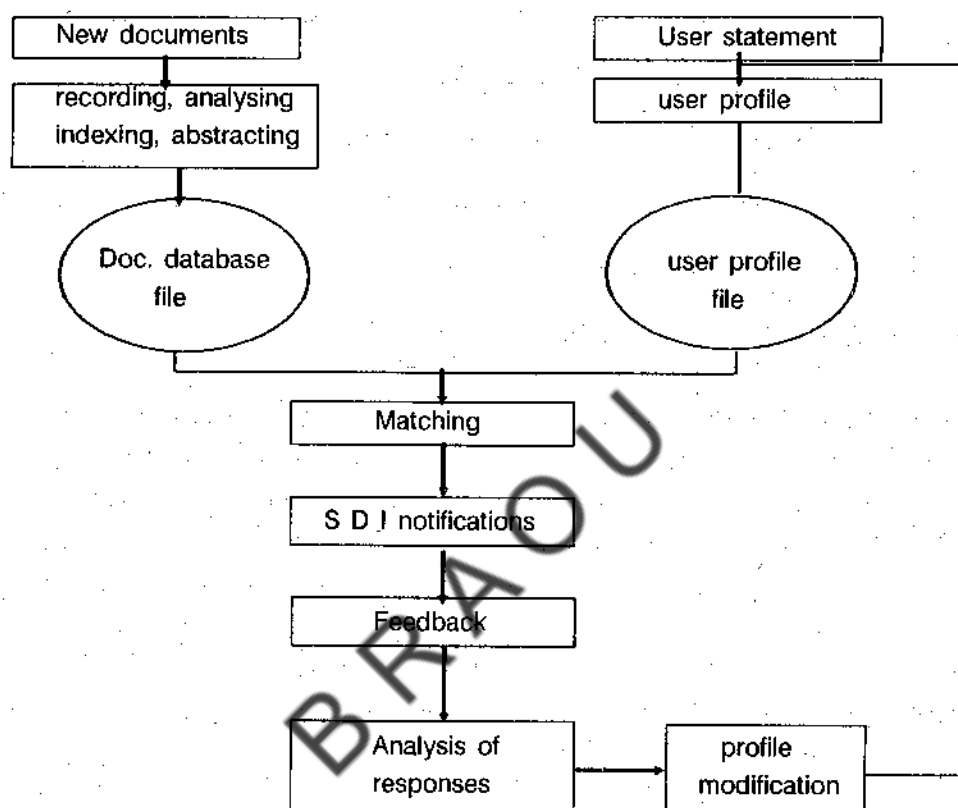
3.9.4 Notification, Feedback and modification

Notification can be sent in the form of handwritten references or typewritten lists. They can be also sent in the form of cards which can be maintained as a personal file by the user. Copies of first page of articles, contents pages of books are some of the other methods of notification.

Feedback could be obtained by sending a tear-off-sheet giving the details of the item, along with it a query regarding the usefulness. The librarian/information officer may directly interact with the user as the clientele size is small.

The usefulness of the service can also be gauged by the requests for original documents and the demand for photocopies.

Fig. 2 : S D I FUNCTIONAL CHART



3.10 SDI AND NEW TECHNOLOGIES

For generating the SDI service the library/information centre has to create a computer readable database, computer readable user profiles, programmes to match the two, and generate notifications with provision for feedback to carry out modifications if and when necessary. One of the components which involves a great deal of professional time and effort is first the creating of the computer readable database and secondly, the technical processing of literature for inclusion in the database which includes scanning, selection, indexing, and abstracting of relevant items.

With the increasing availability of computer readable databases dealing with almost every area through subscription it may not be necessary for every library to create its own database. All that is required is the developing of computer programmes to facilitate matching of user profiles and document descriptions contained in the current issue of the database and generate

the notifications to the user. The factors which discourage such options are the high costs of subscription and more often than not the need for subscribing to more than one database to meet the diversity of information needs of the organisation.

Another development which has brought tremendous changes in the information services scenario is Online technology. The technology helps a user of the database to search for the database available on a computer and instantaneously obtain the search results in the form of references. More importantly, the user can gain access to the databases in any part of the world using telecommunication channels. There are several groups of people called Online vendors in USA and elsewhere who are providing such services. Some of the vendors also offer SDI services. The user profiles can be developed online and stored on the computer of the vendor. The user profiles are matched against the new increments of the database periodically, the frequency depending on the user's choice. Some libraries and information centres in India are regularly conducting literature searches by accessing online the databases offered by DIALOG services, in U.S.A through the telex or telephone lines.

Another emerging technology is CD-ROM technology. The CD-ROM is a Compact disk read only memory device. The compact disk facilitates high storage. Some of the reference volumes like large dictionaries can be accommodated on a single disk. The disk also has computer programmes resident on it which facilitates searches. The abstracting and indexing services have been increasingly using this medium and offering their products at reasonable prices. Online searches involve chiefly telecommunication costs, computer connect time costs apart from other costs. Databases acquired on this media can be searched any number of times without incurring any extra cost. The medium is ideal for retrospective searching, but needs to be seen whether it would be suitable for the SDI. The producers are following different mechanisms for updating the databases. Some are sending quarterly, half yearly and annual updates. On the frequency of the updates depends the suitability of the medium for generating the SDI.

3.11 SUMMING UP

The need to know the new developments in one's field of activity has become one of the prerequisites for success and development. The user's approaches include, 'everday approach', 'exhaustive approach', 'current approach'. The Current awareness services and the SDI attempt to satisfy the current approach of the users.

The growth of literature, the interdisciplinary approach to the study of subjects, the need for optimal utilization of vast resources acquired by the library are some of the reasons which prompt Libraries/Information centres to generate specialised information services.

Current Awareness Services are browsing tools. They do not attempt to answer any specific query.

The nature of needs, the clientele size and choice, the library resources are the major factors which decide how the service needs to be generated.

The types of Current Awareness Services include Contents-by- journal, Current Awareness Lists, Research-in-progress and newspaper clippings.

SDI is a highly selective and personalised service generated with the application of computers.

SDI is different from Current Awareness Services and retrospective searching.

The SDI system components include document database file, user profile file, matching programmes, notification, feedback and modification.

In the SDI the new increments of the database are matched with the user profiles, notifications sent to profile holders, feedback obtained and the necessary modifications carried out in the user profile.

SDI can be produced manually, the components being the same but organised differently.

The emerging technologies like Online technology, CD-ROM technologies can and do influence the modes of provision of SDI.

3.12 MODEL ANSWERS

1. Libraries and information centres need to generate Current Awareness Services due to the following reasons:
 - a) The ever increasing volume of literature coupled with the growing diversity of the information sources is making it extremely difficult for an active professional to keep track of new developments and new knowledge;
 - b) The increasing interdisciplinary nature of research is resulting in the items relevant to one area appearing in information sources dealing with other areas;
 - c) Libraries and information centres being traditionally involved in the selection, acquisition, processing and maintenance of a variety of information sources, for optimum utilization of these resources, need to inform their clientele regularly of what is new in their field of activity.
2. The types of Current Awareness Services are a) Contents-by- journal Service, b) Current Awareness Lists, c) Research-in- Progress, and d) Newspaper clippings service.
3. The components of Selective Dissemination of Information service (SDI) are, a) The document database file, b) The user profiles file, and c) Notification, Feedback and Modification.

4. One of the methods by which the user profiles could be maintained in a Manual SDI is by organizing two sets of cards or sheets. One card bears the details of the user, the name, the department, etc., and is termed 'user card'. On this card, the topics the user is interested in is mentioned along with the date when his profile was last revised. The other card bears the name of the topic along with the names of the users who are interested in the topic and is termed 'topic card'. This could be maintained on a sheet listing the topics and the names of the users interested in them mentioned against each topic.

Whenever a new document is received, it is analysed, the topics it discusses identified and the interested users informed.

3.13 ASSIGNMENTS

1. Visit special libraries attached to two or three research institutions. Examine the type of Current Awareness Services generated or subscribed to by the library. Identify the types and record their characteristics, presentation and make a comparative study.

3.14. RECOMMENDED BOOKS

GUHA, B. *Documentation and Information : Services, Techniques and Systems*. 2 nd rev ed. Calcutta: World Press, 1983.

KEMP, D.A. *Current Awareness Services*. London : Clive Bingley, 1979.

WHITEHALL, T. *Personal Current Awareness Services : A Handbook of techniques for manual SDL*. London: British library 1979.

3.15 GLOSSARY

Boolean logic : The logic which helps to express relationships between concepts. The operators used to express the relationships are; OR, AND, NOT.

Core journals : The journals identified as core ones are those which are highly relevant to a particular area; which carry a high proportion of relevant materials on a particular topic.

Database : Information stored on computer files which can also be accessed remotely through a terminal and telecommunication links.

Feedback : Response to a message in communication.

Homogeneous : Groups whose interests are similar, who are working for the same purpose.

Intermediary : A person or a group or an institution acting between two systems interpreting one to the other; a librarian/information officer acting between the information system and the user, translating the needs of the user into the requirements of the system and delivering the capabilities of the information system to the user.

Magnetic media : The media used for storage of computer readable data.

Target audience : The group of people for whom a service, a programme is intended and directed at.

User profile : The statement of the user's interest indicating subject or non-subject interests translated into precise terminology and combination of concepts.

Venn diagrams : A diagram which uses circles to represent logical representation between sets, named after John Venn, a logician.

BRAOU

UNIT 4 - INDEXING AND ABSTRACTING SERVICES

Contents

- 4.0 Aims and Objectives
- 4.1 Introduction
- 4.2 Need and purpose of Indexing and Abstracting Services
- 4.3 Development of Indexing and Abstracting Services
- 4.4 Planning and Organising the Services
- 4.5 Major Indexing and Abstracting Services
- 4.6 Summing Up
- 4.7 Model Answers
- 4.8 Assignments
- 4.9 Recommended Books

4.0 AIMS AND OBJECTIVES

This unit introduces you to two most widely used services, viz., Indexing and Abstracting Services. The indexing service helps the user in locating a document in a particular subject of interest and the abstracting service, in addition to locating the document, aids in selecting the relevant document for further study through its abstracts.

A study of this unit will enable you to

- understand the need of the abstracting and indexing services;
- highlight the historical development of these services;
- organise these services whenever the situation warrants; and
- describe the scope, coverage and functions of some existing abstracting and indexing services.

4.1 INTRODUCTION

Indexing and abstracting services have been recognised all over the world as important disseminating tools of information. The tremendous increase in user population and volume of literature being published have reinforced the need for such services for locating information. There are about 2500 of such services in operating in different subject fields, published some

times with the help of computers, in a number of organisations throughout the world. These services help in locating the original document. They also facilitate retrospective search, the preparation of subject bibliographies and the identifying of the documents to be translated.

4.2 NEED AND PURPOSE OF ABSTRACTING AND INDEXING SERVICES

The need of abstracting and indexing services was established due to the increasing gap between the producer of information and its consumer/user. The contributing factors to such a situation are:

- i) Increase in the volume of research
- ii) Increase in the volume of published primary literature
- iii) Scattering and seepage of information
- iv) Geographical barrier
- v) Language barrier
- vi) Types of documents published
- vii) Obsolescence of information, and
- viii) Increase in the user population.

Let us examine in detail these factors which influence, to a great extent, the publication of secondary services.

ii) Volume of Research:

After the World War II the number of research institutes has increased. Development of new subjects like electronics, biotechnology, biomedical engineering, etc., is the indicative of continuous research in many fields. The increase in the volume of research has resulted in the publication and use of new information which in turn has facilitated new developments. In this cycle of research and development, information is required by the user on a continuous basis. The indexing and abstracting services fulfill this need.

ii) Volume of Published Primary Literature:

With the increase in research there has occurred phenomenal proliferation of primary literature. According to one estimate the number of primary periodicals has gone up to 26,000 in science and technology alone. No individual research worker will be able to scan through even a part of the primary information produced in the area of his specialisation. This situation has suggested that at least an announcement service about the availability of incremental information will be of great help to the researcher and thus the indexing and abstracting services have come to be organised.

iii) Scattering and seepage of information:

The information required by a researcher is scattered among different sources and search for the information required. In certain cases the information sought by the researcher might have been published in an unexpected source. Such a phenomenon is called 'seepage of information'. A good indexing and abstracting service will sort out these problems.

iv) Geographical barrier:

Primary literature is produced world wide. This information may not reach or some times the user may not be aware of the publication of such information because of geographical and political barriers. At least the availability of such information at some place can be announced through these secondary periodicals.

v) Language barrier:

Information is produced in different languages. Only about 50 per cent of the literature is in English which is known to most of the researchers. The other 50 per cent of literature will be missed by the users who do not know any language other than English. These secondary services could at least bring to the notice of the users the production of such literature.

vi) Diversity of documents published:

A large amount of information is published in a variety of documents like periodicals, reports, standards, specifications, patents, pamphlets, and other microforms, etc. The collecting of all these types of documents by an individual or a library is not possible specifically on a particular topic. The indexing and abstracting periodicals can help the user to identify the various types of published documents containing the required information.

vii) Obsolescence of Information:

By the time the original document in its normal channel reaches the ultimate user, the information contained in the document becomes outdated. To quicken the process of getting the original or at least a photocopy of the document, the secondary periodicals will help to a great extent. Through them the right information will reach the user in right time before the information gets obsolete.

viii) Increase in the user population:

With the increase of population in general and scientific population in particular the requirement of information also has grown tremendously. To cater to the needs of such a large population there must be some efficient dissemination mechanism. Indexing and abstracting services try to keep the users in touch with current information.

Self-Chek Exercise-1

What are the factors contributing to the publication of secondary services?

- Note :
- Write your answer in the space given below.
 - Compare your answer with the model answer given at the end of this unit.

4.3 DEVELOPMENT OF INDEXING AND ABSTRACTING SERVICES

The abstracting and indexing services are not a new phenomenon. The origin of such services could be traced to the Alexandrian period when the abstracts of plays and historical works were prepared for the benefit of scholars who found it difficult to study a large number of papyrus rolls. Abstracts were used by scientists, scholars, statesmen and religious leaders in written or oral forms. The abstract has become a disseminating tool since the 17th century with the starting of **Le Journal des Scavans** (Journal of learned men) in 1665. Many such services were started through individual efforts in the 17th and the 18th centuries but were not continued for long.

Abstracting service in its modern form came to be organised in the 19th century. Important abstracting services which, started in this period, are still continuing are **The Engineering Index** (1884) and **Science Abstracts** (1898). The number of such journals increased in the 20th century. **Chemical Abstracts** (1907), **Biological Abstracts** (1926), **Mathematical Reviews** (1940), **Referativny Zhurnal** (1954), etc., are examples of such services.

Apothegmate, a list of sayings of various Greek fathers on certain theological topics, was the first alphabetical subject index. The Royal Society of London made the first scientific approach to publishing the catalogue of scientific papers. **Zoological Record** (1864) and **Index Medicus** (1879) were the notable indexing services which were started during the 19th century. There are a number of such services now in print. **Current Technology Index** (1962), **Current Index to Scientific and Technical Literature** (1967) are two of the best known of their kind.

4.4 PLANNING AND ORGANISING THE SERVICES

Abstracting and Indexing (A & I) Services are being organised at different levels, viz., global, national and regional levels. However, the nature and scope of each such journal is

different. Sometimes these journals may not be helpful at the local level, because of their scope and coverage. Hence there is always a gap to be filled in at the local level. So the documentalist is expected to offer such a service to fill the gap. Before planning an indexing or abstracting service there are certain requirements to be fulfilled by the documentalist. He should -

- decide to exploit the information resources fully and effectively after discussing with the users and the authorities;
- determine what type, of information is to be covered in the service - by type, by subject and by level of the users;
- develop an overall information system to cope with the new service in terms of document, personnel and financial resources;
- be able to monitor and update the information system on the basis of feedback built into the service itself.

After ascertaining about all the aspects of the above mentioned requirements, the documentalist should set about offering the need-based service at the local level.

The text of the abstracting or indexing service will have two parts:

1. The classified part which apart from the bibliographic description of the original document gives the subject heading, class number and serial number and an indicative abstract (in the case of an abstracting journal), and
2. An alphabetical part with a key word index and an author index.

Preparation of A & I Services

The actual preparation of these two parts of the indexing or abstracting periodical involves the following steps:

- i) Document selection for coverage by language, by type, by subject, etc.
- ii) Document selection for relevancy in regard to the publication by scanning the source document;
- iii) Noting down the bibliographic details of the document to be included in the publication on a separate standard slip called 'entry';
- iv) Preparation of an abstract of the text of the document in the case of an abstracting service;
- v) Identifying subject headings and standardising them with the help of vocabulary controls such as subject heading lists and thesauri;

- vi) Classifying the entries by following a standard classification scheme;
- vii) Arranging the entries in the classified order and in each class, alphabetically by author;
- viii) Giving a serial number to each entry after preparing the **see** and **see also** entries;
- ix) Preparing alphabetical subject and author indexes; and
- x) Publishing the indexing or abstracting periodical for the benefit of users.

The work of preparing these periodicals entails considerable effort, time and skill on the part of the persons involved. It is highly technical and requires the services of subject specialists trained in the documentation field. Taking all these into consideration the secondary services should be offered only on a subscription basis.

The indexing and abstracting services so prepared should be able to function as

- a) carriers of published current information;
- b) tools for retrospective searches through their periodical cumulations;
- c) sources for the preparation of subject bibliographies;
- d) facilitators for the selection of documents for photocopying and translation.

Self-Check Exercise-2

- (a) Give a brief account of the requirements for offering an indexing or an abstracting service which a documentalist has to fulfill.

Note: i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

- (b) What are the steps involved in preparing an indexing or an abstracting periodical?

(c) What are the functions of the Indexing and Abstracting Services?

Note : i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

4.5 MAJOR INDEXING AND ABSTRACTING SERVICES

A number of indexing and abstracting journals are in existence to help bring the information published to the user. As has already been mentioned, there are more than 2500 such journals regularly published in different fields ranging from Psychology to Technology. Let us examine in detail some of the important journals for their coverage, scope and presentation of material, etc.

(i) Current Technology Index (1962)

A monthly index providing subject and author access to English language periodical literature dealing with general technology, engineering and related topics, started in 1962, is published by the Library Association Publishing Limited, London. This index covers 350 periodical titles published in the United Kingdom. It is also available on microfilm and magnetic tape.

Entries are arranged in the classified order in the main part. Each issue provides an author index and a source list. A typical entry includes article title, sub-title, author's name, journal title, and volume, issue and page numbers.

(ii) Education Index (1929)

A monthly subject and author index to English language educational publications started in 1929 by H.W. Wilson Company, New York. The index covers education, including administration and supervision, preschool, elementary, secondary, higher and adult education, vocational education, counselling and personal audiovisual education, comparative and internal education, etc. Periodicals indexed are selected from a master list of suggested titles by the users.

Periodicals (330), books and monographs are scanned for the purpose. A list of periodicals scanned with full details concerning them is included in each issue.

Entries are arranged in the main section alphabetically by article title under different subject headings and author names appear in a single alphabetic sequence.

A typical entry includes article title, author's name, indication of bibliography and illustrations, journal's title abbreviation, series, volume and page numbers and date.

(iii) **Humanities Index (1974)**

A quarterly subject and author index to current English language periodical literature covering various topics in the field of Humanities, started in 1974, is published by H.W. Wilson Company, New York. The periodicals covered are selected by the subscribers. The subject coverage includes Humanities, Archeology, and Classical Studies, Area studies, folklore, history, language and literature, literary and political criticism, performing Arts, Philosophy, Religion and Theology and related subjects. 250 periodical titles are scanned for the index and each issue of index gives the details of the periodicals scanned.

Entries in the main section are arranged alphabetically by article title under author's names, and subject headings appearing in a single alphabetical sequence. Each entry includes article's title, author's name, indication of bibliography and illustrations, journal's title abbreviation, volume number, page number and date.

(iv) **Index Medicus (1879)**

One of the oldest indexes in the medical and allied field, the *Index Medicus*, started in 1879, is published every month by the US National Library of Medicine. The index covers periodical literature published all over the world in all languages. The subjects covered are medicine, life sciences and other health related topics. An abridged *Index Medicus* and an annual cumulation - *Cumulated Index Medicus* - are also published. The *Index Medicus* is also available as on-line data base. It uses the US National Library of Medicine's *Medical Subject Headings* (MeSH) for indexes.

Entries in the main section are arranged alphabetically by journal's titles under specific alphabetical subject headings and sub-divisions. The English language journal titles appear at the beginning of the heading. Each issue has 2000 entries and is cumulated annually.

The index is produced from a computerised MEDLARS system. MEDLINE, the online version of the index, is searchable through the National Library of Medicine, DIALOG Information Services Inc. and Bibliographic Retrieval Services Inc.

(v) Biological Abstracts (1925)

A presentigeous abstracting journal in the field of biological sciences, *Biological Abstracts*, is published by Bio-Sciences Information Service, Philadelphia since 1925. Biological Abstracts publishes every fortnight summaries and indexes of research reports, reviews, papers and books on biology and biomedicine. It covers periodical and other literatures published all over the world. About 9000 periodical titles are scanned. Abstracts in the main section are arranged by entry number under 84 alphabetical subject headings. Each issue includes author index, biosystematic index, generic index, concept index and subject index.

Each entry includes entry number, author's name and his institutional affiliation and address, as also article's title, journal's title abbreviation, and volume, issue and page numbers, year of publication, original language, if it is other than English. It gives 7300 abstracts in each issue and is cumulated semi-annually. These abstracts are also available on-line as part of BIOSIS PREVIEWS covering Life Science literature since 1969.

(vi) Chemical Abstracts (1907)

Produced by Chemical Abstracts Service (CAS), a division of American Chemical Society, *Chemical Abstract* (CA) is a weekly publication, available in print or microform, containing abstracts, bibliographic headings and indexes of the world's chemical literature. CA covers approximately 10,000 periodicals published in about 150 countries in any of 50 languages. It's comprehensive coverage also includes patent documents issued by 29 patent offices all the world over, technical reports, dissertations, conference proceedings and new books on chemistry. Approximately 5,00,000 documents are selected for abstracting each year from leading chemical, physics, medical, biological and other technical journals.

More than 1,47,00,000 documents have been referenced in CA so far. Abstracts provide concise summaries of the information contained in original documents, substances, procedures, equipment, author's names to help determine whether or not one needs to see the original document. CA abstracts give complete bibliographic data, patent references, chemical structure, chemical substance names, etc. Each issue gives keyword, author and subject indexes. In addition to these CA also produces general subject index, chemical substance index, formula index and ring index.

Abstracts in the main section are arranged by entry under 80 section headings within five broad subject categories. The indexes are cumulated every six months and the volume indexes are cumulated every five years. Photocopies or loans of original documents cited in CA are available on payment of the fees from CA's document delivery service. Chemical Abstracts information is accessible through various world-wide on-line services.

(vii) Devindex Africa: Index to Literature on Economic and Social Development in Africa (1980)

A quarterly publication by Pan-African Documentation and Information System under United Nations Economic Commission for Africa from Addis Ababa of Ethiopia. It gives abstracts and indexes of selected English and French language documents published by the UN Economic Commission for Africa (ECA) on topics of economic and social development in Africa. It is available as a printed publication, in microform and as a machine readable data base.

It scans 400 periodicals, 600 reports per year and proceedings and other ECA publications. Abstracts in the main section are arranged by geographic region under sub-topics within seven subject categories. Each issue also includes English language subject indexes, French language subject indexes, French and English-language geographical index, Bilingual French and English Institution index. Photocopies of all the documents referred are available.

(viii) Engineering Index (1884)

Engineering Information Inc., of New York has been publishing this abstracting and indexing journal every month. It provides access to all Engineering disciplines. It covers about 2000 periodicals, 1000 proceedings, books, reports and standards published from 50 countries in 15 languages.

In the main section entries are arranged by entry number under specific alphabetical *Subject Headings for Engineering* (SHE) with sub-topics. Each issue also includes author index, a list of conference publications covered, a list of acronyms and abbreviations of organisation names.

A typical entry presents complete bibliographical data and is cumulated annually. The information from EI Annual is included in the COMPENDEX database and is widely available on-line.

(ix) Environment Abstracts (1971)

A monthly abstracting and indexing journal which provides coverage of international English language literature relating to environment is published by EIC/Intelligence, New York.

It scans periodicals, reports, proceedings and other literature published the world over, and is available as printed publication, magnetic tape and on-line.

The journal covers air pollution, chemical and biological contamination, energy, environmental education, environment design and urban ecology, food and drugs, noise pollution, renewable resources, water pollution, etc.

Entries in the main section are arranged by entry number within 21 subject categories. Each issue also includes subject index, author index, source index and industry index. Each

entry gives full bibliographic description of the source document along with an abstract. The information of EA is available on-line through DIALOG Information Service, Inc., and System Development Corporation (SDC).

(x) Excerpta Medica (1947)

The largest service in the field of Medical science, *Excerpta Medica* is published ten times a year from Amsterdam, Netherlands. An abstracting and indexing journal in 46 parts published separately under different main subject headings of medicine and related topics, *Excerpta Medica* scans 3500 biomedical, pharmaceutical and chemical periodical titles. Abstracts in the main section are arranged by major topics. Each issue also includes a subject index and author index.

A typical entry includes entry number, article title in English, abbreviation for original language, article title in original language, author's name and address, journal title abbreviation, year of publication, and volume, issue and page numbers, language of article summary and abstract in English. Subject classification is based on EMCLAB and the *Excerpta Medica* uses the *Master List of Medical Indexing Terms* (MALIMET).

Information from the journal is searchable on-line as part of the *Excerpta Medica* database (EM BASE) which is accessible through DIALOG Information Service, Inc., Data Star and others.

(xi) Indian Science Abstracts (1965)

An abstracting periodical, published every month from the Indian National Scientific Documentation Centre, New Delhi, it reports original scientific research work published in Indian journals including short communications, research work by Indian scientists published in foreign journals, reviews, conference proceedings, seminars, symposia held in India, Indian patents, standards, monographs and ad hoc scientific reports from Indian scientific research institutions.

Entries are grouped according to the UDC and are arranged under appropriate headings alphabetically by the author's name. Entries are serially numbered. Each entry includes author's name, title, followed by language symbol, if the article is in a language other than English and locus followed by abstract and initials of abstractors. Each issue provides author and keyword index.

(xii) Sociological Abstracts (1953)

An abstracting and indexing journal published by Sociological Abstracts Inc., from San Diego, CA, it covers world literature in Sociology and related disciplines. A supplement, the *International Review of Publications in Sociology* is also included in each issue comprising a bibliography of book reviews appearing in the journals abstracted.

The journal covers 1500 periodical titles, 200 books per year as also conference proceedings.

In the main part the entries are arranged alphabetically by author under sub-topics within 31 subject categories. Each issue includes subject and source indexes.

Each entry includes entry number, author's name, author's affiliation and address, article title in original language and English journal title, year of publication, and volume, issue and page numbers, issue data, language code, if other than English, the number of illustrations and an abstract.

Sociological Abstracts is issued five times a year. Indexes are cumulated annually and issued separately. SA database is available on-line through DIALOG Information Services, Inc., and Bibliographical Retrieval Services, Inc.

4.6 SUMMING UP

Indexing and abstracting services help bring the literature published to the notice of the users for effective use of information available in such literature. There are a number of indexing and abstracting services in almost all fields of human endeavour. The documentalists should try to utilise the existing services before planning to start one such service which is costly and time consuming.

4.7 MODEL ANSWERS

1. The factors contributing to the publication of secondary services are:
 - i) Increase in the volume of research;
 - ii) Enormous volume of published primary literature;
 - iii) Scattering and seepage of information;
 - iv) Geographical barrier;
 - v) Language barrier;
 - vi) Diverse types of documents published;
 - vii) Obsolescence;
 - viii) Increase in the user population.
2. (a) Requirements for offering indexing and abstracting services:
 - i) Decide to exploit the information sources fully and effectively after discussing with the users, and the authorities;
 - ii) Determine what kind of information is to be covered by the service - by type, by subject and by level of the users;
 - iii) Develop an overall information system to cope with the new service in terms of document, personnel and financial resources;
 - iv) Monitor and update the information system on the basis of feedback built into the service itself.

2. (b) The actual preparation of the indexing and abstracting periodical involves the following steps:
 - i) Document selection for coverage by language, by type, by subject, etc.
 - ii) Document selection for relevancy in respect of the publication by scanning through the source documents;
 - iii) Noting the bibliographic details of the document on entry slips;
 - iv) Preparation of an abstract of the text;
 - v) Identifying the subject heading and assigning it;
 - vi) Classifying the entries;
 - vii) Arranging the entries in the classified and author's alphabetical order in each class;
 - viii) Giving a serial number to each entry and preparing see and see also entries;
 - ix) Preparation of alphabetical subject and author indexes;
 - x) Publishing the indexing and abstracting periodical.
2. (c) The indexing and abstracting services prepared should be able to function as:
 - i) Carriers of the details of the published current information;
 - ii) tools for retrospective searches through their periodical cumulations;
 - iii) sources for the preparation of the subject bibliographies;
 - iv) facilitators for the selection of documents for photocopying and translations.

4.8 ASSIGNMENT

Write short notes (150 words) on any four of the indexing and abstracting services you know.

4.9 RECOMMENDED BOOKS

GUHA, B. (ed.) *In the Library and information Science Horizon*. New Delhi: Allied, 1985.

ROWLY, J.E. and TURNER, E.M.D. *The Dissemination of Information*. Delhi: Clarion Books, 1979.

SCHMITTROTH, J. (ed.) *Abstracting and Indexing Services Directory*. Detroit: Gale Research Company 1983.

UNIT 5 - LITERATURE SEARCH AND INFORMATION RETRIEVAL SERVICES

Contents

- 5.0 Aims and Objectives
- 5.1 Introduction
- 5.2 Literature Search
 - 5.2.1 Types of Information Sources
 - 5.2.2 User Needs and Approaches
 - 5.2.3 Steps in Literature Searching
- 5.3 Information systems and services
 - 5.3.1 Types of Information Retrieval Systems
 - 5.3.2 Subsystems of Reference Retrieval Systems
 - 5.3.3 Major Activities of Reference Retrieval Systems
- 5.4 Summing Up
- 5.5 Model Answers
- 5.6 Assignments
- 5.7 Recommended Books

5.0 AIMS AND OBJECTIVES

In this unit we discuss the various types of information sources and describe the information retrieval systems and services.

After studying this unit, you should be able to :

- discuss why literature searching is necessary and explain the steps involved in literature searching;
- discuss briefly the types of information retrieval systems;
- explain the various parameters considered while designing a reference retrieval systems; and
- describe in detail the major activities of such systems.

5.1 INTRODUCTION

Since the time literature was considered the primary medium for conveying new thoughts, experiences, observations and analyses, those keen on enriching their knowledge looked forward

to accessing literature relevant to them. Scientists and philosophers in the earlier times could even maintain personal collections of relevant literature, and could easily keep in touch with the few institutions and specialists working in the same area. After the Second World War, the increased investments in science and technology resulted in an unprecedented growth of scientific manpower, scientific and technological institutions and advanced research institutions. The increased scientific and research activity and the scientific community's desire to make known their efforts resulted in the exponential growth of literature. The phenomenon is continuing and is no more restricted to science and technology alone. In recent times great emphasis has come to be laid on application of the benefits of scientific advances to the betterment of society as a whole. Much importance is being given to research in social sciences also.

5.2 LITERATURE SEARCH

With the increased interdisciplinary research the information is getting dispersed. The exponential growth of primary literature resulted in a situation in which it has become impossible to keep track of these resources. The secondary sources specialising in a discipline have been considered to be one of the ways of keeping track of what is new in one's field of scholarly interest. There has been a tremendous increase in the types and number of secondary sources also. Several new information sources (Review publications) which analyse and consolidate information in a field of activity have also become popular. At the same time, several bibliographies, and guides to literature have been published which also serve as useful tools for knowing and selecting new information resources. This brief introduction highlights the dilemma of a librarian/information officer, and gives an idea of the effort he has to put in to keep track of the various kinds of information sources, their diversity, the depth and extent of each which enables him to choose the right source to meet a specific information need.

5.2.1 Types of Information Sources

The types of literature can be broadly categorised as primary, secondary and tertiary literatures.

Primary literature includes periodical articles, research reports, conference papers, standards, patents, theses and trade literature.

Secondary literature includes indexing and abstracting services, reviews of progress, reference books, treatises and text books.

Tertiary literature includes a bibliography of bibliographies, Union list of periodicals, Guides to literature, Guides to individuals and organisations.

Most of the secondary and tertiary literatures are increasingly becoming available on computer readable media. The emergence of new information products is adding new dimensions to the provision of literature search services to users.

5.2.2 User Needs and Approaches

To satisfy user needs it may be necessary to refer to appropriate primary, secondary or tertiary literature also.

First, let us look at the types of user approaches. A user may be interested in

- a) knowing what is new in a field - 'Current Approach';
- b) Knowing an item of data like the melting point of a chemical 'Everyday Approach';
- c) Knowing the present state of a field - 'Catching up Approach';
- d) having a comprehensive list of references on a topic - 'Exhaustive Approach'.

The 'Current Approach' is satisfied by generating appropriate current awareness services. The 'Everyday Approach' is satisfied by providing appropriate reference service. The 'Catching up Approach' is satisfied by providing the information concerning the state of the art publications and review publications in the field concerned.

The 'Exhaustive Approach' is the approach which can be satisfied by methodical literature searching. The purpose for which a user requires a literature search depends on the background in which he is actively involved. An academician may require all the material pertaining to a topic for preparing a reading material, lecture or presentation etc. A researcher may request for a literature search while initiating a project or when confronted with a problem which has arisen while being engaged in his research. An industrial scientist or worker may request for a patent literature search while thinking of patenting an invention, method, etc. Similarly, a manager may be interested in knowing from the literature the ways and means of solving a managerial problem or enhancing productivity, or implementing new methods of organisation.

Depending on the type of information needed the appropriate literature has to be identified.

5.2.3 Steps in Literature Search

The following five steps are involved in a literature search:

i) Identification of scope and purpose of search:

Before undertaking the search, the purpose for which the search is required needs to be understood. This can be ascertained only after interacting with the user adequately. The next factor which needs to be ascertained from the user is the scope of the literature search. Sometimes the user may say that he is interested in only literature pertaining to Indian conditions. In such cases the scope is geographic in nature. The other options could be selectivity by type of document, language of primary source, years of publication, type of treatment such as preliminary, detailed theoretical work, practical experiences, case studies, etc. It is always useful

to conduct a brief literature search before conducting a full scale search. The references selected after brief searching could be shown to the user concerned to ascertain whether he is satisfied with the selection. A positive response would help carry on the search and a negative response would help in choosing the right search strategy.

ii) Identification of appropriate information sources:

This is by far the most crucial part of literature searching. Identify an appropriate source, the librarian/information officer has to be aware of the range of information products/services relevant to the topic. He has to consult the relevant information sources and tools such as guides to literature, encyclopedias etc. to get a better understanding of the topic. The search is generally initiated at the level of secondary publications because they give a comprehensive coverage as well as give clues to primary publications for examination. Initially, the secondary source which deal with the topic as a core area need to be identified. Further any other secondary service which covers the topic as a peripheral area has also to be consulted. Sometimes it would be helpful to examine whether a review article is available on the topic as such an article not only provides extensive references but also presents a consolidation of views and efforts on the topic.

iii) Deciding the search methods and search strategy:

All the secondary sources do not follow any common pattern and are marked by striking diversity. The introductory chapter in each secondary source or tertiary source provides information as to how the source could be used. Some secondary sources have been probably more frequently used than the others, which makes them familiar and easy to use. Some of the secondary sources follow systems of classification for grouping the topics. It is advisable to check whether in these classificatory groups the topic identified for literature search is listed as one of the selection. If it has been listed, references listed under those sections will be highly relevant. It can be supplemented by consulting the subject or concept index for identifying other relevant items which have been included under other sections. Some of the popular names, synonyms, and trade names for the concepts identified for the search could also be included in the terms used for literature searching.

Some of the secondary services follow their own thesauri and subject heading terms which need to be consulted before using them. The secondary services are increasingly becoming available as computer readable databases. These databases can be searched by means of several parameters. The librarian/information officer has to become familiar with search capabilities to make the best use of these information products.

After referring to the subject section of secondary sources the names of authors/corporate authors are noted down. These names are looked up under author and corporate author indices mainly for identifying additional references.

Some of the other important sources of information include conference proceedings, technical reports, theses, patents, trade literature, etc., which could be useful information source on the topic. Sometimes institutions as individual experts could be additional sources of information.

iv) Methods of recording references or information:

The recording of references could be done in several ways. In case the search results have to be provided very quickly, page mark could be kept in the primary sources identified as relevant for examination by the user. In most cases, the searcher has adequate time to make a comprehensive, consolidated presentation of search results. While actually searching the searcher could spend a little more time on recording the information adequately and methodically instead of making vague notes. Such initial patient efforts help avoid the repeating of the exercise involved in searching. Generally the tendency is to note down references on a sheet of paper, one recorded under another. Initially, it may be convenient, but later, it does not provide any flexibility for arranging the references in a desired manner. The references could be recorded on a card or a slip which would facilitate, first, handling; secondly, the adding of extra information like an abstract and thirdly, flexibility in choosing any desired order for arranging the references (e.g., by author, or by date of publication).

v) Presentation of search results:

Informative, useful, and impressive presentation of search results is as essential as painstaking searching and identifying of appropriate sources.

While presenting the search results, decisions need to be taken regarding the following aspects: a) the type of logical arrangement of search results; b) the amount of detail to be included in each of the references; and lastly c) the type of layout.

The arrangement could be by subject, by author or by type of material or it could be chronological. The arrangement could be a mixed arrangement combining some of these arrangements. The appropriate arrangement will be the one chosen based on the user's preferences, the type of arrangement the user finds the most useful and helpful. Regarding the details to be included besides the necessary bibliographic details, a brief annotation may be added to each reference and a slanted abstract may be provided highlighting the appropriateness and relevance of the selected references.

The layout of details has to be such that the presented product is easily browsable. The standard arrangement of details with which the user is already familiar may be followed to avoid creating confusion to the user.

Self check exercise-1

Mention the steps involved in literature searching?

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

5.3 INFORMATION RETRIEVAL SYSTEMS AND SERVICES

It is not necessary to stress that information has value and that it is sought by people involved in various activities. The type of information needed depends on the nature of the activity the person is involved in and the purpose for which he is seeking the information. The groups who seek information include planners, policy makers, managers, research scientists, agriculturists, industrialists and businessmen, academicians, students, and professionals, involved in different spheres of activity. Each group has specialised information needs along with some types of information requirements. Approximately, the user group's needs have to be understood and relevant information sources have to be identified, acquired, processed and stored.

The processing and storing of information should be done in such a way that answer to queries can be sought as and when required.

It has already been discussed in the earlier part of the unit that the users' approaches for information differ from one another, depending on the purpose for which the information is being sought. The same user at one time could seek facts, data - for example, - altitude of a place, corrosion rate of a material, names of Ambassadors of various countries, etc. At another point of time, he may seek references to literature dealing with a specific topic so as to enable him to take right decisions. Traditionally, libraries/information centres have been involved in developing information systems which are reference retrieval systems.

The overall objective of the information system depends on the target group(s) it is expected to serve. If it forms a part of an organisation, its design is influenced by the priorities of the organisation, the information requirement of the individuals or individual groups who constitute the organisation. For example, in the Government sector it may be expected to help the planners, and the policy makers to take the right decisions at the right time, and in the

industrial sector to help managers take steps to increase productivity, efficiency, profit making capability, as also to effectively utilise human, financial and other infrastructural resources.

5.3.1 Types of Information Retrieval Systems

Having briefly examined the nature of information requirements of the users, the information systems can be broadly classified as

- (1) Fact Retrieval systems,
- (2) Reference Retrieval systems, and
- (3) Document Retrieval systems.

i) Fact Retrieval Systems or Data Retrieval Systems:

Fact retrieval systems are expected to provide answer to queries regarding facts, figures, data, etc. The raw data collected from various sources is stored in these systems. The data could be statistical data like census, demographic data or scientific data such as chemical, physical and biological data. Some of the Data retrieval systems are termed 'databanks'. Most often, these are being designed and developed by specialised information analysis centres, private and government bodies, professional and learned associations. In fact, some of the modern libraries and information centres do provide access to such information systems to their users.

ii) Reference Retrieval systems:

Reference retrieval systems are expected to provide references of pertinent literature in response to a query. For example, it could be all the works of an author or documents discussing a particular topic. In these systems the original document is not retrieved but only the information about the document is retrieved. Example of such systems are a library catalogue, and an abstracting and indexing service. As libraries/information centres acquire a variety of information sources like books, periodicals, technical reports, theses, patents, etc., for building up their document store, they need to develop information systems which could store details of these diverse sources.

iii) Document Retrieval systems:

In document retrieval systems the document is retrieved in response to a query. It could be an image of a page if it is a microform and the text of which could be displayed on a visual display screen. With the advent of computers and high density data storage devices it is becoming possible to store large volumes of text on computer readable media. The entire text is stored and retrieved frame by frame on to the visual display screen. Such systems are also termed 'Text retrieval Systems'.

Some of the characteristics common to all the three types of systems help provide answers to queries and to facilitate searching by means of several parameters, the most popular being query by subject and regular updating of the system.

Self check exercise-2

What are the different types of information systems?

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

5.3.2 Subsystems of Information Systems

The various components of information retrieval systems as identified by Lancaster are:

- A document selection subsystem;
- An indexing subsystem;
- A vocabulary subsystem;
- A searching subsystem; and
- A user interface.

5.3.3 Major Activities of Information Systems

The activities carried out by the information retrieval systems are (1) Information resource building; (2) Maintenance of a searchable file; (3) information search and retrieval; (4) Information dissemination and reporting; and (5) Networking with other systems.

Each of these activities is discussed in the following sections:

i) Information resource building:

The ability of the information system to adequately and appropriately respond to queries posed to it depends to a large extent on the richness of the collection of information sources. Here, richness does not mean just quantity, but, more importantly, the quality of acquisitions.

To ensure this, the needs of the user community, their present and future interests, and their priorities should be understood properly. Based on such understanding, the areas of disciplines of interest to the user community have to be identified. This includes the identifying of the core, the peripheral, and the alien areas for building the information resources. Obviously, the core areas get top priority. The peripheral and alien areas can be decided taking into consideration the budgetary provisions. Some of the efforts involved in information resource building are close monitoring of announcement tools of publishers and distributors; scanning of appropriate tertiary literature sources like guides to literature; and getting to know the outputs of learned societies, research organisations (conference proceedings, technical reports), institutes of higher learning (dissertations), etc. In case the information system is involved in an industrial sector, patents also form a very important source of information.

So information resource building is a highly complex activity which requires a high level of professional expertise and awareness on the part of the personnel involved in the activity.

Besides, a well defined acquisition policy also is necessary for building a resource which is uniform and free of gaps. The information sources existing in various other forms like microforms, and machine readable-forms should also form part of the collections of the document store.

ii) Maintenance of a searchable file:

The information sources are acquired in response to the expressed interests and identified future probable interests and maintained as a document store. The document store has to be accessed whenever there is an information need. It means that whenever there is a request from a user for a specific piece of information, each information source needs to be examined so as to ascertain whether it is appropriate. This type of examination is difficult when the collection of information sources is large. Hence, a substitute or a surrogate file is maintained which is searchable. Such a searchable file should consist of adequate information about each information source. The information source could be a book, a report, a patent, a journal article, or a conference paper. Each information source has certain characteristics by which it can be identified. Some of these characteristics are common to all types of information sources as for example, author/corporate author. Some characteristics may be unique such as report number in a report, and patent number in a patent specification. All the characteristics identified for a particular information source or document describe it adequately and in other words, reflect the personality of the information resource. One of the most important aspects which has to be kept in view while designing a searchable file is the probable user approaches to the file and ensuring that the characteristics required for searching by those approaches are identified and included. For example, one of the searchable files maintained in a library is the library catalogue. It follows the rules of descriptive cataloguing, and provides various approaches such as author, title, series, report number, patent number, etc.

The most important characteristic of any information source is the subject characteristic. It happens to be one of the most popular characteristics by which a user poses a query to an information system.

It is difficult not only to identify the subject characteristics of an information source or a document but also to provide multiple and flexible approaches by this characteristic. First, the subject content of the information source is analysed, and then the subject characteristics or concepts are identified. The identified characteristics are represented by appropriate terminology taken from a standard vocabulary which can also be termed 'indexing language' of the system. The subject characteristics now termed 'index items' are recorded on the search file record maintained for each information source. The search file record could exist in the form of a catalogue card or as a record in a computerised database.

Similarly, there are several search records created. All the records need to be maintained in some logical order so that they are easily searchable. Some of the logical orders followed are the alphabetical and the classified. One of the most popular logical orders is the author index arranged alphabetically by the author's last name. Additional approaches like report number are provided whenever they are essential. It means that depending on the type of approach the additional search file records have to be maintained for each information source.

Coming to subject approach, as and when the information source has more than one subject characteristic, which is often the case, additional search file records have to be maintained. In the case of the records maintained as a computerised database additional search file records need not be maintained, instead, a single record can have all the characteristics of the information source.

For creating the search file appropriate subject indexing tools and techniques need to be adopted.

Sometimes the searchable file can be directly accessed by the user himself (e.g., a library catalogue; a highly user friendly computer based information retrieval system). Otherwise, the librarian/information officer has to carry out the search on behalf of the user after adequately understanding his needs.

iii) Information Search and Retrieval:

In response to a query the operation of retrieval takes place. The non-subject characteristics like author and patent number could be searched straightaway and the relevant references retrieved. In case the search is by a subject the query has to be analysed, the subject requirements identified and then represented by appropriate index terms. The index terms have to be identified using the same vocabulary or indexing language which has been earlier used for describing the subject characteristics of the document.

Whenever a match or a partial match occurs between the concepts expressed in the query and the subject characteristics identified for the document, a relevant document reference is retrieved. The retrieval process is often an interactive process especially so when the user himself searches the searchable file. Whenever he searches with a specific term he is presented with the search results which help him to amplify or modify his strategy and search accurately so as to obtain the desired results from the information systems.

Especially in a computer based information retrieval systems, the flexibility of searching is very high. The following are some of the features: (1) The system being searchable by several keys such as index terms, class numbers, ISBN, ISSN, year of publication, and patent number; (2) Comprehensive retrieval is facilitated by free text searching (i.e., searching by a word occurring in the title or abstract or any other portion of the record), by using term truncation in searching (searching for the word 'automat*' would retrieve automatic, automation or any other word starting with 'automat'). Similarly, highly precise and selective retrieval can be facilitated by using Boolean operators to make a search expression to reflect the subject requirements accurately (explained in Unit 3 in detail).

iv) Information Dissemination and Reporting:

While retrieval is a responsive activity, dissemination is an anticipatory activity. Dissemination could be directed at the whole user community, small groups or individuals. The type of services generated are Current Awareness Services and SDI (discussed in detail in Unit 3).

Reporting involves collection, analysis, collation, merging and finally the repackaging of the information to generate a comprehensive report on a selected topic. The publication of a state of the art review on a topic prepared by specialists in an area is also such an exercise.

v) Networking With Other Systems:

There may be several other information retrieval systems operating elsewhere, the target audiences of which have more or less the same information needs. Some of the systems may be operating at a higher level of specialization and some may be operating with a larger scope and coverage. Some of these systems could be operating at the national or international levels. Efforts should be made to provide facilities to access such systems, which would considerably enhance the users access to information sources located elsewhere. Besides, such networking efforts would also minimise duplication of efforts and ensure better channelisation of resources. The aspects discussed above can be better appreciated by examining the increased efforts towards developing national and international information systems and networks (explained in detail in Unit 15). The major activities of information retrieval systems are represented diagrammatically in Fig. 4.

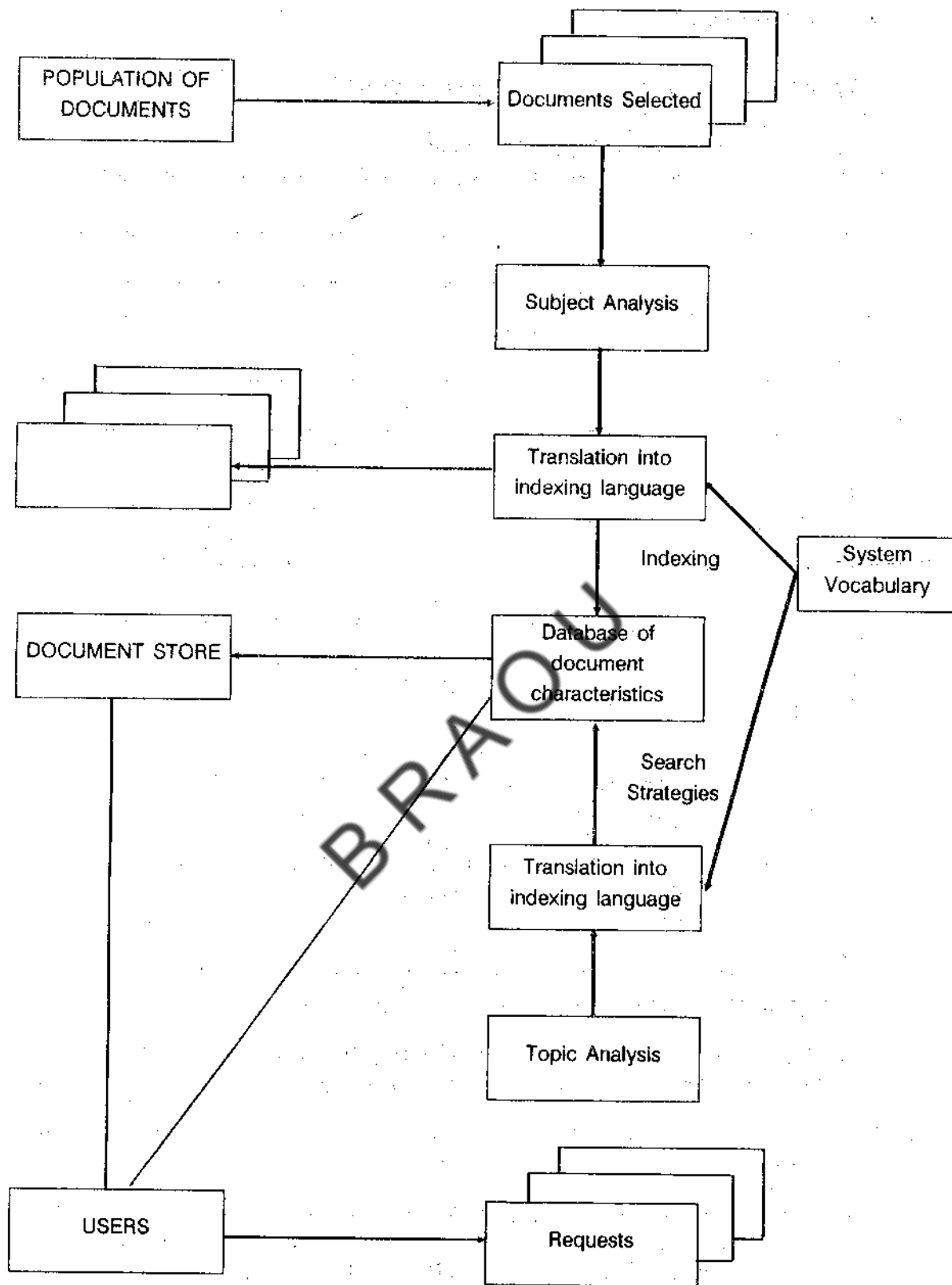


Fig. 4 Activities of Information Retrieval Systems

Self check exercise-3

List the major activities of Reference Retrieval systems?

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

5.4 SUMMING UP

The above description of the content in this unit can be summarised in the following:

- * Literature can be broadly classified as primary, secondary, and tertiary types.
- * Secondary and tertiary sources serve as useful tools for identifying relevant primary sources on a subject, topic, etc.
- * Literature searching is undertaken in response to an 'exhaustive approach' for information by a user. The choice of information sources depends on the scope of the search topic and the purpose for which the search is being done.
- * The steps involved in literature searching are identification of appropriate sources; the adopting of the right search technique for each source; the recording the results and the presentation of the results.
- * The objectives of the information systems depend on the background they are operating in, and the target groups of users they are expected to serve.
- * The type of information systems can be broadly grouped as Fact Retrieval systems, Reference Retrieval systems, and Document Retrieval systems.
- * The libraries/information centres are mainly involved in the development of Reference Retrieval systems.
- * The main activities of information systems are Information resource building; Maintenance of a searchable file; Information search and retrieval; Information dissemination and reporting; and Networking with other information systems

5.5 MODEL ANSWERS

1. The steps involved in literature searching are a) defining the scope and purpose of the literature search, b) identification of relevant and appropriate sources, c) determining the search technique needed for searching each secondary source and carrying out the search, d) recording the results, and e) presentation of the search results.
2. The different types of information systems are Fact Retrieval systems, Reference Retrieval systems and Document Retrieval systems.
3. The major activities of a reference retrieval system are
 - a) the building up of a comprehensive information resource,
 - b) maintenance of a searchable file, c) the providing of facilities for search and retrieval of information, d) the supporting a information dissemination and reporting activities, and e) the providing for networking with other information systems.

5.6 ASSIGNMENTS

1. Take up a topic for literature search and define the scope in terms of years to be covered. Identify two relevant secondary sources, examine the arrangement, record the search experiences and prepare a bibliography of at least twenty items.
2. Visit a special library, examine the types of information sources being acquired and make a note. Examine what type of search file is being maintained and make a note of the various approaches available for searching the file.

5.7 RECOMMENDED BOOKS

GROGAN, D. J. *Practical Reference Work*. London: Clive Bingley, 1979.

LANCASTER, F. W. *Information Retrieval Systems : Characteristics, Testing and Evaluation*. 2nd ed. New York: John Wiley, 1979.

VICKERY, B. C. *Information Systems*. London: Butterworths, 1973.

UNIT 6 - TRANSLATION SERVICES

Contents

- 6.0 Aims and objectives
- 6.1 Introduction
- 6.2 Need and purpose
- 6.3 Development
- 6.4 Planning and Organisation of the Service
 - 6.4.1 Functions of the Translation Service
 - 6.4.2 Types of Translation Service
 - 6.4.3 Methods of Translation
 - 6.4.4 Principles of Translation
 - 6.4.5 Identification of Translators
 - 6.4.6 Pricing of Translations
- 6.5 Role of Documentalist in Translation Service
- 6.6 Translation Pools/Banks and Services
 - 6.6.1 International Scene
 - 6.6.2 National Scene
- 6.7 Machine Translation
- 6.8 Summing Up
- 6.9 Model Answers
- 6.10 Assignment
- 6.11 Recommended Books

6.0 AIMS AND OBJECTIVES

In this unit we shall introduce to you an important tool, viz., translation service providing access to non-English literature to English speaking people and helping to overcome the language barrier in literature searching. After a study of this unit you should be able to

- explain the need and usefulness of translation services;
- trace the development of the services;
- outline the functions of some of the international and national translation pools and services; and
- describe how to plan and organise the translation service.

6.1 INTRODUCTION

Information - scientific, technical, managerial or cultural - can be effectively and efficiently communicated only through the language best known to the receiver/user. In the absence of a universal language known to all, the scientific communication is being done through different languages known to the information generator, resulting in no or improper communication. Consequently, it does not reach the scientific community the world over, which in turn retards the growth of knowledge and which some times inhibits the efforts of the learned community. A way out is to provide information in the language known to the user by translating the document into the user's language.

6.2 NEED AND PURPOSE

Research and development are dependent on the availability of knowledge generated and packaged elsewhere. But the scattering of knowledge in different languages prevents the use of it. When research was the sole effort the researchers used to know two or three languages and so there was not much need for translation. With the advent of team and relay research, the language barrier assumed greater proportions than ever before. Only less than 50 percent of the literature is produced in English which is known by many all over the world. The other 50 percent or more is being published in languages other than English, i.e., in Russian, German, Japanese, Chinese, etc. A survey at the University of Sheffield by the research workers and research students showed that well over half of them feared that they might be missing important work done outside the English speaking countries. In this situation to keep abreast of the new developments, a researcher has to have a competency in four or five languages which is virtually impossible. Hence these users cannot make use of the information published in other languages. Thus the language barrier creates hurdles in the free flow of information. Consequently, there are problems in exploiting the information for education, research and in technology transfer. The researchers in all fields have looked forward to finding a way out and the information of 'Translation Triangle' (producer- Translator-User) has been envisaged.

6.3 DEVELOPMENT

Since the last century literary works of higher order of significance have been translated from one language to another as part of the effort to promote cultural understanding. The need for knowing different languages was increasingly felt, since the beginning of the twentieth century. With the information explosion people started preferring micro-documents (journals, reports, standards, patents, etc.) to books for current information. Scientists and researchers with limited time at their disposal have realised that getting translations is better than learning different languages. Hence measures have been taken at different levels to overcome this problem and to see that documents in a particular language can reach wider audiences in other language groups. These efforts have taken shape in "Repertoire International des Traductions" published

by the International Institute of Intellectual Co-operation in 1932. Since then many organisations at international and national levels have tried to tackle the problem from different angles: e.g.,

- i) Teaching foreign languages to users
- ii) Development of linguistic tools - multi-lingual dictionaries
- iii) Cover-to-cover translations
- iv) Translation on demand
- v) Formation of translation banks/pools
- vi) Machine translation

As has been already mentioned, researchers have very little time to spend on learning foreign languages and most of them do not have the linguistic skill. Moreover, cover-to-cover translation is costly, machine translation with the aid of computers is yet to take shape. So translation on customer demand and formation of translation pools/banks have become popular.

6.4 PLANNING AND ORGANISATION OF TRANSLATION SERVICE

National Documentation Centres/large special libraries and their associations utilise the services of linguists, familiar with the subject as well as with the source and target languages. (The languages of the document to be translated is called 'source language' and the language into which the document is to be translated is called 'target language'). These experts need not necessarily be on the staff of the organisation and the organisation can maintain a panel of translators whose services can be utilised, whenever there is demand. It is suggested that attempts be made to have an objective assessment of the need of such a service at the institutional level from the point of view of organisation. Important factors to be considered while organising an in-house translation service are:

- i) Identification of the principle subject fields in which translations are required, and likely changes and shifts of priorities in the subject fields;
- ii) Identification of languages from which the documents are to be translated and likely shifts;
- iii) Examination of the existing services for the coverage of such subject fields and languages;
- iv) Assessment of work load in terms of the volume of documents to be translated, money required for translation, if it is to be done by outside agencies;
- v) Relative lead time taken, if the translation is to be done by an external agency and by an in-house translator;
- vi) Personnel requirement in terms of language, subject specialisation and salary to be paid.

6.4.1 Functions of Translation Services

The functions of a translation service are:

1. To provide the document in the user's language which is hitherto not available;
2. To save the time of the researchers;
3. To promote the use of the documents;
4. To promote cultural understanding.

6.4.2 Types of Translation Service

The translation service can be provided in anticipation and on demand.

- a) Anticipatory Translation Service is done through cover-to-cover translation of documents after a preliminary survey for such need. The advantage of such service is that it would eliminate the hit-or-miss selection of articles, and ensure the availability (not necessarily use) of important foreign scientific literature. It is estimated that there are about 300 cover-to-cover translated periodicals in English, mostly from Russian, and other east European and Far-Eastern languages. Provision of such a service is very costly and involves more lead time than that of any other.
- b) On Demand Translation Service is done when a request for translation is made by the user. This type of service is relatively cheap and the lead time is comparatively less than others. Most of the Translation Pools/Banks do provide this type of service.

6.4.3 Methods of Translation

Depending on the type of document to be translated, four methods of translation are in vogue. The translator should be directed to adopt a suitable style, keeping in view the type of document to be translated.

- a) Literal translation should be utilised for factual type of translation. Commercial correspondence, legal materials, technical information and scholarly material in Pure and Applied Social Sciences are examples where this type of translation is required.
- b) Free translation involves the exercise of a type of freedom or leeway in the choice of an equivalent for the original word. It is found to be more appropriate, and understandable to the target language group than even literal translation.
- c) Transposition is used where an entirely new work has been created based on the ideas, emotions, view points, attitudes and literary style of the original by the translator in the target language. Poetry and such a literary works are examples of this type.
- d) Adaptation is used more in children's books than in others so as to make the work concerned more intelligible, interesting, educative and entertaining to the foreign readers.

6.4.4 Principles of Translation

The following are the criteria formulated for translations:

- i) Translation should give a complete transcript of the ideas of the original work;
- ii) The style and manner of writing should be of the same character as that of the original work;
- iii) The translation should have all the ease of the original composition.

6.4.5 Identification of Translators

Through advertisement, by consulting the directory of scientific and technical translators or by contacting an organisation like Indian Association of Special Libraries and Information Centres (IASLIC) one can identify the translators of his choice for the purpose of recruiting or for creating a panel of translators.

The selected translators can be assessed by giving them test translation and by subjecting the translated texts to scrutiny for clarity, speed, etc.

6.4.6 Pricing of translations

While pricing a translation the following factors are to be considered.

1. The purpose of translation - whether it is for exclusive in-house use or for the use of outsiders also;
2. Time taken to translate the document;
3. The source and target language of the document to be translated; and
4. Intrinsic value of the thought content of the source document.

Self Check Exercise-1

- a) State the factors to be considered while planning the translation service.

Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

-
-
- b) State the functions of a translation service.
-
-
-
-
-

6.5 ROLE OF DOCUMENTALISTS IN TRANSLATION SERVICE

The providing of a translation service is a responsible job. It involves some essential decisions. In the translation of books the documentalists have no role to play, since the translation of a book is out of the purview of the normal library functions. As has already been stated, the translation service generally is related to microdocuments. These documents are being processed regularly by the documentalist. He will be aware of the availability of foreign language documents and the requirements of his user. Whenever an inhouse translation service is to be offered the documentalist should accept the responsibility for it. He should have information on translation pools, centres, professional associations, commercial publishers, government agencies and their products and services. He should try to acquire tools like translation indexes, translation directories, multilingual dictionaries, etc. He should be able to assist the users on translations and get them whenever required if available, or else arrange for translation. The documentalist can bring to the notice of the translating institutes, the documents on demand for translation. It will be an added advantage if the documentalist possesses a working knowledge of one or two foreign languages.

6.6 TRANSLATION POOLS/BANKS/SERVICES

When the translations are carried out on a responsive basis, the bibliographical control of such translations becomes very difficult. If there is a proper control, repeated translations can be avoided thereby saving a lot of money, effort and time. Translations can be put to repetitive use by some kind of announcing mechanism. Keeping these aspects in view translation pools/banks have taken shape with the objective of collecting translated versions of documents and maintaining them with proper bibliographical control, and also with that of announcing the availability of these documents with appropriate indexes. There are a number of such translation pools at International and National levels.

6.6.1 The International Scene

(a) The UNESCO

As a part of its role in promotion of cultural understanding among the nations of different social and cultural background the UNESCO has undertaken the translation of books of high literary value of each country into the languages of other countries. It is mainly concentrating its efforts in the fields of Humanities and Social Sciences. The UNESCO is publishing an annual "*Index Translationum*", containing a list of books translated in all subjects from different countries of the world. The entries are arranged countrywise and within the country by the UDC.

(b) National Translation Centre (NTC), Chicago:

A co-operative, non-profit enterprise, National Translation Centre (NTC), formerly Special Libraries Association Translation Centre (SLATC), is vested with the responsibility of collecting all non-governmental translations generated within and outside the country. The government translations are taken care of by the Clearing House for Federal Scientific and Technical Information (CFSTI), formerly National and Technical Information Service (NTIS). Many scientific and professional societies and universities and other institutes in the USA and abroad send their translations to the NTC making it a depository of translations.

It answers enquires about the availability of translations from the centre and elsewhere. The NTC publishes a semimonthly, "*Translation Register - Index (TR-I)*". This Index announces newly accessioned translations. The services of the NTC are available at the BLLD and vice versa for the users. The CFSTI announces the government translations through *Government Reports Announcements (GRA)* and *Governments Report Index (GRI)*.

(c) International Translation Centre (ITC), Delft, Netherlands :

The ITC was established in 1960 at the Technological University of Delft in Netherlands, under the guidance of the OECD, and is supported by 17 governments with the cooperation of many governments and agencies throughout the world. The ITC, formerly known as European Translation Centre (ETC), acts as referral centre in relation to national Centres. It functions as a clearing house for scientific and technical translations prepared throughout the world from East European and Far-Eastern languages into English, German and French. The Translations available at various sources are announced through the publication, "*World Transindex*". This covers almost the entire gamut of translation activities in the fields of Science, Technology and Social Sciences.

(d) The British Library, the National Bibliographic Service :

Formerly known as British Library Lending Division (BLLD) it is an important depository of translations and promotes translation activity with special emphasis on Russian literature. It publishes "*BLLD Announcement Bulletin*" and "*The BLLD Review*". The first one is a complete

guide to British research and development reports, translations and theses produced by the British government organisations, industries, universities and other learned institutions. The second publication covers the cover-to-cover translations, NLL Book translations and a list of BLLD translations. Of late the titles of these publications have been changed to "British Reports, Translations, Theses" and "Interlending and document supply".

(e) Association of Special Libraries and Information Bureau (ASLIB), UK :

The ASLIB is responsible for the maintenance of "Common-Wealth Index" of unpublished translations, which is created by the Commonwealth countries. This is only a location tool. The ASLIB also maintains a record of translators with linguistic and subject proficiencies.

(f) Transatom :

A specialised information pool located at Brussels, it is the joint effort of European Atomic Energy Community (EURATOM) and the US Atomic Energy Authority (USAEA). It has the objective of collecting and disseminating information on translations in the field of Nuclear Science, with an emphasis on East European, Oriental and other unfamiliar languages. It announces information on translations through "Transatom Bulletin" which is amalgamated with the World Transindex.

6.6.2 National Scene

India has the third largest scientific and technical manpower in the world. Hence the requirements of these people are of a high order. To cater to their translation needs as many as 25 scientific, industrial and defence organisations have taken up in-house translation activity in their areas of specialisation. Most of these organisations collaborate with the INSDOC at the National level. The services of some of the organisations are given below :

a) Indian National Scientific Documentation Centre (INSDOC), New Delhi :

The INSDOC, being a national centre, has taken up the responsibility of supplying the translations on an all India basis. It supplies translations on orders placed by any individual or organisation in the country for translation into English of scientific and technical documents published in many languages, e.g., Arabic, Bulgarian, Chinese, Czech, Danish, Dutch, French, German, Hungarian, Italian, Japanese, Norwegian, Polish, Portuguese, Rumanian, Russian, Slovak, Spanish, Swedish, etc. These translations are available at a reasonable cost. Special attention is given to supply translations of Russian scientific and technical literature. The INSDOC publishes "Russian Science Digests" as a quarterly in two series, a monthly current contents list of 230 Russian scientific periodicals, a bimonthly accession list of Russian scientific and technical books and a monthly, the National Translation Index (NTI) listing the translations already done in the country. The NTI also lists the translations done at other research and industrial organisations. In fact, 26 organisations throughout the country collaborate with the INSDOC in bringing out the NTI. The INSDOC also maintains a panel of translators apart from its regular translating

staff. The INSDOC has brought out a "Roster of Indian Scientific and Technical Translators" (1978) to help locate suitable translators.

b) Defence Science Information and Documentation Centre (DESIDOC), Delhi :

The DESIDOC is the central information agency for Defence Research and Development Organisation (DRDO) in India. A translation Bank was set up in 1980 at the DESIDOC.

This translation bank is to :

- act as a repository centre of translations done at DRDO establishments;
- act as a referral and clearing centre for translations;
- announce translations at regular intervals through the "DESIDOC Trans Index"; and the "DESIDOC Bulletin", containing abstracts from foreign language periodicals.

The DESIDOC collaborates with the INSDOC and other scientific and industrial research organisations in bringing out the NTI. The DESIDOC offers its services through information search on specific topics, verification of new requisitions for translation, procurement of translations and supply of photocopies of translations.

c) Indian Association of Special Libraries and Information Centres (IASLIC), Calcutta :

The IASLIC keeps a panel of translators and arranges translations into English of the papers in foreign languages as well as in Indian languages. The service is offered on request to individuals and organisations.

d) The National Library, Calcutta :

The National Library of India has published an Index, "*Translationum Indicarum*", a collection of 2800 translations published in India.

e) Indian Scientific Translators Association (ISTA)

The ISTA was founded in 1962 with the aim of promoting facilities for translation and of maintaining high standards of scientific translations. The Association publishes a journal, "*Journal of Indian Scientific Translators Association*". It holds seminars on various professional aspects, and conducts short term training programmes in technical translations.

Self Check Exercise-2

What are the activities of the DESIDOC regarding its translation service?

- Note : i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

6.7 MACHINE TRANSLATION

Computers are being used in all the areas where a great volume of work is to be handled accurately and speedily. With the increasing volume of documents to be translated quickly, people started thinking of using computers for translations as early as in 1933. These ideas crystallised by the 1960s and the machine translation became an internationally recognised field of research. Experiments on many systems are under way but few are yet in every day use. Some of the systems developed are SYSTRAN (1960), LOGOS (1980), ALPS (1970) and VINTI (in the late 70s).

Machine Translation is the most important area where symbiosis between computer and man can be most successfully advanced. This cooperation is involved at both the input and output stages in the form of pre-editing and post-editing processes. A great deal of research is still going on in machine translation. In order to develop a viable machine translation system, it is necessary to concentrate on the development of input-output devices with capabilities of handling different scripts of languages and suitable programming languages for translations.

6.8 SUMMING UP

The increasing volume of literature in different languages in Science and Technology increases the load on the translation service. The translation service will certainly play an important role in bringing the scientific community closer, thereby linking the humanity together. The knowledge of foreign languages will thus be considered another pair of eyes and ears. That is why in this unit we have described the need and functions of translation service, and explained how a translation service can be organised. The role of various translation pools and agencies in removing the problems of language barrier has been highlighted.

6.9 MODEL ANSWERS

1. (a) The factors to be considered while planning the translation service are :
 - Identification of the principal subject fields in which translations are required and likely changes and shifts of priority in the subject fields;
 - Identification of languages from which the documents are to be translated and likely shifts;
 - Examination of the existing services for the coverage of such subject fields and languages;
 - Assessment of the work load in terms of the volume of documents to be translated, money required for translation, if it was to be done by outside agencies;
 - Relative lead time taken if the translation is to be done by an external agency vis-a-vis an inhouse translator;
 - Personnel requirement in terms of language, subject specialisation and salary to be paid.
- (b) The main functions of a translation service are :
 - To provide the document in the user's language hitherto not available;
 - To save the time of the researchers;
 - To promote the use of the document;
 - To promote cultural understanding.
2. The DESIDOC carries out the following activities as a part of its translation service :
 - act as a referral and clearing centre for translations;
 - announce translations at regular intervals through the "DESIDOC Trans Index";
 - publish the *DESIDOC Bulletin*, containing abstracts from foreign language periodicals.

6.10 ASSIGNMENTS

1. What are translation pools? Describe the functions any four translation services you know.
- 2.. Explain how you will carry out the responsibility of organising a translation service.
3. What is the role of the INSDQC in the translation service.

6.11 RECOMMENDED BOOKS

- GUHA, B. *Documentation and Information : Services, Techniques and Systems*. Calcutta: World press, 1983.
- GUHA, B. *In the Library and Information Science Horizon*. New Delhi : Allied Publishers, 1985.
- GROGAN, D. *Science and Technology : An Introduction to the Literature*. London : Clive Bingley, 1976.
- GUPTA, B.M. et al : *Hand book of Libraries, Archives and Information Centres in India*. Vol. 2. New Delhi : Information Industry Publications, 1986.
- KENT, Allen (ed.) *Encyclopedia of Library and Information Science*. Vol. 31; 1980. p. 105-134.

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UNIT 7 - DOCUMENT DELIVERY SERVICES

Contents

- 7.0 Aims and Objectives
- 7.1 Introduction
- 7.2 Need and Purpose
- 7.3 Document Delivery
 - 7.3.1 For In-House Use
 - 7.3.2 For External Use
- 7.4 Planning and Organising the Service
 - 7.4.1 Photocopying in Document Delivery
 - 7.4.2 Role of Inter-library Cooperation
- 7.5 Document Delivery Centres
 - 7.5.1 International Centres
 - 7.5.2 National Centres
- 7.6 Summing Up
- 7.7 Model Answers
- 7.8 Assignment
- 7.9 Recommended Books

7.0 AIMS AND OBJECTIVES

This unit introduces you to one of the important services called "Document Delivery Service", which provides hard copy of a document to the user irrespective of language, type of the document and nature of information.

A study of this unit will enable you to

- highlight the need and usefulness of the document delivery service;
- explain how to organise the service; and
- describe the activities of some of the important document delivery centres.

7.1 INTRODUCTION

Document delivery begins where the literature search ends. A researcher or information user is not satisfied with a list of references *per se*. He needs the documents containing

(according to his judgement) the vital information he is after. Thus, the ultimate aim of any library/documentation centre is to provide hard copy of the document which the user wishes to consult. The realisation of this objective alone transformed the libraries from "store houses" to "service systems". In the beginning the "closed access" systems of these service system restricted the use of documents by the user and the service was entirely dependent on the staff of the system. Later, the advent of "open access" system has thrown open the collection of the library to the user for making his choice of the document. This supply of the document to the user for in-house or for borrowing for permanent keeping is called as Document Delivery Service, (DDC). The documents so supplied could be of any type except those meant for restricted use or those of 'classified' nature.

Earlier, in the closed access system the document supply was in its rudimentary form and the user had no choice and was entirely dependent on the library personnel. The open access system has overcome this difficulty and the user is allowed to browse freely and select the document of his choice at the shelves either for in-house use or for borrowing through the circulation counter. The demand for the document is met by procuring multiple copies. This practice of lending has been successful to some extent with macrodocuments, i.e., books. But with the phenomenal increase in the number of microdocuments, i.e., periodicals, reports, standards, etc., where procuring multiple copies is not possible, the lending of such documents has become impracticable. Moreover, the need is also felt for copies of such documents which are not available in the library.

7.2 NEED AND PURPOSE

The importance of information as a resource has been widely recognised all the world over. All the available information must be fully exploited to build a scientifically and technically sound nation. Access to such vital information must be made through different methods. The Document Delivery Service plays an important role in this respect. This service will be effective only when a hard copy of a document is provided to the user at a faster rate and that too, with minimum cost to him. It is observed that in the last two decades the document delivery does not mean simply the lending of documents to the user for a specific period. With increasing awareness about the publication of information through a variety of secondary sources, there is a large demand for the original of such information.

The following factors influence the demand for documents:

- Geometrical growth of literature;
- A single library not being able to afford to subscribe to more than a fraction of the total journals published;
- Increasing cost of the journals and other micro-documents;
- A wide gap or increasing gap between demand and supply;

- Awareness of researchers about the relevant references through indexing and abstracting journals and through machine readable data-bases; and
- Increase in the user population.

The problem posed by this increase in demand can be met through the document delivery service with the twin purpose of providing a reproversion of a document within a reasonable time and at a minimum cost irrespective of language, place of publication and subject of the document.

7.3 DOCUMENT DELIVERY

The supplying of a hard copy of a document involves a lot of planning and expenditure. This service may be offered in two stages in the first stage the supplying of a copy of document which is available at the centre to the users and in the second stage the procuring of a hard copy from outside agencies at the request of the user. From the user's point of view there are two levels of the service as described below:

7.3.1 Document Delivery for In-House use

Document delivery for in-house use includes the lending of the document for a certain period, which does not pose much of a problem. However, there are certain aspects of the library which influence the document delivery capabilities of the library. These may be outlined as:

- i) comprehensiveness of the collection;
- ii) proper organisation of the collection;
- iii) availability of multiple copies of documents in demand;
- iv) frequency with which a document is sought;
- v) number of users ;
- vi) loan period of a document.

If these six aspects are taken care of, there will be no problem in providing a copy of a document. If proper attention is not paid to the above the result will be non-fulfilment of users' demand due to following reasons:

- a) The documents required are not available in the collections;
- b) Required document has already been borrowed by someone else;
- c) The document is misplaced or missing;
- d) The document may be with the binder, and

- e) Failure of the readers in locating the document on the shelf.

To reduce the negative results and promote the use of documents and to provide every reader his document through document delivery service, the documentalists should provide for the following;

- a) The library should have open access system;
- b) The reading habits of the user should be respected;
- c) The circulation policy should be flexible; in other words, the reader should be able to reserve a document which is already on loan, or have accessibility to the documents which are being processed etc.,
- d) Create an awareness of the arrangement of documents;
- e) Proximity of the catalogue, stack area and reading area; and
- f) Courteous behaviour of the library personnel.

7.3.2 For External Users

The supplying reproversions of documents to outside users is being tackled through different models in different countries:

i) Centralised Model :

In this model the responsibility of providing reproversions to the user rests solely with one organisation where all the published documents are deposited. The best example of such a model is the British Library Bibliographic Services Division.

ii) Partially Centralised Model :

A partially centralised model in addition to its resources depends on a limited number of other libraries to supply copies of documents to users.

iii) Unplanned Decentralised Model :

Some libraries try to provide DDS independently, taking the help of union catalogues to know the resources of other institutions. Thus dependence on the external source for document copies is the hall mark of this model. Many existing services including of INSDOC come under this category.

iv) Planned Decentralised Model :

Completely decentralised DDS spread over a large number of libraries with a definite plan to achieve maximum coverage at relatively low costs is the character of this model. The German DDS is a good example of this.

Whatever be the model adopted at the national level, there should be a certain arrangement to provide DDS to external users at the local level through the photocopying of the documents.

Self Check Exercise - 1

a) What are the aspects that influence the capabilities of the DDS of a library ?

Note: i) Write your answer in the space provided below.

ii) Compare your answer with the model answer given at the end of this unit.

b) State different models of the DDS for external users.

7.4 PLANNING AND THE ORGANISATION OF THE DDS

After a careful assessment of the demand for reproversions of the documents at the local level one should take up the organising of such a service. The problem and prospects of providing such a service should be studied in their entirety and a plan for the financial, personnel and material resources worked out.

7.4.1 Photocopying in Document Delivery

As has already been mentioned, hard copies of macro-documents can be provided for in-house use by procuring multiple copies. But for micro-documents and to external users only reproversions have to be provided. Photocopying (or xerox facility) may not be available in all the libraries. In such cases one has to depend on the services of some other local facility or a national centre or an international agency. As far as possible, if there is a felt need at the local level, the documentalist should plan for the provision of photocopying facility.

a) Choice of the System:

There are a number of photocopying systems available for use such as

- i) Xerography
- ii) Electrostatic copying
- iii) Thermographics
- iv) Diffusion Transfer
- v) Gelatin Transfer

Of these only xerography is popular because of certain definite advantages. In this method plain papers are used for copying. It is easy to operate and automatic versions of the machine are available, and the unit cost is also low. A number of manufactures/dealers of machines, spares and stationery are locally available in all towns. With the developments in information technology a variety of facilities for document/text transmission are available supported by both computer and communication technology at the macro-level.

b) Personnel Selection:

Almost all the dealers of photocopying machines offer a customer training programme in addition to a maintenance contract. Hence one or two suitably qualified persons on the staff may be trained in such customer training programmes. This makes for better maintenance of the machine as also efficient and effective service. Untrained persons should not be allowed to operate the machine to avoid breakdown due to mishandling.

c) Responsibilities of the person-in-charge:

The person-in-charge should be assigned the responsibility of maintaining a register of requests for photocopying, checking for the correctness of bibliographic data of the requests and source, making bills wherever necessary, maintaining cash and reporting periodically to the documentalist. He should also maintain the machine in a good condition taking the help of the supplier of the machine so as to provide a quality copy of the document.

7.4.2 Role of Inter-Library Cooperation

No library is self-sufficient and with the increasing volume of literature its selfsufficiency is decreasing. Hence every library has to depend on the others at some point or other.

When a particular document requested by the user is not available in the centre, the documentalist should contact other local, regional, national or an international agency where there is a likelihood of its being available through the utilizing of the union catalogues or library holdings of other libraries. The dependence on other libraries paves the way for inter-library loan and thereby resource sharing. If properly planned at the local level the inter-library loaning arrangement can help save on procurement costs for individual libraries. There should be close cooperation among the local libraries to provide an effective and efficient service. This is dependent

on the size of the collection of the libraries, the distances between libraries, the type of material requested, and the availability of a union catalogue for the region.

Self-Check Exercise - 2

Describe briefly the role of photocopying in DDS.

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

7.5 DOCUMENT DELIVERY CENTRES

With the advent of automatic photocopying machines, on-line data bases, network systems and cooperatives, document delivery services at local, regional, national and international level can be operated fairly easily and successfully. The activities of some of the important centres are outlined below.

7.5.1 International Centres

Information Centres in the West are equipped with the capability of supplying photocopies of documents all world over. Since most of the scientific and technical literature is produced and used in the region and communication technology is also highly developed, these centres are able to do the job fairly well and successfully. Activities of some such centres are described below:

The British Library Bibliographic Services Division, Boston Spa, U.K.:

Perhaps, the largest and most successful of centralised model of document delivery service in the world is the British Library Bibliographic Services Division (formerly known as British Library Lending Division BLLD). The library gets around 40,000 periodicals and provides DDS to individuals and institutions within the UK and overseas.

ii) Clearing House for Federal Scientific and Technical Information Centre (CFSTI), Springfield, Virginia, U.S.A. :

This centre is formerly known as NTIS. This is the main source for reprints and copies of government reports and copies of government reports in the U.S.A., especially those listed in Government reports announcement. Technical libraries throughout the world utilized this service.

iii) Ohio College Library Centre (OCLC), U.S.A.

On-line Computer Library Centre of the Ohio College Library Centre facilitates interlending at reduced costs and faster speed. OCLC in collaboration with the State University of New York provides fast and efficient state-wide delivery of inter-library loan material by using OCLC inter-loan subsystem.

iv) International Development Research Centre (IDRC), Ottawa, Canada.

With the cooperation of documentation centres the world over the IDRC publishes the DEVINDEX. Canadian documents reported in the DEVINDEX are microfiched and made available to the Third World countries.

v) Chemical Abstracts Services (CAS), Columbus, U.S.A.

The CAS publishes abstracting and indexing journals covering Chemistry, Chemical Engineering and allied fields from 14000 periodicals. The CAS document delivery service can provide copies of

- Documents from the CAS collection including journal articles, conference proceedings, symposia and edited collections published since 1975 along with Soviet documents since 1970;
- Patents issued by 29 patent offices around the world;
- Articles from American Chemical Society Journals from initial publication to the present;
- Articles registered with the Copyright Clearance Centre; and

it can also arrange loans of original articles in instances where they cannot photocopy as also 24 hour turnaround and speed delivery.

vi) National Library of Medicine, Maryland, U.S.A.

One of the largest medical library is in the world, the NLM is responsible for publishing *Index Medicus*. The NLM receives 2,600 periodicals in its area of specialisation and helps the users in getting copies of documents in its field.

vii) Lenin State Library, USSR.

Lenin State Library stocks all Soviet publications collected under legal deposit law and is supported by a catalogue of periodical holdings. This library provides document supply service at the national level.

7.5.2 National Centres

Though there are few institutions providing reproversions of document to the user, a concerted effort in this regard was made with the establishment of the INSDOC for providing DDS. In the recent past the DDS scene has shown a lot of improvement. Now there are a number of institutions supplying copies of documents drawn from their own collections in addition those from the INSDOC.

i) Indian National Scientific Documentation Centre (INSDOC), New Delhi.

The INSDOC is the only centre in India which was established with the objective of supplying photocopies to the users, mainly in Science and Technology, from its captive collection through its main office and the regional centres at Bangalore, Madras and Calcutta. Since its inception the INSDOC has been supplying copies of documents from the collections of other important scientific libraries. Studies made on the efficiency and effectiveness of the service rendered by the INSDOC reveals that a better management of the service will be able to fulfil 75% of the requests.

ii) Small Enterprises National Documentation Centre (SENDOC), NISiet, Hyderabad.

SENDOC publishes a bulletin in three parts covering the areas of Industry, Technology, Economics and Development, Management and Behavioural Sciences from which the user can identify the citation for the journal articles. The centre supplies photocopies of the articles from about 1000 journals and of around 3500 product profiles.

iii) British Council Library, New Delhi.

Photocopies of the materials held in the library at its different centres are provided to the users subject to the provisions of the Copyright Act. Access to the British Library Document Supply Centre is also available through the British Council Library.

Information centres attached to different CSIR and other national laboratories like Central Drug Research Institute, Lucknow; Central Leather Research Institute, Madras; Central Food Technology Research Institute, Mysore; etc., also provide DDS to the users in their respective areas of specialisation.

7.6 SUMMING UP

Whatever be the management and processing techniques adopted to store and retrieve the information, it is the effectiveness of the system that counts at the end. Hence there should be proper coordination and cooperation among different information centres to provide a cost-effective document delivery service to the use when needed. All the information centres should work on these lines.

7.7 MODEL ANSWERS

- a) The aspects that influence the capabilities of the DDS of library are
 - i) Comprehensiveness of the collection;
 - ii) Proper organisation of collection;
 - iii) Availability of multiple copies of documents in demand;
 - iv) Frequency with which a document is sought;
 - v) Number of users;
 - vi) Loan period of a document.
- b) The different models of the DDS for the external user are
 - i) Centralised model
 - ii) Partially Centralised model
 - iii) Completely Decentralised, Unplanned model
 - iv) Planned Decentralised model
- 2. Multiple copies of microdocuments are difficult to procure hence photocopying of microdocuments should be provided to the users whenever requested. Photocopying of documents is easy to do, quick in delivery, cheap in cost and easy to handle. Automatic models of photocopying machines and maintenance contracts of the dealers have simplified the work for to the library personnel. Photocopying saves a lot of money on subscription to journals and other documents.

7.8 ASSIGNMENT

- 1. What are the factors that influence the demand for the DDS ?
- 2. Describe the activities of various national centres providing the DDS.

7.9 RECOMMENDED BOOKS

GUHA B, (ed): *In the Library and Information Science Horizon*, New Delhi: Allied Publishers, 1985.

IASLIC: *Document Delivery, Reproduction, Translation: IASLIC Seminar Papers*, (11th Hyderabad: 1984

NORMAN, A and LITTLE, AD. *Electronic Document Delivery*. Oxford: Learned Information, 1981.

BLOCK III - DOCUMENTATION TECHNIQUES

This block consisting of four units (Unit 8 to 11) deals with various documentation techniques practised in libraries and documentation/information centres.

The first unit (unit 8) introduces indexing techniques, such as chain indexing, thesaurus, uniterm, citation index, postulate-based permuted subject indexing (POPSI), preserved context indexing system (PRECIS) and keyword-in-context (KWIC).

Unit-9 describes various abstracting techniques used in the bibliographic organisation of primary literature.

Unit-10 explains reprographic and micrographic techniques and services used in libraries. The knowledge of such techniques help in providing documentation/information services.

The last unit of this block (Unit-11) handles the topic, use of computer in information storage and retrieval. Computer has been increasingly used in library routines and information work in recent times and hence knowledge of computer application in libraries is essential.

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UNIT 8 - INDEXING TECHNIQUES

- 8.0 Aims and Objectives
- 8.1 Introduction
- 8.2 Chain Indexing
 - 8.2.1 Format of Chain Indexing and Reference Entries
 - 8.2.2 Formation of Subject Headings
 - 8.2.3 Merits and Deficiencies
- 8.3 Preserved Context Index System (PRECIS)
 - 8.3.1 Formation of Index Headings
 - 8.3.2 Format of PRECIS ENTRY
 - 8.3.3 Role Operators of PRECIS
 - 8.3.4 Merits and Deficiencies
- 8.4 Postulate-Based Permuted Subject Index (POPSI)
 - 8.4.1 Formation of Index Heading
 - 8.4.2 Format of POPSI Entry
 - 8.4.3 Comments
- 8.5 Key word in Context Indexing System (KWIC)
 - 8.5.1 Format of KWIC Entry
 - 8.5.2 Variations of Keyword Index
 - 8.5.3 Merits and Deficiencies
- 8.6 Uniterm Systems
 - 8.6.1 Format of Uniterm Entry
 - 8.6.2 Search Strategy in Uniterm System
 - 8.6.3 Merits and Deficiencies
- 8.7 Citation Index
 - 8.7.1 Search Strategy in Citation Index
 - 8.7.2 Merits and Deficiencies
- 8.8 Thesaurus
 - 8.8.1 Format of Thesaurus Entry
 - 8.8.2 Parts of a Thesaurus
 - 8.8.3 Types of Thesauri
 - 8.8.4 Role of Thesaurus in indexing and searching
- 8.9 Summing Up
- 8.10 Model Answers
- 8.11 Recommended Books

8.0 AIMS AND OBJECTIVES

In this unit, we shall introduce you some of the specific indexing techniques such as chain indexing, PRECIS POPSI, Uniterm, and KWIC. We shall also acquaint you with a new approach to the problem of subject indexing systems known as Citation Index. This unit also deals with a controlled vocabulary tool known as 'thesaurus'. After studying this unit, you will be able to:

- explain the need and successfulness of each of these indexing techniques;
- give a historical account of the development of these techniques;
- describe the scope and functions; and
- explain merits and deficiencies of these techniques.

8.1 INTRODUCTION

Indexing is the technique of document representation by their subject content. The purpose of indexing is to provide a key to the user to have access to the vast store of knowledge locked up in the documents. While catalogues are effective in bibliographic description of a document, indexes attempt to describe the information content of the document. Indexes thus provide access to those who search for ideas and subjects in a document. Fundamental to the problem of indexing is content analysis, the essential requirement for which is the availability of an indexing language. An indexing language is different from a natural language, as it is an artificial one. An indexing language has to be very precise. A large part of the indexing problem is connected with the development of the indexing language.

Most of the subjects treated in a modern document are of compound nature, that is, they cannot be represented by a single term. When multiple terms are used to represent the subject content of a document, the question that naturally arises is how to determine the most appropriate order of the terms, so that the documents can be retrieved quickly and unambiguously. All such problems are discussed in this unit, which deals with the various techniques of indexing.

As already mentioned the purpose of indexing is not just to specify the subject contents of documents, as it has also got a retrieval function. Terms or phrases describing the subject must be arranged in a predetermined order like PRECIS or POPSI or the complete subject should be analysed so as to reduce it to terms representing simple concepts. The coordination of these constituent terms is carried out only during search or output stage as in uniterm indexing. Thus the two systems differ in respect of coordination during the input stage.

The coordination or combination of terms poses the problem of sequencing of terms. The sequencing or ordering of terms is very important in indexing. The rules for prescribing

the sequence of terms to show the correct relationships of terms differ from system to system. These rules form the syntax of the system.

Rules of the syntax of the indexing system help us to formulate the subject representation of document. But in a linear representation the index statement can provide only one single access in the searchable index file. To overcome this limitation, the indexing systems have a mechanism of rotating the component terms. The Chain indexing, KWIC, PRECIS, POPSI etc., implement this idea of rotation with slight variations. Chain procedure lacks the facility of projecting context as the terms are deleted in successive stages. But the idea of different lead terms is very much present. Sometimes the titles of the documents or keywords derived from the title may determine the subject of a document as in KWIC. But they may not be helpful always in organising a search file. Thus arose the need for developing controlled vocabulary or indexing languages in the form of subject heading lists, classification schemes or thesauri. The thesaurus lists terms, display the relationships and define the vocabulary. Citation Index, a new approach to the file organisation devoid of vocabulary and intellectual involvement of indexers is also dealt with in this unit. The following section describes each of these techniques and tools in detail along with its applications, merits and deficiencies.

8.2 CHAIN INDEXING

S.R.Ranganathan evolved the Chain indexing, originally called 'chain procedure'. It is a semi-automatic method of deriving alphabetical subject headings to provide a subject approach to a classified catalogue, based on the analysis of the classification symbol of each subject.

This method is distinctly different from the enumerated subject heading system like the Library of Congress subject headings or Sears list of subject headings. The class number of a subject formulated according to a classification scheme is taken as the base for use in chain indexing. The class numbers represent the chain of subordinated classes or steps of division from the most general class to the specific subject. By means of chain procedure each term in a compound subject becomes an entry point in the alphabetical index (to the classified catalogue, preferably prepared according to a faceted scheme like 'colon classification'). In other words, each subject receiving a class number is analysed as a series of steps of divisions from the main class to the specific subject. The chain of a class number is retranslated into its verbal equivalents to formulate a subject heading that represents the subject content of the document.

As this chain is used for deriving subject entries on the basis of a set of rules and procedures, this system is called chain procedure. These rules and procedures form an integral part of the classified catalogue code of S.R. Ranganathan. This approach has inspired many other models of subject indexing, based upon classificatory principles and postulates.

Although Chain procedure was intended initially to provide class index entries to a classified catalogue, rules and procedures were formulated for deriving subject headings for a

dictionary catalogue also. In fact, this method can be extended to formulate subject entries to bibliographies, documentation lists, abstract bulletins, etc.

We shall confine our discussion in this unit to the method of deriving subject headings for library catalogues, using Colon Classification to demonstrate the method. During the last forty years the Chain indexing method has been undergoing continuous refinement.

8.2.1 Format of Chain Indexing and Reference Entries

In a subject heading derived according to Chain Procedure, there is a main subject heading as also additional reference entries. When there are more than one substantive terms in the subject heading, the sequence of the terms is decided by the citation order prescribed by the classification system. The rendering format of the main subject heading has to be taken.

8.2.2 Formation of Subject Headings

The derivation of subject index entries consistently following a set of rules and procedures involves the following steps:

- i) digit by digit interpretation of the class number;
- ii) identification of the substantive terms that would constitute the subject entry;
- iii) citing them according to the prescribed rules;
- iv) providing additional entries to provide subject approach through every component of the class numbers;
- v) arranging the entries in an alphabetical order and interfiling with other such entries in the subject index of the catalogue.

In this way, simple, complex and compound subjects are handled using a definite set of rules and procedures. An example is worked out below creating the index entries, starting with the first link and working down step by step, each level of which should be analysed according to schedules.

J381.7	made up as follows (colon classification ed.6)
J	Agriculture:
J3	Agriculture : Food
J38	Agriculture : Food : Seed
J381	Agriculture: Food: Seed: Rice
J381:7	Agriculture: Food: Seed: Rice: Harvesting

Index entries starting with the bottom term, the most specific link in the chain, and proceeding step by step through the chain, qualifying, where necessary, by a more general term or terms to show the context:

Index entries for harvesting of rice are:

Harvesting: Rice : Agriculture	J381 :7
Rice : Agriculture	J381
Seed : Agriculture	J38
Food : Agriculture	J3
Agriculture	J

Self Check Exercise -1

Enumerate the five steps involved in the method of deriving subject headings by chain procedure.

- Note:
- Write your answer in the space provided below.
 - Compare your answer with the model answer given at the end this unit.

8.2.3. Merits and Deficiencies

The importance of Chain indexing lies in the fact that it is the first systematic procedure laid down for subject indexing. The method influenced successive systems of subject indexing due to its economy and speed in producing subject index entries. It is a systematic and exhaustive procedure based on the hierarchy of steps of division.

Therefore, it provides all general as well as specific approaches at the same time.

Some of its principal merits and deficiencies are as here under:

- It is a systematic, consistent and almost mechanical method of deriving subject entries;
- With its postulational approach and principles, the Chain Procedure is based on a fairly strong theoretical foundation of classification which gives it a logical syntax;

- iii) It economises on the number of subject entries;
- iv) Its provides for exhaustive, at the same time pinpointed, retrieval efficiency;
- v) It is a useful method not only for deriving subject entries for documents in libraries but also for retrieval in bibliographies and micro level documents;
- vi) Its classificatory approach makes it possible for deriving subject entries for documents in languages other than English;
- vii) Class number need not limit its application for subject retrieval; once the chain of isolate ideas are formed by facet analysis and synthesis, the subject headings can be derived from the verbal chain;
- viii) With further research and refinement in faceted classification, particularly with reference to computer retrieval, the Chain Procedure could be further strengthened so as to become a powerful tool for subject retrieval.

The Chain indexing criticised because of its disappearing chain, its citation order, its link with the scheme of classification. Chain Procedure's reliance on classificatory principles is at once its strength and weakness. Classification has its own limitations as it provides only for a linear approach to subject retrieval, whereas many other approaches may be desirable. Therefore, these limitations mark any system of subject indexing based on such classificatory principles.

The Chain Procedure will operate quite well if backed by a faceted classification system which has a well regulated and modulated schedule. With other systems of classification such as Dewey Decimal Classification, its efficiency suffers. However, with improvisations and some modifications, the Chain Procedure was used in the British National Bibliography for nearly twenty years.

8.3 PRESERVED CONTEXT INDEXING SYSTEM (PRECIS)

PRECIS was designed and developed by Derek Austin in 1970. The system seeks to allow the user of an alphabetical subject index to enter the index at any of the significant terms which together make up a compound subject statement. The PRECIS was intended to provide a new system of subject indexing for the British National Bibliography making use of the UK/MARC (Machine Readable Catalogue) Project. The PRECIS is now adopted by a number of indexing tools like national bibliographies, library catalogues, audio visual materials and micro-documents. The system is specially designed to be amenable to computer manipulation.

8.3.1 Formation of Index Headings

A fundamental concept in PRECIS is the principle of context dependency. Ordering terms according to this principle results in index headings which represent the subject of a document completely and at the same time meaningfully so that the users are able to interpret

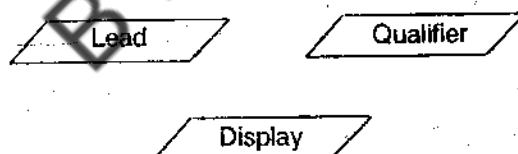
the entries correctly with a minimum of instruction on how to use the index. The formation of subject headings in the PRECIS is done in two stages. In the first stage, a human indexer does all the intellectual tasks of subject analysis to set the indexing terms in a logical sequence according to the syntactical rules. In the second stage, the computer takes over the routine tasks of producing the desired entries from the inputs provided by the human indexer. The steps involved in this process are:

- content analysis of documents to determine their specific subject;
- selecting appropriate index terms;
- putting these index terms into a string to form a sequence, based upon the application of role operators of PRECIS;
- formation of entries; and
- alphabetical arrangement of entries.

The most important aspect of PRECIS is the formation of the input string where each term is prefixed by a code of the role operators that indicates how each term has to function.

8.3.2 Format of PRECIS Entry

The format of PRECIS heading is in two-line three-part format which presents the two way relationships and is as follows:



- a) The lead position is occupied by the filing term i.e., the term which serves as the user's access point.
- b) The qualifier position is occupied by the terms which set the lead in its wider context;
- c) The display position is occupied by the terms which are context dependent upon the lead.

An example is worked out below to show the format of an index entry:

Example: Development of small industries in backward areas of Bihar:

1. BIHAR
Backward areas - Small Industries - Development

2. BACKWARD AREAS - Bihar
Small Industries - Development
3. SMALL INDUSTRIES - Backward areas - Bihar
Development.
4. DEVELOPMENT - Small Industries - Backward areas - Bihar.

In all the entries one to one relationship is strictly preserved, i.e., Bihar - Backward areas - Small Industries - Development. The PRECIS has been called a shunted index because of the way entries are generated from a context-dependent input string. It can be seen in the above mentioned example that the terms which become lead terms shunt the previous lead term into the qualifier position leaving the rest of the terms in the display position. This continues until all the terms occupy the lead position. It is not necessary, however, that all terms should occupy the lead position; this is entirely under the control of the indexer. The two-line, three-part format of the PRECIS and the shunting principle ensure the preservation of contextual relationship between terms.

In carrying out these tasks, the indexer needs to keep the following factors in view:

- a) an entry can be made under any terms likely to be sought in a string;
- b) each entry should be intelligible, and it should state the subject unambiguously;
- c) entries should be consistent in structure, so that they collocate with those produced from other strings on similar themes.

8.3.3 Role Operators of PRECIS

The grammar of PRECIS is based on a scheme of Role Operators. This scheme determines the order in which terms should be cited and hence could be regarded as a kind of indexing grammar. The use of role operators ensures that a team of different indexers or the same indexer on different occasions, consistently arrives at the same conclusions concerning the input order.

The role operators in PRECIS fall into three main groups:

- i) the main line operators represented by the numbers 0 to 6;
- ii) the interposed operators represented by the lower case letters p to u and f.g.;
- iii) the differencing operators represented by the lower case letters h to o and d.

The main line operators (0 to 6) form the backbone of the system of PRECIS. A basic rule of PRECIS is that concepts should be cited in ascending order of the main-line operators assigned to them. The interposed operators are used in between the main-line operators to increase the specificity in the index heading. The differencing operators are used to analyse the compound subject headings. The PRECIS is based on open ended vocabulary, since new terms can be added to the system as soon as they are encountered in the literature.

Self Check Exercise - 2

State the Primary role indicators of PRECIS.

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

8.3.4 Merits and Deficiencies

Among the many indexing systems which were developed after the Second World War, the PRECIS is one of the most successful ones. It has been in active use for the last twenty years. One of the reasons for its outstanding success is the support it got from the British National Bibliography. The experience it obtained from indexing a large number of documents for BNB gave it a unique opportunity to assess its performance. It now forms part of the MARC records generated in Australia National Bibliography (ANB) as well as those from BNB, and has been used successfully in the indexing of films. Its theoretical foundation, initiated and supported by the Classification Research Group of Great Britain, is one of the primary causes for its success. Besides the experience it acquired at BNB, ANB, and other bibliographical publications, and also in non-English indexing Systems, the PRECIS Manual contributed considerably to its application in many situations. Every aspect of the System is treated in detail with numerous examples so as to make the manual helpful to both practitioners and learners as a handy tool. No other system has this facility. Although its features are not extraordinarily new its success has been remarkable.

The PRECIS is criticised as being an expensive system to use and complex to learn and use. It is certainly inefficient, if used manually, as the generation of the appropriate entries from the string of terms is time-consuming.

The application of the 'Role Indicators' for the formation of the String may not produce the same results when different indexers interpret the operators with reference to the different concepts. It is largely due to the difference in interpretation.

With all these limitations, the PRECIS claims to be one of the best systems of indexing currently available. Some say it is the best among the contemporary indexing models.

8.4 POSTULATE-BASED PERMUTED SUBJECT INDEX (POPSI)

Postulate-based Permuted Subject Index (POPSI), designed by Ganesh Bhattacharyya of the Documentation Research and Training Centre (DRTC), Bangalore, is another indigenous indexing model besides Ranganathan's Chain procedure. It is now about fifteen years since it was designed and is in the process of further development, particularly in its application. POPSI can be applied to micro and macro level documents available in the form of non-print/non-book forms. As the system is comparatively new, its use in subject catalogues of libraries of other published bibliographies is rather limited. What follows is a short summary of POPSI dealing with some of the essential features of it, largely culled from the writings of Bhattacharyya.

8.4.1 Formation of Index Heading

POPSI is not based upon any particular system of classification but is built around a set of fundamental theoretical ideas on classification both in the analysis of subjects and in the structuring of the names of subjects. The deep structure of POPSI arises from a Subject Indexing Language which should form the basic framework for any system of subject indexing. Ranganathan's Chain Procedure, according to this approach, is one of the versions of POPSI.

All ideas, concrete or conceptual could be regarded as a manifestation of one or other of a set of postulated Elementary Categories of POPSI. These Elementary Categories are : Discipline (D); Entity (E); Action (A); Property (P) and Modifier (M). These Elementary Categories are explained here under :

Discipline (D) includes conventional fields of study, or any aggregate of such fields; e.g. Physical Sciences, Physics, Chemistry, etc. Entity (E) includes manifestations of ideas which are concrete or conceptual, as contrasted with their properties and actions performed by them or on them; e.g., Energy, Light, Plants, Place, Time, Environment, etc. Action (A) includes manifestations denoting the concept of 'doing'. Action may manifest as Self Action or External Action; e.g. Function, Migration, Selection, Organisation, Education, etc. Property (P) includes ideas denoting the concept of 'attributes' - qualitative or quantitative; e.g., Property, Effect, Power, Capability, Efficiency, Utility, Form, etc.

Modifier (M) relates to the manifestations of any of the Elementary Categories D, E, A and P. Modifier refers to an idea that qualifies the ideas of the Elementary Categories without disturbing the conceptual wholeness of them; e.g., Infection in Infectious disease.

The formation of subject entries in POPSI is based upon an analysis of documents, directed by a set of rules and procedures for interpreting the ideas and fitting them to the fundamental categories and organised into a logical sequence again based on a set of principles. The resulting chain is permuted to formulate entries, providing retrieval from any of the components of the chain.

Self Check Exercise-3

State the Elementary Categories of POPSI

- Note :
- Write your answer in the space provided below.
 - Compare your answer with the model answer given at the end of this unit.

8.4.2 Format of POPSI Entry

The formation of entries in POPSI is illustrated by taking the following example :

- Subject Indicative Expression :
Chemical treatment of the adenocarcinoma of stomach (Adenocarcinoma is a disease caused by harmful overgrowth of tissues)
- Analysis
D = Medicine (Implicit in the above statement)
E = Stomach (Explicitly stated)
P of E = Adenocarcinoma (Explicit)
A on P = Chemical treatment (Explicit) = Chemotherapy
- Formalisation :
Medicine (D), Stomach (E), Adenocarcinoma (P),
Chemical Treatment-Chemotherapy (A)
- Standardisation :
Medicine, Stomach, Adenocarcinoma, Chemotherapy (Chemical Treatment)
- Modulation :
Medicine, Digestive System - Stomach, Disease - Cancer - Carcinoma -
Adenocarcinoma, Treatment - Chemotherapy (Chemical Treatment)
- Organising Classification Entry :
Medicine, Digestive System > Stomach, Disease > Cancer -
Carcinoma > Adenocarcinoma, Treatment > Chemotherapy

- 6 Terms-of-Approach :
Chemical Treatment (Medicine)
See
Chemotherapy
Use each term other than Medicine as the term of approach
- 7 Associative Classification entries :
Digestive system
Medicine, Digestive system > Stomach, Disease > Cancer > Carcinoma
Adenocarcinoma, Treatment > Chemotherapy
Similarly under each of the other terms.
- 8 Alphabetisation :
Arrange the entries in word-by-word sequence ignoring signs and punctuation marks.
To sum up, the steps, involved in the POPSI Procedure are :
- 1) Analysis
 - 2) Formalisation
 - 3) Standardisation
 - 4) Modulation
 - 5) Organising Classification Entry
 - 6) Terms-of-Approach
 - 7) Associative Classification Entries, and
 - 8) Alphabetisation

It may be noted that in Steps 1 to 5, the special interest at each step is to arrive at an organising classification. The foundation of these steps is predominantly the postulates about the different structures of different subjects. Therefore, this part of the procedure is postulate-based. On the other hand, in steps 6 to 8, the special interest is to arrive at various associative classifications. The foundation of these steps is predominantly the technique of 'Permutation'. The 'Permutation' in this context refers to 'transformation' or the process of changing the linear order in a definite sequence. Therefore, this part of the procedure is referred to by using the term 'Permutation'. Hence the entire system is known as postulate-based Permuted Subject Index (POPSI).

Self Check Exercise-4

State the eight steps involved in deriving subject headings in POPSI.

- Note : i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

8.4.3 Comments

POPSI is based on extensive basic thinking to design a system that would combine the best features of classificatory principles and alphabetical subject indexing. As seen earlier, historically, the POPSI is an extension of Chain indexing. But Dr. Bhattacharya of DRTC has successfully resolved the difficulties of disappearing chain in Chain indexing. POPSI table reminds one of the role indicators of PRECIS which is used for analysis of subjects of documents. POPSI is flexible and its basic version can be manipulated to produce POPSI-Specific to meet the specific requirements of information systems. This model has to be tested; applying it to a number of subjects to assess its utility in practical situations. This new approach should stimulate further thinking on this system to make it a viable indexing system.

8.5 KEYWORD-IN-CONTEXT INDEXING SYSTEM (KWIC)

H.P Luhn of IBM developed KWIC system, and was adopted in 1960 by the American Chemical Society in their publications entitled *Chemical Titles*. A simple KWIC index is based on the 'keywords' that appear in the title of the documents. It is, therefore, expected that words in the title should be significant or coextensive with the subject content of the document or the keywords should project the subject covered in it. Thus the success or otherwise of this system depends much on the efficiency of the titles. The system is based on the use of natural language terminology for deriving the index entries. Thus, instead of concepts, significant words, the keywords or catch words used in the titles of documents are used as index terms. Each significant word is, therefore, brought in turn to the window of the index along with other terms maintaining the context for each display.

8.5.1 Format of KWIC Entry

The index consists of three parts - keyword, context and identification code. The keyword which is displayed at the window provides access point to the search. It should be remembered that all keywords are displayed in turn at the window and they appear in the index at the appropriate place, according to alphabetical order.

Excluding the keywords at window other terms in the index line express the context in which the keywords have been used. Identification code at the extreme right indicates the location of the document.

Not all the words in a title are significant ones or keywords. KWIC indexes are normally computer generated and the computer cannot distinguish this, unless properly instructed. This is done by providing a 'Stoplist' to the computer. The Stoplist is a record of words which have no currency of access points in an index. In such a list all initial articles, prepositions and certain other insignificant words are included. According to instruction, the computer deletes these words and generates index entries with only key words in turn.

The keywords are shifted from the extreme left to the centre of the page and the title is wrapped around or recirculated along the index line to avoid spacing problem. Thus the index entries will appear in the following manner:

e.g: Use of roles and links in indexing

and links in	INDEXING	use of roles	16
of roles and	LINKS	in indexing/use	16
Indexing/use of	ROLES	and links in	16

8.5.2 Variations of Keyword Index

Modification of the format of the KWIC index could not offer proper satisfaction, since the filing word was not at normal place. Therefore, various printed formats have been tried for keyword index. These resulted in different variations like KWOC (Keyword out of context), KWWC (Keyword with context), KWAC (Keyword and context), etc.

In fact, all these various forms hardly differ in indexing technique. Naturally, there is hardly any difference in their retrieval efficiency.

8.5.3 Merits and Deficiencies

All these keyword indexes can be produced economically and speedily as there is no intellectual effort involved. The production of KWIC index does not involve costly indexing staff. What is required is a machine readable title. The effectiveness of the system is based on the explicit titles which are meaningful. This system is useful for rudimentary current awareness service, where the quickness with which it is produced is important.

The alphabetical approach invariably scatters information on a specific topic. The index can satisfy the current approach of users but fails to meet the exhaustive approach for a large collection. Thus the exhaustive approach requires another index. In all such cases, as a result, for a large collection the KWIC becomes a costly affair.

However the costs of computing are comparatively cheaper than the costs of human intellectual resources. Hence, with the increasing availability of computer facilities in this electronic age there is much talk about machine indexing. KWIC has simplified the production of printed indexing to massive collections and has opened up a new range of possibilities.

Self Check Exercise-5

Explain in the peculiarities of KWIC index.

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

8.6 UNITERM SYSTEM

The problems of pre-coordinate indexing, especially that of the rigidity of citation order, have led to the development of indexing techniques, in a new direction. In the new technique the problem of taking a decision on the citation order is avoided by isolation the concepts of a composite subject and keeping them separate for manipulation at the search stage. This device has shifted the co-ordination of index terms from input to output stage making the input work simpler and easier. As the co-ordination of terms takes place at the output stage, that is, after the indexing operation itself, the system is called "postcoordinate indexing" or simply 'coordinate indexing'.

Based on the basic principles of post-coordinate indexing the uniterm system was introduced by Mortimer Taube in 1953 to organise a collection acquired by the US Armed Services Technical Information Agency. The very name of the index suggests that single term is used as heading in place of composite subject formulation. The accession number of all documents carrying out that concept are posted on it. Thus we need to make as many entries (term cards) for a document as the term we select to describe its contents. In each of these entries the accession numbers of the documents will be posted in the appropriate columns.

8.6.1 Uniterm Entry

The method employs (i) choice of single words or unit term representing the subject of the document, (ii) allocation of a serial or accession number to the document, and (iii) posting the accession number to the uniterm cards as shown below:

BOILERS									
0	1	2	3	4	5	6	7	8	9
1436						1439			

Fig: UNITERM CARD

The term chosen to index a document is written in the top row, while the accession number or the serial number is posted in the columns headed by the number 0 to 9. Numbers are posted in the columns corresponding to their last digit. Thus the serial number 2537 would be posted in the column below number 7 in the uniterm card.

Once a card for a certain term is prepared the numbers for all documents indexed with that term are posted in the respective columns in the same card.

Thus, for instance a document dealing with the subject, 'Detection of leaks in boiler tubes' with the Acc.No.1436 would need 4 uniterm cards, one for each of the terms, viz., Detection, Leaks, Boilers, Tubes. In each of these cards the number 1436 will be posted in the column under No. 6.

A subsequent document (Acc.No. 1439) dealing with, Corrosion of boiler tubes due to water' would also require 4 uniterm cards. There would be no need to prepare new cards for the terms, "Boilers" and "Tubes" as in earlier document has already been indexed by these terms. The new document, No. 1439, would simply be posted to the cards already available. Two more cards, one each for "corrosion" and "water" will, however, be needed to index the document 1439.

It can thus be seen that the above mentioned method of indexing does not involve the coordination of terms at the time of indexing, as in a precoordinate index.

Initially, Mortimer Taube did not stress vocabulary control. The emphasis was on free choice of single words or unit terms to represent the subject of a document. These features of uniterm indexing led to several problems in retrieval which were later sought to be corrected by the introduction of refinements such as bound terms, links and roles. The need for vocabulary control also became obvious and the thesaurus was devised for this purpose.

Self Check Exercise-6

Explain briefly the basic principles of Uniterm indexing.

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

8.6.2 Search Strategy in Uniterm System

The Uniterm system permits the coordination of terms at the time of searching. For instance, in order to retrieve documents relevant to the corrosion of boiler tubes, the uniterm cards for boilers, tubes and corrosion are compared to locate the document numbers which are common to all three terms. A convenient way of comparison is to start with the card carrying the minimum number of postings. The practice of posting in a column according to terminal digit helps in making this comparison. From this card only accession numbers could be located. For details of the document there has to be another file with accession numbers and bibliographical citations describing the details of the documents.

In the manual search the user is likely to miss a number, representing an important document and thus spoils the search. This problem is solved by W.E. Batten's 'Peck-a-boo' system of optical coincidence system. In this system the accession numbers are punched by a drilling mechanism and scanning is simplified with a beam of light by the light box that passes through the holes in the cards, indicating accession numbers. This system also permits speedy search covering 10,000 items in less than two minutes.

8.6.3 Merits and Deficiencies

In spite of the simplicity of operation and of the physical apparatus used the uniterm method is not free from problems e.g., limitation of card size is one of these as only a limited number of documents can be posted on a card. It is difficult to operate the system, if the collection comprises more than 10,000 documents. The method involves a two stage search—once through comparison of document numbers and again by translation of this number to document in the accession number file. The system may suffer from false coordination in some cases. Coordination of the same pair of terms, "History and Science", may produce different subjects like 'History of Science' and 'Science of History', creating confusion. Synonyms, homographs and singular/plural forms of words also create problems in the system. By making use of mechanical devices and sophisticated devices such as computers, and the specialised vocabulary control tools the above mentioned disadvantages can be minimised.

6.7 CITATION INDEXING

We introduce to you now some ideas about citation indexing, which is a relatively new method of organizing the contents of a collection in a way that overcomes many of the shortcomings of the more traditional indexing methods.

Citation indexes are compiled in such a way that they do not depend on any brainwork in determining the subject headings of documents. There is no assignment of subject names for grouping related documents. The related documents are grouped through mechanical sorting of citations. Citations are nothing but references made to other documents in an article by an

author. These citations or references are pertinent to the subject of the author's article. Citation indexing has been evolved by Eugene Garfield of the Institute for Scientific Information, Philadelphia, in 1963. The Institute is publishing regularly Science Citation Index, Social Science Citation Index and Arts and Humanities Citation Index. Citation indexing is based on the simple concept that an author's references to previously recorded information identify much of the earlier work that is pertinent to the subject of this present document. These references are commonly called 'citations'. A citation index is a structured list of all the citations in a given collection of documents. Such lists are usually arranged in such a way that the cited document is followed by the citing documents. A cited document is one to which reference is made, and a citing document is one which makes references to the cited document.

Self Check Exercise-7

What is a Citation Index?

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the answer given at the end of this unit.

8.7.1 Search Strategy in 'Citation Index'

The basic technique implies that a paper on the topic of search should be identified in the beginning by his personal knowledge or that he may collect this information from different sources like books, secondary services, etc.

The next step is to carry out a search in the citation index part to identify the authors citing this reference. A second search through the source index reveals complete bibliographical details of these source items. The detailed information in the source index helps the user to judge the relevancy of the documents to the query.

The simple search may be extended for a comprehensive one by cycling. Once the user locates the citing reference in the source index, he can have a look on the other documents of the citing author, which may also be relevant to the query. Presence of titles in the source index is helpful to the user in ascertaining the relevancy. These extra papers of the citing author may be considered to be the starting reference and used in the citation index to locate the other papers of the same author cited somewhere. This will again lead the searcher to the source index, where complete bibliographical details of the citing documents will be available.

Cycling will result in the identification of a large number of documents on a particular query. When the user cannot identify a starting reference by any chance, the permutterm subject index can come to his help. To use this index, the searcher must compile a list of the terms relevant to the search topic. A glance through the index will help the searcher to identify one of the terms used as a primary term along with co-terms and the name of the author using the term in his title. He can then turn to the source index to identify complete bibliographical details of the document.

8.7.2 Merits and Deficiencies

- i) The primary advantage of citation indexing is that it identifies relationships between documents that are often overlooked in a subject index;
- ii) An important secondary advantage is that the compilation of citation indexes is well suited to the use of man-machine indexing methods that do not require indexers who are subject specialists. This helps to make citation indexes more current than most subject indexes;
- iii) Further, citations, which are bibliographical descriptions of documents, are not vulnerable to scientific and technological obsolescence as are the terms used in the subject indexes.
- iv) Flexibility of citation index is a major advantage and the compilation can be achieved by hand, although machine processing is necessary if speed or width of scope are desirable factors;
- v) Errors in citation by authors of documents adversely effect its efficiency;
- vi) Citation indexes are reported to have had more favourable reception from scientists than from librarians.
- vii) Noise can effectively be filtered by using titles of articles and journals, and authors, specialization.
- viii) Citation indexes must be regarded as supplementary to abstracting services.

8.8 THESAURUS

The word, 'Thesaurus', comes from the Greek term, 'Thesaurus', meaning a storehouse or treasury of words. Webster's dictionary defines it as 'a book of words or of information about a particular field or set of concepts, specifically a dictionary of synonyms.'

In the context of information retrieval the concept of thesaurus was first introduced by Hans Peter Luhn of IBM in 1957.

In an information retrieval system a thesaurus, in terms of its function, means terminological control device used in translating from the natural language of documents, indexers or users

into a more constrained system language. In terms of its structure the thesaurus is a controlled and dynamic vocabulary of semantically and generically related terms covering a specific domain of knowledge. It is a tool intended for use in postcoordinate systems where terms denote single concepts.

8.8.1 Format of a Thesaurus Entry

- i) A thesaurus should include concepts, i.e., descriptors arranged in an alphabetical order. The concepts which an indexer assigns to a document to describe its contents are called "descriptors". The terms which are not preferred to be used in indexing are "non-descriptors". They are proper names of corporate bodies, government agencies, institutions and firms, geographical names, etc. In addition, scope notes and definitions are also given.
- ii) Display of interrelationships between the Concepts. Three kinds of relationships are usually displayed in a thesaurus. They are
 - a) Equivalence or preferential relations: When terms are regarded as similar or almost the same in meaning, they can be combined with the same concept. Synonyms are indicated in the thesaurus by the terms USE and UF (used for)
 - b) Hierarchical or structural relationship: The hierarchical relation expresses super/subordination of concepts. Relation between genus and its species and the part-whole relationships are displayed in the thesaurus by using the symbols BT (broader term) and NT (narrower term).
 - c) Associative or affinitive relation: This relationship is employed to cover other relationships between concepts that are related but are neither consistently hierarchical nor equivalent. This relationship in a thesaurus is displayed by the symbol RT (related term).

A typical entry taken from "*Thesaurus of Engineering and Scientific Terms*" indicating all the three relationships is shown below:

POLICE
UF Bodyguards (Personnel)

BT PERSONNEL
NT MILITARY POLICE
RT INDUSTRIAL PLANT PROTECTION
INTERNAL SECURITY

Thus a thesaurus contains terms so arranged as to express their structural and functional relationships. A list of terms which does not include structural and relational information is not a thesaurus. It is merely an alphabetical list of descriptors or subject headings.

Self Check Exercise-8

Define "thesaurus" and mention three types of relationships displayed in a thesaurus.

Note: i) Write your answer in the space provided below.

ii) Compare your answer with the model answer given at the end of this unit.

8.8.2 Parts of a Thesaurus

Main part: The thesaurus has a main part and auxiliary parts. The main part is a normal alphabetical list of all descriptors giving complete information on each descriptor, including the concept relationship. This part includes both descriptors and non-descriptors along with scope notes and definitions.

Auxiliary parts: In order to improve the access to the main part of the thesaurus, a thesaurus may contain several auxiliary parts, i.e., permutterm subject index, systematic listings like hierarchical index, and broad subject category index as in *"Thesaurus of Engineering and Scientific Terms"* and graphic display of relationships as in *SPINES Thesaurus*. The thesaurus may also contain a faceted classification along with alphabetical thesaurus as in *Thesaurofacet*.

8.8.3 Types of Thesauri

There are thesauri developed in board areas of Science & Technology, Engineering, Education, Phychology as well as in very specific subject fields such as Machine tools, Solar energy, Water resources, Environment Sciences, etc.

A general thesaurus has to treat all the specific fields at the same level and has to include as many terms as possible. The specific subject thesaurus covers only that specific subject field in greater detail than any other and peripheral subject fields are treated at a generic level. Some relationships which are peculiar to that subject field are displayed.

8.8.4 Role of Thesauri in Indexing and Searching

Thesaurus is only a tool used for indexing. The tool has to be used only to control the vocabulary but not for subject analysis. The tool plays the following two roles:

- i) Prescriptive role: It prescribes as to what term should be assigned;
- ii) Suggestive role: It suggests terms to be considered instead of, or in addition to, etc. The RT and to a certain extent BT & NT references are suggestive indicators.

8.9 SUMMING UP

This unit deals with six indexing techniques, viz., Chain Indexing, PRECIS, POPSI, Keyword Indexing, Uniterm Indexing, Citation Indexing and a Vocabulary Control tool, i.e. Thesaurus. The discussion of the different aspects of these techniques and tools is preceded by a consideration of the objectives and principles of indexing systems in general. Of the six indexing techniques, three of them are based on faceted classification principles, and one is based on titles of documents. The uniterm system is based on the principle of postcoordination of concepts. A non-conventional method of indexing based on citations of authors is also discussed.

A brief introduction, formation of subject headings, format and structure of entries, merits and deficiencies of all systems have been discussed. The concept of thesaurus, its structure, use, and its role in indexing is also dealt with.

8.10 MODEL ANSWERS

1. The derivation of subject headings by chain procedure involves the following steps:
 - i) digit by digit interpretation of the class number;
 - ii) identification of the substantive terms that would constitute the subject entry;
 - iii) citing them according to the prescribed rule;
 - iv) providing additional entries to provide a subject approach through every component of the class member;
 - v) arranging the entries into an alphabetical order;
2.
 - 0 = Environment, Location
 - 1 = Key system
 - 2 = Action
 - 3 = Agent
 - 4 = Viewpoint of an author
 - 5 = Sample study, sample population
 - 6 = Target user/form of the document.
3. The elementary categories of POPSI are Discipline (D), Entity (E), Action (A); Property (P) and Modifier (M).

4. The steps to be followed in deriving a subject heading according to POPSI are
 - i) analysis
 - ii) formalisation
 - iii) standardisation
 - iv) modulation
 - v) the organising of the classification entry
 - vi) terms-of-approach
 - vii) associative classification entries
 - viii) alphabetisation
5. A simple KWIC index is based on the keywords which appear in the title of the document. Each significant word in the title is, therefore, brought in turn to the window of the index along with other terms maintaining the context and along with the identification code at the extreme right to indicate the location of the document.
6. The very name of 'Uniterm Indexing' suggests choice of single terms to represent the subjects of documents. Thus, we need to make as many entries (term cards) for a document as the terms we select to describe its contents. The accession numbers of the documents carrying that concept are posted in the appropriate column according to the terminal digit in the columns headed by the number 0 to 9. The new cards prepared only when there is a new term. The coordination of terms is done at the time of search.
7. A citation index is a structured list of all the citations in a given collection of documents. These citations are the references made to other documents in an article by an author.
8. Thesaurus is a controlled and dynamic vocabulary of semantically and generically related terms covering a specific domain of knowledge. The three types of relationships displayed in a thesaurus are:
 - i) Equivalence or synonymous relationship
 - ii) Hierarchical or structural relationship
 - iii) Associative or affinitive relationship

8.11 RECOMMENDED BOOKS

1. AUSTIN, D. *PRECIS: A Manual of Concept Analysis*. 2nd, London: British Library, 1984.
2. BHATTACHARYA, G. Chain procedure and Structuring of a subject. *Lib. Sc.* 1972, 9, 585-636
3. BHATTACHARYA, G. Elements of POPSI. IN Rajan T.N (ed). *Subject Indexing System*, Calcutta: IASLIC, 1981.

4. CHAKRABORTY, A.R. and Chakrabarty, B. *Indexing: principles, processes and Producers*, Calcutta: The World press, 1984.
5. FOSKETT, A.C: *Subject approach to Information*. 4th Ed. Bombay: Asia publications, 1982.
6. GARFIELD, E: *Citation Indexing*, New York: John Wiley, 1979,p.1-224.
7. GILCHRIST, A. *Thesaurus in Retrieval*, London: Aslib, 1971.
8. GUHA, B. *Documentation and Information*. Calcutta: World Press; 1978.
9. LANCASTER, F.W. *Vocabulary Control for Information Retrieval*, Washington: Information Resources, 1972.
10. RANGANATHAN, S. R. Chain Procedure and Dictionary catalogue. *Annals of library Science* 1954, 1; 217-221.
11. ROWLEY, J.E. *Abstracting and Indexing*, London: Clive Bingley, 1982.
12. VARMA, A.K. *Trends in Subject Indexing*, Delhi: Mittal publications, 1984.

UNIT 9 - ABSTRACTING TECHNIQUES

Contents

- 9.0 Aims and Objectives
- 9.1 Introduction
- 9.2 Definition
- 9.3 Purpose of Abstracts
- 9.4 The Abstractor
- 9.5 Types of Abstracts
- 9.6 Abstracting Procedure
 - 9.6.1 Style and Content of Abstracts
- 9.7 Guidelines for Abstracting
 - 9.7.1 Tips for Abstractors
- 9.8 Summing Up
- 9.9 Model Answers
- 9.10 Assignment
- 9.11 Recommended Books
- 9.12 Glossary

9.0 AIMS AND OBJECTIVES

Document analysis makes a significant contribution to communication and information flow. One of the major document analysis tools is an abstract. This unit describes different types of abstracts as also what their purpose is, and sets the guidelines for preparing an abstract. A study of this unit will enable you to

- give the definition of an abstract;
- distinguish between an abstract and various other document abridgements or a literary condensation;
- describe the purpose of abstracts; and
- explain some of the principles/guidelines important to the preparation of a good abstract.

9.1 INTRODUCTION

Abstracting is one of the most popular means of representing information. It is a vital component in the communication link between the originator of information and its ultimate consumer. Abstracts organize the literature so that a specialist can identify documents of interest more easily. This is particularly important in scientific and technical fields of research and is also increasingly considered to be essential for research in the Social Sciences, Economics as also for cultural pursuits. With the tremendous proliferation of literature, which has been termed 'information explosion', it is no longer possible for anyone, however erudite he may be, to keep abreast of all the literature published in his/her field of specialisation. Hence various tools and techniques have been evolved to keep the reader informed. Abstracts are one of the most important tools among them.

9.2 DEFINITION

An abstract is a concise and accurate representation of the contents of a document, in a style similar to that of the original document. An abstract may be briefly defined as an 'abbreviated accurate representation of a document'. It is, in the words of Dr. S.R. Ranganathan, "the summary of the essential contents of a work, usually an article in a periodical, together with the specification of its locus, that is, its place of occurrence". Ashworth defines it as "a precis of information coupled with a reference for tracing; now usually refers to the information contained in an article of a periodical". In other words, an abstract is an abbreviated representation or gist of a publication or article accompanied by an adequate bibliographical description to help trace the publication or the document.

Another means of document representation is the **Extract**. An extract is one or more portions of a document selected to represent the whole document. Due to the very nature of these portions they are unlikely to be a balanced representation of the whole document, but will tend to highlight certain significant points made in the document.

A third type of document abridgement is the **Summary**. The distinction between a summary and an abstract is often not clearly indicated. Strictly, a summary is a restatement within a document of the salient findings and conclusions of the document. A summary is different from an abstract in that it assumes that the reader will have the opportunity to peruse the accompanying text.

An '**abridgement**' is usually taken to be a reduction of the original that necessarily omits a number of secondary points, and is, therefore, a relatively general term.

A '**Precis**' is an account which restricts itself to the essential points of an argument.

A **paraphrase** is an interpretation of the ideas encoded in a document, and a translation into the language of the writer of the paraphrase.

A **digest** is a methodically arranged presentation of the main arguments in a document.

And lastly, a **synopsis** is the term which was originally used to denote a resume prepared by the author of a work.

9.3 PURPOSE OF ABSTRACTS

Abstracts are widely used as an aid to the reader in assessing the contents of a document and their potential relevance. The document may be a report, journal article, thesis, patent, paper contributed in a conference, standard, letter, etc. They can help in effective note-taking, digestion of current literature, analysis of committee papers and the presentation of reports.

- abstracts are a vital aid in document selection and information gathering, and help to avoid duplication and delay in work in progress;
- abstracts accompanying the primary publication indicate the content and facilitate rapid scanning prior to reading the full document;
- abstracts are the cornerstone of secondary publications. Today the large computer based bibliographic databases associated with abstracting and indexing services also use abstracts as their chief means of document representation. They are, perhaps, more valuable in retrospective searching than in current awareness devices. Abstracts permit a more immediate assessment of relevance;
- by digesting information on behalf of the user, and making his information gathering more efficient, the abstractor aims at making significant impact upon research and decision making;
- abstracts also make a contribution towards the overcoming of the language barrier, for they make it easier to judge of the necessity of translation;
- abstracts aid in the compilation and provision of other tools such as indexes, bibliographies and reviews.

However, the time saved by the abstract for the user depends upon the nature of both the abstract and the original. Some of the factors affecting the value of abstracts are :

- abstract length;
- abstracting orientation;
- abstracting quality;
- the nature of the original document.

For example, an English language abstract of an foreign language document makes some of the ideas in the foreign language more accessible.

Self-Check Exercise-1

State the main functions of abstracts.

- Note :
- i) Write your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

9.4 THE ABTRACTOR

An abstract can be written by different people, for different purposes, and in indifferent styles. In choosing abstractors much depends upon the nature of the organization and its resources, as well as upon the purpose of the final abstract. Abstracts could be prepared in the following ways :

- i) **Author** : Author abstracts or synopses are prepared by the author, usually at the time of the publication of the original document. Author abstracts can vary in quality. Also an author abstract is unlikely to be tailored specifically to the interest of an organization's clientele.
- ii) **Specialist** : Specialist abstracts are prepared by subject specialists who are peers in their own field of specialization.
- iii) **Professional** : Professional abstracts are prepared by professional or freelance abstractors, who have general subject background and considerable expertise in abstracting.
- iv) **Information Officer** : An Organization within which abstracting is a relatively minor activity often expects an information officer or librarian to prepare such abstracts as are necessary in addition to performing various other information duties. The quality will depend on the skill and training of the information officer. However, he has the advantage of orienting the abstracts to his clients' specific needs.

9.5 TYPES OF ABSTRACTS

- (a) **Informative abstracts** present as much as possible of the quantitative or qualitative information contained in a document and acts as a substitute for the original document. It provides a clear condensation of the essential arguments and of the findings of the original. Informative abstracts tend to be lengthier than other abstracts varying from 250 to 500 words. The nature and scope of the problem, the objectives of

the investigation, methodology, the major conclusions, results or findings, and recommendation are presented.

- (b) **Indicative abstracts** merely indicate the content of an article and contains general statements about the document. Since the treatment is more superficial than in an informative abstract, the indicative abstract can be written quickly and economically and requires less perception and subject expertise on the part of the abstractor. No attempt is made to report the total content of the article/document. It is no more than a sophisticated selection aid. Its application and value are more limited than those of an informative abstract.
- (c) **Critical abstracts** are unusual but have some attractions for the user. A well produced critical abstract not only describes the document content, but also evaluates the work and its presentation. A critical abstract normally indicates the depth and extent of the work commenting on the adequacy of experimentation and survey methodology, etc. Critical abstracts are especially effective in pinpointing documents of exceptional interest. The abstractor injects his opinions and analysis.
- (d) **Annotations** are very brief abstracts, do little more than amplifying the title and basically an expansion of the information given in the bibliographic citation. They involve only a little analysis, and are quick to produce, and are particularly important where currency is paramount or abstracting time is at a premium.
- (e) **Telegraphic abstracts** present information in an exceptionally concise form. The telegraphic abstract is written in a telegraphic style, and was originally meant for computer processing.
- (f) **Slanted abstracts** may be informative, indicative, or critical and are oriented towards the interest of a known audience. Such abstracts are particularly useful in an in-house abstracting bulletin for a particular group of audience, concerning a specific branch of knowledge.
- (g) **Statistical, tabular and numerical abstracts** are a means of summarizing numerical data. For this type of data, which may be presented in its original format in a tabular form, a table or other similar device may be the most successful means of summarizing the data. Skill is involved in selecting significant data from the original table or graphical presentation, and in preparing a table containing the vital statistics in a more condensed format. Statistical and other numerical abstracts cover effectively certain types of economic, social and marketing data.
- (h) **Data-type abstracts** provide information in a semi-tabular form, with some key information on how experiments are done. These abstracts developed by the Nuclear Data Group of the National Research Council, Washinton, for each nucleus for which new experimental data are given on a paper, an "item" is made consisting of the name of the nucleus, the category of the new data, and the new data, some information about how the experiment is done, and finally a complete literature references.

- (i) **Graphic abstracts** make use of the molecular and structural formulae in the field of Chemistry. Instead of naming the substances and compounds and their treatments. Current Abstracts of Chemistry and the Index Chemicus make extensive use of this type of abstracts.
- (ii) **Auto abstract** is produced by a computer analysis of the frequency of the use of significant words in a document. The computer produced auto abstract is a collection of typical sentences from the original document.

Self-Check Exercise-2

Name the different types of abstracts.

Note : i) Write your answer in the space provided below.

ii) Compare your answer with the model answer given at the end of this unit.

9.6 ABSTRACTING PROCEDURE

A trainee abstractor will profit from a sequence of distinct steps to help him in the preparation of an abstract. A four point plan for abstracting is outlined below:

Step 1 : Read the document with a view to gaining an understanding of its content and an appreciation of its scope. A practised abstractor does not read every word in a document, but scans the significant portion of the document.

Step 2 : Make written notes of the main points made in the document. Steps 1 and 2 may be completed simultaneously or step 2 may be conducted during a re-reading of the document.

Step 3 : Draft a rough abstract from notes recorded in step 2. It is important not to transfer verbose words or phrases from the original.

Step 4 : Check the draft abstract for punctuation, spelling, accuracy, omissions and conciseness. Accuracy is particularly essential. When all necessary amendments have been made, edit the draft abstract to improve the style.

Step 5 : Write the final abstract.

9.6.1. Style and Content of Abstracts

No one style, content or length is appropriate for all abstracts. All three must be tailored to the nature of the original document, the anticipated use of the abstract, and the resources of the abstracting agency. The first set of factors which need to be considered relate to the nature of the original document. Some of the more prominent of these are :

- i) length and scope of the original document;
- ii) subject of the original document;
- iii) Language of the original document;
- iv) availability of the original document;
- v) author's style and emphasis.

Other factors that influence the decision as to preferred length, style and content stem from the anticipated use of the abstract and the requirements of its users. Two points which are important are the following :

- 1) Client needs and preferences concerning relatively briefer or longer abstracts may depend upon the field of work or the ease of access to originals or to library and information services.
- 2) Abstracts planned primarily as alerting devices may be shorter (typically 80 to 100 words) than those abstracts which are to be stored for permanent reference, where the use of 400 to 500 words might, on occasions, be justified.

Lastly, the style, length and contents of an abstract should and will be coloured by the resources of the abstracting agency. Factors operating in this regard may be the following:

- i) Characteristics of the abstracting staff, such as their proficiency as abstractors, subject knowledge, and other duties demanding their time and attention.
- ii) Total budget available for the production of abstracts. Budgetary considerations are likely to be a factor in determining the amount of abstracting time of the number of abstractors to be employed.
- iii) Any guidelines set internally or by external agencies restricting the length and content of abstracts, and prescribing stylistic features.

Each abstracting organization must consider many factors before settling upon a specific abstracting format and style. Organizations employing a large team of abstractors will normally abide by a set of abstracting guidelines which impose some standardization with respect to style and content. Smaller organizations may also recognize certain standards, but may not necessarily have any formal written guidelines. However, there are some features of abstracting style and approach which are good to observe irrespective of circumstances.

Self Check Exercise-3

Indicate the 5 steps for the preparation of an abstract?

- Note :
- i) Write your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

9.7 GUIDELINES FOR ABSTRACTING

Some points which recur in the practice of abstracting are recorded below. Any guidance concerning style and content must permit the abstractor to use his discretion to achieve a good abstract. One of the main tasks in writing a good abstract is to convey the maximum quantity of information using the minimum number of words. Brevity is all important. In pursuing brevity, however, care must be exercised to avoid ambiguity.

- i) The abstractor must resist the temptation to use long sentences in striving to avoid repetition. Flow and readability should not be sacrificed to brevity. Sentences with an average length in the region of twelve words are likely to yield a readable abstract.
- ii) An abstract often starts with a 'topic' or 'lead' sentence. This first sentence attempts to summarize any essential information that is not conveyed by the title.
- iii) All abstracts, barring those of exceptional length, should consist of one paragraph only. This should be a coherent paragraph, and not a series of disjointed sentences. All sentences should be complete, and verbs, prepositions and articles should not be omitted. Separate paragraphs may be introduced for long documents like theses, reports, etc., where different topics are introduced.
- iv) A device which is acceptable and widely used in abstracts is to number and list the points within a sentence.
- v) Ambiguous words, and terms whose meaning is otherwise unclear, should be avoided.
- vi) Conciseness is paramount. Redundant phrases such as 'the author's studies', 'in this work', 'the paper concludes by', 'these discussions lead to the recommendations' should be avoided.

- vii) Style and order of ideas should mirror that of the author, unless there are sound grounds for modification.

Regarding the content of a good abstract it must convey that of the original document. In selecting content it is important to remember that the abstractor is expected to reflect the author's emphasis, priorities, order and language as far as is reasonable. The abstractor should not introduce any new bias or emphasis.

9.7.1 Tips for Abstractors

The following points should be kept in mind while writing an abstract :

1. Write in fluent, easy-to-read prose. Strive for simplicity and general understandability.
2. Be exact, concise, and unambiguous. Avoid general statements where you can be specific.
3. Condense, but as a general rule, do not personally interpret the author's remarks.
4. Be consistent in tone and emphasis as in the document being abstracted.
5. Use short sentences, but with some variety in length and structure to avoid monotony.
6. Use generally complete sentences, except when supplying the last bits of descriptive information, e.g. "12 ref."
7. Place general statements, where needed, toward the end of the abstract.
8. Use active-voice verbs instead of passive ones. "A exceeds B" makes better reading than "B is exceeded by A", and is also shorter.
9. Avoid both overusing and awkward omission of articles.
10. Use past tense to describe the specific activities which the author is reporting, since they belong to the past. However, the conclusion that he draws from these activities are facts (of permanent value unless proved otherwise) and, therefore, prevail in the present; accordingly, they should be written in the present tense.
11. Use short, simple, familiar words.
12. Avoid trade jargon and colloquialisms to the extent possible.
13. Abbreviations commonly understood or easily intelligible in the context may be used.
14. Use standard nomenclature. Unfamiliar terms, abbreviations, and symbols should be defined when for the first time they occur in the abstract.
15. When using abbreviations for units in combination with a number, omit periods and write the number as a numeral e.g. 3 ft. 150 yd.

16. Since brevity is the essence of abstracting, both verbosity and redundancy should be avoided. Some verbose expressions, which are commonly used, and the corresponding concise expressions are given below :

Verbose

A great deal of
A large number of
By means of
Despite the fact that

Due to the fact that
For the purpose of
In a similar manner
In order to
In the event of
In view of the fact that
It appears that
Led to the production of
On account of

Concise

Much
Many
By, with
Although

Because
For, to
Similarly
To
If
Since
Apparently
Gave
Because

Self Check Exercise-4

Mention the factors to be considered while preparing an abstract.

Note : i) Write your answer in the space provided below.

ii) Compare your answer with the model answer given at the end of this unit.

9.8 SUMMING UP

In this unit, we have discussed the need and purpose of abstracts and explained how they are different from other literary condensation.

The various types of abstracts are informative, indicative, critical, annotative, telegraphic, slanted, statistical, graphic and data-type. The steps for abstracting have been indicated and guidelines for abstracting including the style and content of abstracts given. We have also provided useful tips to be followed by the abstractors for preparing good abstracts.

9.9 MODEL ANSWERS

1. The main functions of Abstracts are :
 - i) To help in document selection and to ascertain their potential relevance;
 - ii) To facilitate rapid scanning prior to reading the original document;
 - iii) As valuable retrospective searching tools as well as a current awareness device;
 - iv) To overcome the language barrier.
2. The different types of abstracts are :
 - i) informative abstracts;
 - ii) indicative abstracts;
 - iii) critical abstracts;
 - iv) annotations
 - v) telegraphic abstracts;
 - vi) slanted abstracts;
 - vii) statistical, tabular and numerical abstracts;
 - viii) data-type abstracts;
 - ix) graphic abstracts;
 - x) auto abstracts
3. The steps in abstracting are :
 - i) Read the document with a view to gaining an understanding of its content and scope;
 - ii) Make written notes of the main points made in the document by re-reading of the document;
 - iii) Prepare a rough abstract from notes recorded in step two without transferring verbose words or phrases from the original;
 - iv) Check the draft abstract for accuracy, punctuation, spelling, omissions and conciseness;
 - v) Write the final abstract after editing the draft abstract.
4. The five important factors to be considered while preparing an abstract are :
 - i) length and scope of the original document;
 - ii) subject of the original document;
 - iii) language of the original document;
 - iv) availability of the original document;
 - v) the author's style and emphasis.

9.10 ASSIGNMENT

Select two articles, one each from Technology and Science. Prepare an annotation, an indicative abstract, and an informative abstract for each of the articles selected. Enclose the cutting of articles along with the abstracts.

9.11 RECOMMENDED BOOKS

1. BORKO, H. and BERMIER, C.L. *Abstracting Concepts and Methods*. New York : Academic Press, 1975.
2. IS : 979-1976 : *Guide for Preparation of Abstracts* (1st revision).
3. MALZELL, RE et al : *Abstracting Scientific and Technical Literature - An introductory guide and text for scientists, abstractors and management*. New York : Wiley - Interscience, 1971.
4. ROWLEY, T.E. : *Abstracting and Indexing*, London : Clive Bingley, 1982.
5. SENGUPTA, B. and CHATTEJEE, M. *Documentation and Information Retrieval*, Calcutta : The World Press, 1977. P. 45-50.

9.12 GLOSSARY

1. **Bibliographic citation** : Description of a source document referred to for specific information to write a document.
2. **Bibliographic database** : A list of references of documents relating to a specific subject or author maintained by a computer.
3. **Colloquialism** : Belonging to familiar speech, not used in formal language.
4. **Communication link** : Various steps involved in transmitting information from its generation to its use.
5. **Document analysis** : The methodological investigation into the content of the document and division of the content into smaller related units.
6. **Erudite** : Learned
7. **Proliferation** : Fast and excessive growth
8. **Retrospective searching** : Searching requests for all items published on a specific topic, in a specified period.

UNIT 10 - REPROGRAPHY AND MICROGRAPHY

Contents

- 10.0 Aims and Objectives
- 10.1 Introduction
- 10.2 Need for Reprography and Micrography
- 10.3 Macrocopying: Processes and Techniques
 - 10.3.1 Electrostatic Process
 - 10.3.2 Diazographic Process
 - 10.3.3 Thermographic process
 - 10.3.4 Photographic (Silver Halide) Process
- 10.4 Duplication Processes and Techniques (Macrocopies)
 - 10.4.1 Offset Duplication
 - 10.4.2 Stencil Duplication
 - 10.4.3 Spirit Duplication
- 10.5 Micrography and Microcopies
 - 10.5.1 Advantages
 - 10.5.2 Microformats
 - 10.5.3 Micrography related Equipments
- 10.6 Management of Reprographic Services
- 10.7 Summing Up
- 10.8 Model Answers
- 10.9 Assignment
- 10.10 Recommended Books

10.0 AIMS AND OBJECTIVES

Reprographic and Micrographic services are being increasingly offered even by small libraries and information centres. Therefore, a librarian must possess basic knowledge about various techniques processes and equipments involved in the rendering of reprographic and micrographic services.

At the end of this unit, you should be able to

- Explain the important concepts in reprography and micrography;
- Tell how and why reprographic and micrographic services are useful in a library;

- Describe briefly important processes and machines used in reprography, duplication and micrography; and
- Discuss the factors involved in managing a good reprographic/micrographic unit in a library.

10.1 INTRODUCTION

Very often we need to obtain copies of original documents. Such documents may be letters or certificates - hand written, typed or printed - and may perhaps, contain seals, signatures, or illustrations. A simple method of getting a copy is to use a pen or pencil, carbon paper and, if needed, some tracing paper, too. This method is time consuming. Only a few copies can be produced. Copies may not be clear or of uniform quality.

When a large number of copies are needed we resort to duplication. For instance, we can type out on a stencil paper and use it on a duplicating machine to get hundreds of copies. Here a stencil needs to be prepared. It cannot accommodate illustrations, say, photographs.

Photography is a well known age old method of getting a true copy of the original. As the optical method of photography makes it possible to get copies of increased or reduced sizes, we can obtain replicas in different sizes. Graphics or illustrations are not a problem to copy. Reprography is a term coined from reproduction and photography and is the collective name given to the large number of copying and duplicating processes that enable one to prepare one or more copies of a document.

In the earlier days photography was an important method for obtaining a true to the original copy. But reprography now includes other methods of copying like electrostatic method, diazographic method, thermographic method, etc. When copies are made to the same size as that of the original or reduced or enlarged and in any case readable and usable as such, then such copies are called macrocopies. Copies can also be made on films, paper, etc., reduced to such a high degree that reading is possible only with the help of enlargement devices like a microfilm reader. Such copying systems are called micrography or micro copying.

The term, "Duplicating", though similar to copying, is normally restricted in meaning to the processes of making a large number of copies for distribution. A fairly fast and cheap copying method may be a duplicating method also. This unit presents a brief consideration of various macrocopying, microcopying and duplication methods, principles involved, advantages and disadvantages, etc., also will be taken and issues concerning the managing of a reprographic department.

10.2 NEED FOR REPROGRAPHY AND MICROGRAPHY

Photocopying and preparation of copies in microform is helpful to libraries in many ways. True-to-original copies can be obtained irrespective of the language, illustrations, graphics, signature, etc., which may form part of the original. Copies may vary in size. Colour reproduction may not always be feasible. But for these exceptions, photocopies offer workable substitutes for the original. Therefore, they are valuable and further, libraries can procure a copy of only those portions needed instead of the whole volume. This saves space and cost. Photocopies are obtainable fairly quickly and, therefore, save time. They are also economical in the sense that the original need not be redrawn, retyped, etc. For instance, if blue-prints are needed you have to prepare a drawing on tracing paper. In the case of microforms there is tremendous advantage of space. Records in microforms need only about 2% of the space occupied by the original. The format is best suited for back volumes of journals, "less often used reports", etc. Engineering drawings are difficult to handle and store because they are large in size. Microform, say, aperture cards, are uniform in size and easy to store or file.

Libraries can go in for photocopies or microfilm in the case out-of-print books. It is also possible to preserve archival copies of important documents for the use of future researchers. When a publication goes out of print, and reprinting is not worth while, photocopying or copies in microfilm will be worth while. When a library possessing a valuable document does not wish to lend it as such, a photocopy will serve the purpose.

Thus we see that copies in both paper and microform offer many advantages to libraries and information centres. Hence the need for such a facility.

Self-Check Exercise-1

Mention briefly applications of reprography in information centres.

- Note:
- Write your answer in the space given below.
 - Compare your answer with the model answer given at the end of this unit.

10.3 MACROCOPYING : PROCESSES AND TECHNIQUES

There are four major processes in macrocopying. They are Electrostat process; Diazo process; Thermographic process and Silver halide method. It is important to remember that

macrocopies are those which are of the same size as that of the original or slightly reduced or enlarged in order that they may be read by the naked eye and used as such without the aid of any special device. We shall discuss the four processes in some detail now.

10.3.1 Electrostatic Process

Electrostatic process of copying makes use of the action of light on electrically charged photoconductors. Photoconductors (for example, selenium coated aluminium plate) conduct away static electric charges accumulated on them when exposed to light. In the dark, the static charge is retained. Because of this property, photoconductive plates can be used in the same way as the photographic film is used in a camera. To make them photosensitive the plates are charged with static electricity. The invisible image can be 'developed' by dusting finely powdered ink of polarity opposite to that of the charge on the plate. If the plate is positively charged then ink is negatively charged. The ink gets attracted to the plate and forms a reverse reading visible image. This image is transferred to paper and made permanent by a process called 'fixing'. Such photo copies are called electrostatic copies. There are two methods of making an electrostatic photocopy: a) Transfer or indirect method, and b) direct method.

(i) Transfer Method (Xerography)

Here an image is first created on photoconductive surface and then transferred onto paper. It is also popularly called xerography and copies are called 'xerox copies'. Xerography means dry copying. The name is appropriate when we consider that the regular photographic method involves the use of liquids for developing, fixing, washing, etc.

The manual method of getting xerox copies consists of the following steps which will be discussed in some detail now:

- 1) Charging photoconducting plate in a charging unit;
- 2) Exposing the charged plate in a camera;
- 3) Development of the latent image;
- 4) Transferring the developed image on to paper;
- 5) Fixing the image permanently.

Step-1 : The first step is to make the photoconductive selenium plate charged positively with static electricity. This is done by passing a strong current of electricity of high voltage, (5000- 7000 volts) through a grid of wires kept very close to the plate.

Step-2 : The next step is to expose the original, kept in a regular camera like arrangement and capture an invisible image of the original on the plate. Here the document is illuminated well. Corresponding to text portions, where reflection of light is nil, positive charge on the plate remains as such. Corresponding to background or white portions, from which reflected

light is more, positive charges on the plate are destroyed. As the plate is photosensitive, it is covered by a protector sheet and removed from the camera unit.

Step-3: The third step is development of the image through cascading. Here a rectangular tray which can be conveniently fully covered by the photo conducting plate is used. In the tray the toner (ink powder) and carrier beads (usually plastic beads or natural vegetable seeds like mustard or khuskhus) are thoroughly mixed together. Here the ink is negatively charged. The photoconductive plate is placed over the tray tightly covering it and is tilted up and down to ensure sufficient close contact of toner and dispersant with the plate. Here the toner gets attracted to the plate because of polarity of the charges on the plate being the opposite of those on the ink particles. A visible reverse reading image is then obtained.

Step-4 : In the next step a paper is pressed over the image and a positive charge is applied to the paper in the corona charging unit. Image (ink) is transferred onto the paper.

Step-5 : The image on the paper is made permanent by means of the fixing process. This may be done by keeping the copy in a chamber containing vapours of organic solvent like trichloroethylene or by applying heat through heater lamps.

All the manual process explained above can be automated in a compact machine. Plain paper copiers as these are called have several capabilities. It is possible to get enlarged or reduced copies. Paper of different sizes, thicknesses and even a thin sheet of cellulose acetate film can be used for copying. Originals can be either single thin sheets or big bound books. The machines are fairly fast giving copies at the rate of 10 to 20 copies per minute. Sophisticated machines even allow to stack a number of originals and obtain any number of copies; copies produced can be collated and made into sets automatically. At present even colour reproduction is possible.

Electrostatic copying is the most common copying method. Costs are minimal. Quality of reproduction is satisfactory for most purposes. Presently they are within the reach of even small libraries.

(ii) Direct Method (Electrofax)

Here a zinc oxide coated paper is used. Because of the special coating the paper is made photoconductive. There is no transfer of the image as in xerox process. The coated paper is charged with negative static charge. The charged photoconductive paper is then exposed to the projected image of the document through a camera device. As a result, a right reading latent (invisible) image is obtained on the paper.

This paper is directly developed either by wet method or by dry method to get a visible copy. In the method of development the paper is passed through a liquid hydrocarbon containing finely divided ink powder in suspension. As the toner (ink) particles are positively charged, they get attracted to the paper with negative charge. In the dry method, the paper is brushed with

a magnetic brush containing iron filings carrying the toner power. The image is fixed by passing the paper through a hot chamber. In the liquid method, the exposed paper through a tray containing a solvent in which finely divided ink powder (toner) of positive polarity is suspended. The toner deposits over the latent image. The excess liquid is evaporated away by blowing hot air over it.

The copies obtained by electrofax method are heavy because of the coating involved. The copy quality is not good. However, fairly fast copying (10 copies per minute) may be produced. The cost per copy is also high as compared to that of plain paper copies. The direct copy method of electrofax copies is not much in use now. They were popular at a time when the initial cost of equipment was low compared to that of xerographic machines.

10.3.2 Diazographic Process

This method is suitable for making copies of one sided original in loose sheet form. In the diazo process a paper coated with a diazonium salt is used. Diazonium salt when reacting with a chemical called coupler produces a strong visible dye. The diazonium salt is destroyed when exposed to UV light but is unaffected in ordinary light.

To get a copy a transparent (one sided) original is kept on top of a diazo paper (with coated side facing top and the text of original facing top) and then exposed to UV light from top. As UV light does not penetrate through the text area, corresponding portions of the coating remain unaffected on the diazo paper. In the background areas, light passes through and so destroys the diazo compound on paper and thereby a right reading latent image is obtained. The image is developed by wiping the surface with the coupler solution and drying it.

The above mentioned method where the paper contains diazo compound and development is carried out by brushing with an alkaline coupler solution is a semidry process. There are two more variants of the developing methods. They are a) Vapour method and b) Thermal method.

(a) Vapour Method :

Here the paper contains diazonium compound, coupler and a weak acid. The purpose of the acid is to prevent premature reaction between coupler and the diazo compound. After the development of the latent image by the exposure of the original and diazo paper to UV light, the image is developed by placing the paper in a chamber containing the vapour of ammonia. As ammonia is alkaline the acid is neutralised and the coupler - diazo reaction takes place to yield a visible (dye) image.

(b) Thermal Method :

Here all the components needed for producing a copy are on the paper. The latent image by exposure to UV light is done as before. The development alone is done by passing through a heating chamber.

Characteristics of Diazo Copies :

They are good for engineering drawings and reproduction of fine details. Copies are not permanent and they fade away when exposed to light. Only one sided original can be used. The paper on which copies are obtained is fairly thick and heavy. Vapour-developed copies give out a pungent smell. The cost per copy is cheap. A large number of models for different needs are available.

10.3.3 Thermographic Process

This is a single step process. Special paper coated with heat sensitive material is used. The coating is affected by infrared light to produce a visible image but is not affected by ordinary light. The method is suitable for any type of original printed on one or both sides. However, there is only one restriction which is that the ink used for making the original should contain carbon or metallic content, Otherwise no copy can be obtained.

To get a copy by thermographic method, the original is placed above the coated paper (both facing top) and exposed to IR light from top. The background portions of the original are white and allow the heat from IR source to dissipate. The next portions absorb and radiate heat. When such absorbed heat reaches a peak, it starts rendering the coating on paper visible, and thus visible copy is obtained.

10.3.4 Photographic (Silver Halide) Process

This is the traditional photographic process where light sensitive silver halide films are exposed in cameras to the original well illuminated text. The exposed film is developed, fixed and washed and a negative is prepared. Any number of enlarged positive prints on photographic paper can be obtained through suitable dark room processing.

(i) Contact Printing (Facsimile) :

Eliminating the use of photographic film negatives, photocopies can be obtained directly by exposing the original in contact with photographic paper and by processing the exposed material. There are two main methods of contact printing. Transmission method (or print through process) is suitable for transparent or translucent single sided originals. Reflex method is suitable for matter printed on both sides.

a) Transmission Method :

In the print through process light passes through the document to the photographic paper. Here a right reading negative copy is obtained. The background is black and letters are white. In a single step a readable copy can be obtained.

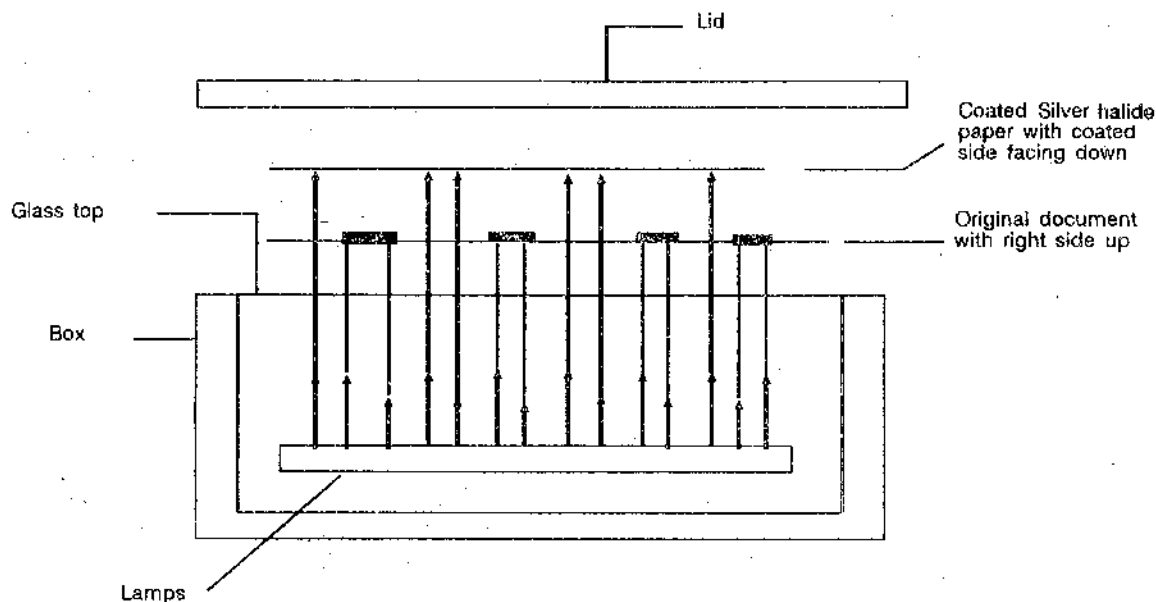


Fig 5. Transmission Copying Technique

b) Reflex Method :

In the reflex process light passes through the photographic paper to the original and gets reflected back to photo paper. Here the image is negative in tone (black background) and reverse reading. The same process has to be repeated in order to obtain a right reading positive copy on paper.

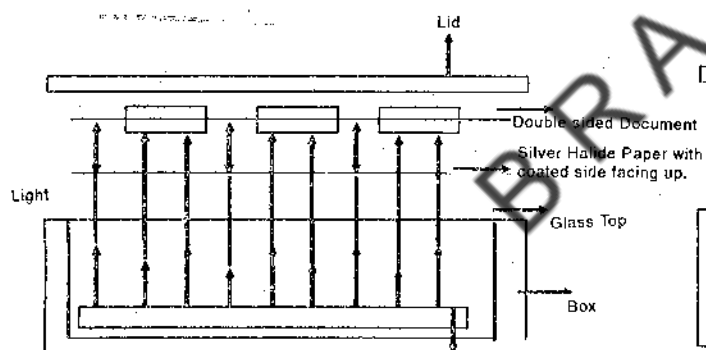


Fig 6 Reflex Method (Making negative)

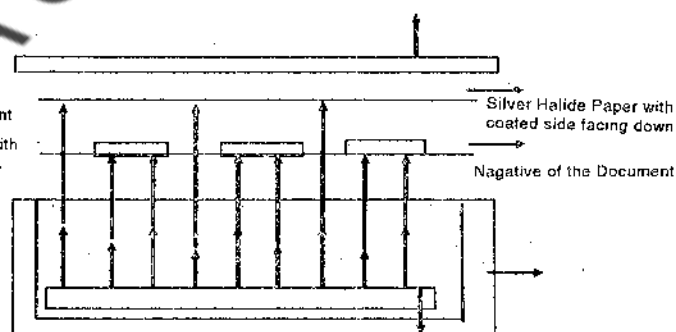


Fig 7 Reflex method (Making Positive)

Copies obtained by these contact methods can be of very good quality, if care is taken. They are costly. As all the steps involved in this method are manual, it is time consuming and cumbersome but simple to learn and use. Dark room facilities are needed.

(ii) Photostat Process :

This is another regular silver halide photographic process which uses a large process camera. A right reading but negative in tone photocopy can be obtained in a single step through a system of special lens or prism arrangement. This method, used for large drawings, plans etc, is also becoming obsolete.

Self-Check Exercise-2

Enumerate the steps involved in xerography (manual).

- Note: i) Write your answer in the space given below.
ii) Compare your answer with the model answer given at the end of this unit.

10.4 DUPLICATING PROCESS AND TECHNIQUES (MACROCOPIES)

Duplication is used to produce a large number of copies for distribution. In a library, the list of additions, circulars, current awareness bulletins, newsletters, etc., may be duplicated for wide distribution. They are basically three methods of duplication. These are 1) Offset duplication; 2) Stencil duplication; and 3) Spirit duplication.

10.4.1 Offset Duplication

All types of documents can be reproduced by offset duplication. Offset duplication is a simplified version of offset printing. In offset printing there are basically 3 steps. The first step consists in preparing the text commonly called "page forming and text composition". The second step deals with the preparation of a photographic master using a large process camera. The Final step is the running of multiple copies on an offset printing machine.

In offset duplication, the first step is not carried out as we are more concerned with duplicating the original as it is. Moreover, the preparing of the master in offset duplication is much simpler because a simple process like xerography is used. An image of the original is transferred to the master by common xerographic method.

The principle behind offset duplication is based on the fact that oil and water do not mix and one is repelled in the presence of the other. A master in offset process consists of a thin sheet of aluminium or a thick sheet of paper, the surface of which is specially treated. A right reading image of the original is transferred to the master by direct electrostat process. The ink making up the text portion is made up of serographic ink (toner) and has some oil on it. The non-text area should not be smeared with ink, when ink applied to text area. This can be done by rendering non-text area watery or wet. This is usually achieved by swabbing the non-text area by a sponge dipped in an aqueous solution of a gum. The purpose of gum is to help water stay in place for some time. The gum dries up in the background area and

becomes wet when a sponge containing water is pressed over it. Now if a plain sheet of paper is pressed over an offset master which contains oily (ink) text area and watery (wet) non-text area, then a copy of the original can be obtained. But this copy on paper will be reverse reading.

In order to obtain a right copy, the offset duplicating machine is used. It consists basically of 3 big rollers. The first roller is the master roller and on to this the master is mounted. In addition to the three main (big) rollers, two small rollers - one for watering and another for inking-are used to make the master constantly coated with water in non-text areas and ink in text areas. The second roller is called the 'blanket roller'. The purpose of this roller is to get transferred onto its surface a reverse reading image from the master of the master roller. The third roller is used only to apply pressure between the second and third roller so that when a plain paper is passed through these two rollers, a right reading copy is transferred from the second roller to the paper. The rollers are so arranged as to rotate as shown in the figure. The feeding of paper, movement and the directing of the rollers, the inking and wetting jobs are all perfectly synchronised to produce thousands of copies quickly.

The whole process is called 'offset process' because the image is set off from one roller to another in a sequential fashion.

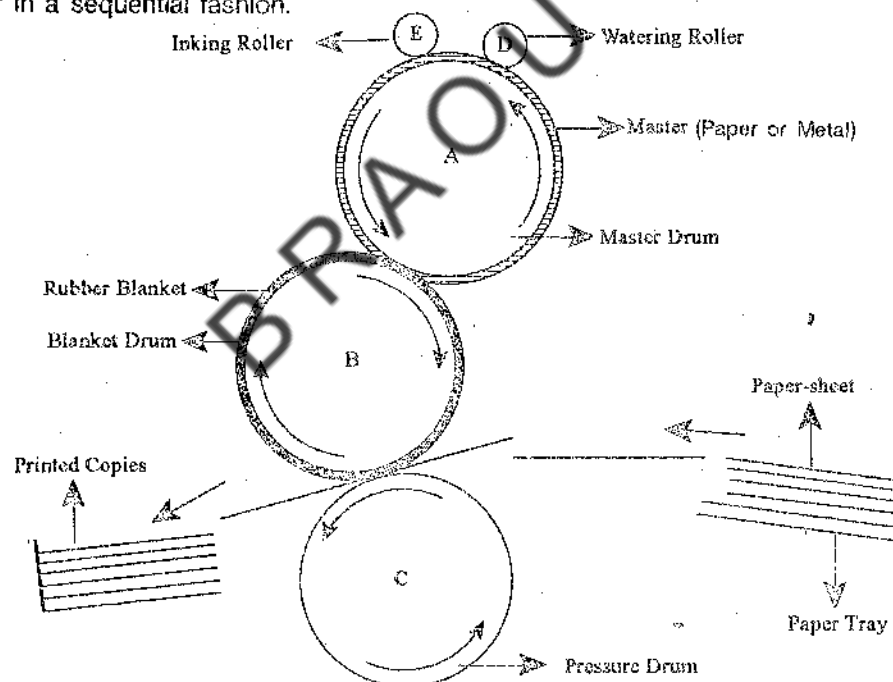


Figure 8 : Schematic Diagram: offset printing

It is worth nothing that the master can be prepared manually by hand also. A lithographic ribbon is used in the typewriter, if typing is done on the master. A lithographic carbon sheet is used if the master is hand written. This special ink contains oil; hence its suitability for offset master preparation. Offset printing or duplication yields good copies, very quickly (1000- 8000 copies per hour) and the cost per copy is very cheap. The machine is expensive and requires a trained operator.

10.4.2 Stencil Duplication

This is the most commonly used method in offices for making a few hundred copies. 'Mimeography' and 'Cyclostyling' are the other names for this method. Two steps are involved in stencil duplication: 1) Stencil preparation; and 2) Taking out copies on the duplicating machine.

i) Stencil Preparation :

Stencil preparation may be done a) manually; and b) by using an equipment called 'electronic stencil cutter'.

a) Manual Method :

In the manual method the stencil is made up of a thin, strong sheet of wax coated paper. The waxed sheet itself is supported on a thick sheet of paper pasted at the top. A stylus is used to write or draw the matter to be duplicated on the stencil. Generally, a thick plastic sheet is used as support while preparing the stencil manually. Stencil sheet can be used on an ordinary typewriter and the matter can be typed after taking out the ribbon so that the typewriter's hammer strikes directly on the stencil. When the stencil is thus "Cut", a perforation allows ink to flow through, which is subsequently passed on to a plain paper, to produce a copy.

b) Electronic Stencil Cutting :

This method is suitable for producing stencil from any type of original handwritten, typed, graphic, etc. The original has to be in the form of a loose sheet. The size of the stencil prepared is normally limited to the foolscap paper size. However, the original needed in loose leaf form can be an enlarged or a reduced copy obtained by other copying methods. The machine uses a stencil made up of special carbon coated paper.

The stencil cutter works as is indicated here. An electronic optical sensing device scans the original mounted on to a drum which rotates at a constant speed. Synchronising with this drum, the stencil also rotates on another drum. On the second drum where the stencil is mounted, a metallic stylus cuts the stencil by burning part of the carbon deposit through the emitting of a spark. The optoelectronic scanning device throws a tiny speck of light on the document. The light is reflected back if the portion of the original being scanned has no text. No light is reflected, if text is present. Whenever light is reflected back, the stylus on the corresponding drum does not emit any spark; whenever light is not reflected, the stylus emits a spark, burning a small portion of the stencil. The drums, their movement and direction, speed, etc., are synchronised so as to enable the scanning of the original and the burning of the stencil to be carried out in about 7-8 minutes. The stencil cut in this machine can be used in the duplicating machine for taking out copies.

ii) Copy Making :

Stencilling machine, also called 'duplicating machine', is one of the most commonly used office machines. The stencil is mounted on to a perforated drum previously smeared with ink. The stencil is mounted with the right reading side facing the drum surface. The machine has a mechanism to pick up plain paper and pass it through the drum and a pressure roller. The drum and the pressure roller move in opposite directions. Ink percolates through perforation on to the paper, producing a copy. Stencil duplication is fairly simple, widely used and cheap and can be operated with very little experience. It is good for a few hundred copies.

10.4.3 Spirit Duplication

It is also called 'hectography'. A special carbon paper which has a coating of an alcohol (spirit) soluble dye (instead of normal carbon) is used. Such 'carbon papers' are called 'hectographic carbons' and are available in different colours like yellow, purple, green, etc., though purple is the most common. The master called 'receiver sheet' is prepared on a stiff glazed sheet of paper. The matter to be duplicated is written or typed on to the back side of the receiver sheet, when the glazed side of receiver sheet is facing the dye side of the carbon.

To take out copies a spirit duplicator is used. This has a drum fitted with a felt surface. The master is mounted over the felt surface, with the impression side facing up. Prior to mounting, the master is smeared with cotton containing spirit and the surface is wetted thoroughly. The spirit dissolves a portion of the dye and is transferred to the paper when the paper gets pressed between the pressure roller and the rotating drum. Copies obtained by the process are not very satisfactory. They cannot be preserved for long time. Only about 100-200 copies can be had from one master as the number of copies is limited to the dye deposited on to the master. This is the only method wherein we can get copies in different colours in a single run. To achieve this the master needs to be prepared carefully using different coloured carbons.

Self-Check Exercise-3

Give in a tabular form the salient points comparing the three important duplicating methods.

- Note: i) Write your answer in the space given below.
ii) Compare your answer with the model given at the end of this unit.

10.5 MICROGRAPHY AND MICROCOPIES

Micrography may be described as miniaturisation of a document. A copy, highly reduced in size, is produced which requires a microfilm reader to read. Any type of document can be microfilmed. In microfilming, using different lenses for reduction, the documents of different sizes are reduced to 'standard' miniaturised size.

10.5.1 Advantages

- 1) The most important advantage of microforms is the saving in storage space. Up to 98% of storage space can be easily saved. This is a boon when we realize that back volumes in a library keep growing fast.
- 2) They are easy to handle, store or transport as compared to books, drawings, record files, etc. Microforms can be conveniently stored. Labelling and indexing are easy. They can be sent by mail without incurring much postage. Microform can be lent in place of the original.
- 3) Microforms are free from vandalism; pages cannot be torn away nor sketches removed. Copies of microforms can be produced and given to user's exclusive use, if necessary.
- 4) Microform editions of books, catalogues and journals are far cheaper as compared to normal printed ones.
- 5) Many publications like government reports and in-house research reports are available only in microform. The library will find it convenient to buy in microform.
- 6) A large volume of data, like census, population, back files for newspapers, land records, etc., can be economically kept in microform.

10.5.2 Microformats

Microfilms are the most commonly used types of microforms. Microfilms come in different formats. Silver halide films are used for making original microfilms using a microfilming camera. Duplicates of the original are made using cheaper diazo microfilms. Depending upon the purpose, the volume of data and size of the original, microfilms are produced in different formats.

i) Microfilm roll :

These come in continuous lengths of width of 16mm or 35mm. In a spool of 100ft of 16mm film about 2500 pages of originals of the size 11"x17" can be recorded whereas 35mm film roll can keep around 600 pages. For engineering and other large size drawings 70mm films are used.

ii) Microfiche :

Sheet microfilm, commonly known as 'microfiche', is a sheet of the size 4"x 6". Depending upon the reduction ratio used each microfiche can hold the following number of images :

18.2 x 5 rows 12 columns = 60 images.

24 x 7 rows 14 columns = 98 images.

48 x 15 rows 18 columns = 270 images.

The top rows are left blank and are filled in with a readable title of the document.

iii) Unitised microfilm :

a) Strips

Microfilm roll of the width 16mm or 35mm is cut into strips of convenient short lengths and used as such to enable easy handling. Usually 10 frames (or pages) make up a strip. The strips can also be kept in paper packets or in transparent acetate jackets to avoid dust and scratches. Several strips can be kept on a sheet and the sheets can be held in book form. Indexing and title information may also be provided.

b) Aperture cards

On a standard IBM punched card, a rectangular aperture of the size 3cm x 4cm is made. A 35 mm roll film (single frame) is mounted. They are very useful for very large volumes of engineering drawings. Cards can be punched and sorted and stored. Retrieval of cards by topic (coded) is also easy.

iv) Microopaques :

When microprints are produced on a thick sheet of paper they are called 'micro opaques'. They can be enlarged and read by special devices. Microopaques are becoming obsolete now.

10.5.3 Micrography Related Equipments

In order to produce microfilm, microfilming cameras are used. The exposed films in the camera have to be processed. Both manual and automatic microfilm processors are available. In order to read the contents of the microfilm or microfiche, microfilm readers or reader/printers are needed. For efficient, economical, safe and convenient storage specially designed microfilm filing cabinets are used.

Only large establishments are likely to go in for full fledged systems for micrography right from microfilming equipment to large volume microfilm cabinets, etc. However, most libraries are end users of documents in microform. So they have microfilm readers or reader/ printers.

A microfilm reader is an equipment which helps to magnify and visually read on a screen the projected and illuminated image of a single frame of the microfilm at a time. The same equipment allows the use of microfilm in roll form and as well as microfiche. In the case of a roll film there are 2 spools for winding and rewinding the microfilm as in a film projector. But the spool size is very small. Since information is stored in frames in a sequential fashion, it is necessary to locate where exactly the relevant information we need is available. In the case of microfiche the fiche is held in a holder which can be moved horizontally, vertically or rotated through 90 degrees. The last provision is necessary to read wide tables printed along the length of the page. Reader-printers allow the production of a paper copy of the relevant frame being read. Both coated paper copying systems and plain paper copying systems are available. Coated paper system is initially cheap but costly in the long run. The coated paper has the limitation of shelf life and as such coated paper systems are not much favoured.

Self-Check exercise-4

- (a) Mention the points you would elaborate while describing the advantages of reprographic and micrographic services in a library.

Note: i) Write your answer in the space given below.
ii) Compare your answer with the model answer given at the end of this unit.

- (b) What are the common formats of microforms?

10.6 MANAGEMENT OF REPROGRAPHIC SERVICES

Nowadays even small libraries have photocopying services. Many procure documents in microforms and provide microfilm readers or reader-printers. Larger libraries have full fledged reprographic services housing various types of copiers, duplicating equipments, microform produc-

tion, duplication or reading equipments. Therefore, it is necessary for the librarian to be knowledgeable in respect of the management aspects of reprographic services.

It is worthwhile keeping in mind a few guidelines which may be called policy decisions. The following are some of such policy guidelines:

- * A reprographic department is a service department. All activities should be geared to fulfil the needs of the whole organisation.
- * Allotment of space, money and staff should be commensurate with the service expected.
- * As department in itself, the reprographic department must have the authority and independence to function.
- * The services shall be so organised that among the factors like cost, time, convenience, quality no single factor gains undue attention over the others.
- * To avoid conflicts of priority, outside jobwork should not be entertained, it may fetch money.

In the light of policy guidelines so framed the management of a reprographic centre can be discussed under seven elements of management. These elements are planning, organising, staffing, directing, coordinating reporting and budgeting.

i) Planning :

Planning is a process whereby the resources needed for a reprographic department are viewed in short and long range perspectives and a working programme is evolved to execute the functions of the department with efficiency and speed.

As a result of planning we can ascertain the following:

- Services to be provided
- Equipments to be purchased
- Space requirements
- Staff requirements
- Budget & Finance

The user's needs determine what services are really needed. This may be ascertained through detailed surveys, if the user population is large and scattered; personal interviews; study of similar reprographic centre; taking advice from professionals and peers. The requirements of the users may be listed out and taken up for fulfilment after deciding on their priorities.

As a result of the user surveys undertaken to assess the reprographic requirements we may, perhaps, arrive at a set of functions for the reprographic department as listed here under :

- * Provide photocopying facility : paper copies
- * Provide paper copy from microform
- * Reading room facility for microform
- * Preparation of overhead transparencies
- * Preparation of 35mm slides
- * Preparation of audio visual kits
- * Duplicating facilities for production of newsletters, current awareness bulletins, selective dissemination of information notices, circulars, forms, bibliographies, abstracting periodicals, etc.
- * Provision of documents in microformat for inter lending, for example, microfiche duplication.

The department must be located in a place convenient for all users and must not be regarded as a section to be shoved into the cellar or basement! Sufficient room for staff, equipment, movement of personnel and easy flow of materials from one stage to another, etc., must be provided.

While selecting equipment to be acquired, we must take into consideration cost, quality, availability of spares and consumables and availability of after sales service. Consultation with other established reprographic centres and going by their experience and advice is helpful. Rapid obsolescence of reprographic equipment is a factor to be kept in mind while planning.

ii) Organising :

The reprographic department should be suitably placed among other departments showing independence, and authority needed to fulfill the responsibilities expected of it. Within the reprographic department, if it is large enough, further sections like photocopying, microfilming, reader services, audiovisuals preparation, secretariat, etc., may be organised.

iii) Staffing :

The head of the department must be professionally qualified and knowledgeable. Apart from a reprographer, we may have photographers, printers, lay-out artists, operators for the duplicating machine, cameras, photocopying machines, etc., also. Their salaries and status must be comparable to those of the other members similarly placed. Continuous training must be ensured as equipments and techniques become obsolete very quickly.

iv) Directing and Coordinating :

The Head of the reprographic department must be a leader capable of motivating his staff to put in their best effort so as to provide efficient service. He should also have special

skills in coordinating and liaising with other departments and sort out problems arising out of conflicts of priority, people, etc.

v) Reporting :

It is the responsibility of the Head of the department to ensure that the personnel have a well defined reporting pattern. Periodical progress reports on work accomplished, work planned and pending work must be made. In turn, the Head of reprographics department keeps the head of the institution informed of the progress either through regular reports or through exceptional reporting.

vi) Finance and Budget :

Every year a budget has to be drawn up indicating the allotment of funds needed under various heads or activities. The following are some typical items :

- Purchase of new equipment
- Rentals / lease for equipments
- Repairs / maintenance contracts
- Replacement of obsolete or non-repairable equipment
- Spares and consumables

Of course, budget provision must be sought for staff, space and other items as well. It may be possible in some instances to generate funds by providing services for a fee. Then the income generated should also be taken into account.

Thus management of reprographic services is important and the Head should be a professionally qualified specialist in the field.

10.7 SUMMING UP

In this unit we have discussed the basics of reprography and micrography. Major process of producing macro copies, different methods of duplication and fundamentals of micrography have been covered. Advantages of reprographic and micrographic services and management aspects of such a reprographic centre in a library have been discussed.

10.8 MODEL ANSWERS

1.
 - a) Help procurement of out-of-print material or unpublished works;
 - b) Provide copies of achival and other valuable records;
 - c) Acquisition of copies of portions of books, periodicals etc., without having to acquire the whole of the original;
 - d) Publication in limited editions.

2. The manual method of getting xerox copies consists of the following five steps :
 - a) Charging photoconducting plate in a charging unit;
 - b) Exposing the charged plate in a camera;
 - c) Development of the latent image;
 - d) Transferring developed image to paper; and
 - e) Fixing the image.
3. Comparison of Duplication Methods

Characteristics	Spirit	Stencil	Offset
Copy quality	Poor	Fair	Excellent
No. of. copies	100	500-1000	2000-8000
Ease of use of Equipment	Easy	Manageable	Difficult
Colour printing in a single run	Possible	Impossible	Impossible

4.
 - a) True copy; Economy; Quick copies; Ease of handling and filing; space saving; reprinting ; archival copy; obtaining only portions of a book; interlibrary loans.
 - b) Microfilm rolls of 16mm or 35mm; Microfiche; Aperture cards; Micro opaques and microfilm strips are common micro formats.

10.9 ASSIGNMENT

1. State the four major processes for macrocopying. Explain in detail the manual method of producing xerox copies.
2. Discuss the advantages and disadvantages of the three different methods of duplication.
3. Describe the various commonly used microformats in a library. How is the microform advantageous?
4. Write a short essay on the management of a reprographic centre.

10.10 RECOMMENDED BOOKS

1. CRUX, Frederic C. *Reprographic Management Handbook*. 2nd ed. London: Business Books, 1979. (Published in association with Institute of Reprographic Technology, London).
2. MICROFORM *Librarianship*. 2nd ed. London: Butterworth, 1979.
3. NEW, Peter G. *Reprography for Libraries*. London: Clive Bingley, 1975.
4. TEPLITZ, A. "Microfilm and Reprography". In *Annual Review of Information Science and Technology*, Vol. 5; 1970, p.87-111.
5. KUCERA, Thomas J. "Reprography". IN *Kirk and Othmer Encyclopedia of Chemical Technology*, Vol.20. New York: Wiley Inter Science, 1982; p. 128-179

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UNIT 11 - USE OF COMPUTERS IN INFORMATION STORAGE AND RETRIEVAL

Contents

- 11.0 Aims and Objectives
- 11.1 Introduction
- 11.2 Advantages of using Computers
- 11.3 Computers: Components and Functions
 - 11.3.1 Types of Computers
 - 11.3.2 Computer Peripherals
 - 11.3.3 Computer Software
 - 11.3.4 How Computers Function
- 11.4 Use of computers in library operations
 - 11.4.1 Books Acquisition and Processing
 - 11.4.2 Serials Control
 - 11.4.3 Circulation Control
 - 11.4.4 Budget Control
- 11.5 Use of Computers in information work
 - 11.5.1 Indexing
 - 11.5.2 Information Storage and Retrieval
- 11.6 Use of Computers in Documentation Services
 - 11.6.1 Current Awareness Services
 - 11.6.2 Abstracting and Indexing Services
 - 11.6.3 Selective Dissemination of Information
 - 11.6.4 Retrospective Searches
 - 11.6.5 Preparation of Bibliographies
 - 11.6.6 Directory Generation
 - 11.6.7 Other Applications
- 11.7 Software Available
- 11.8 Summing Up
- 11.9 Model answers
- 11.10 Assignments
- 11.11 Recommended Books
- 11.12 Glossary and Abbreviations

11.0 AIMS AND OBJECTIVES

In this unit the use of computers in information organisation, storage, retrieval and dissemination are discussed. After studying this unit you should be able to:

- Describe the Components and peripherals of a computer;
- Explain how a Computer Functions; and
- Enumerate the various applications of computers to library and documentation work and services.

11.1 INTRODUCTION

The phenomenal growth of information in various branches of knowledge is making it difficult for individuals to organise and retrieve the relevant information. The multi-disciplinary nature of information calls for multiple approaches to information. The enormous increase in the number of micro documents like research papers and photo copies is imposing considerable strain on the information organisation. To provide manually the available information to the users having multi-dimensional interests at short notice is difficult, if not impossible. Hence the computers have come to play a significant role in information storage, retrieval, and dissemination.

11.2 ADVANTAGES OF USING COMPUTERS

There are several advantages in using computers in information processing such as the following:

- 1) The undertaking of an in-depth analysis of the subject content of the documents to suggest multiple approaches to different users with the aid of sophisticated indexing techniques is feasible;
- 2) Retrieval of information is faster, thus saving the time of the user as well as that of the information scientist;
- 3) With a single input it is possible to have multiple outputs: e.g., with the help of the computer using the same input, current awareness lists, abstracting and indexing bulletins, bibliography, etc., can be produced. Thus the computer relieves the professional and the clerical staff the drudgery of performing respective operations;
- 4) Updating of information files becomes easier and faster with the use of computers;
- 5) Use of computers facilitates the providing of effective and efficient SDI service about which you studied in your previous lesson;

6) Some operations which require laborious effort and time in manual systems or which are error prone can be done with ease and efficiency in the computer:

7) Use of computers helps in accessing the information from various databases scattered over a number of places. (You will learn how this is being done in your next unit); and

8) Networking of numerous information centres is facilitated in the computerised environment. (You will learn about this also later).

Librarians and information scientists have to be acquainted with the elements of computer processing so as to have effective control over the use of computers in their areas of operations. This enables them to communicate freely with the computer systems experts as well as to evaluate the system's effectiveness in a specific environment. Nowadays the computers' market is highly competitive with new equipment replacing the old very quickly. Hence the basic knowledge of the current state of computer technology is essential to exploit its use to the full extent.

Self Check Exercise-1

What are the advantages of using computers in information storage and retrieval ?

- Note:
- i) Give your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

11.3 COMPUTER - COMPONENTS AND FUNCTIONS

Digital Computers operate mainly through counting, i.e., through the converting of letters, numbers, and other symbols into the coded form represented by the presence or the absence of an electric impulse in the binary form. The input so received is stored in the Central Processing Unit (CPU), which is the memory of the Computer. The information in the memory is processed and the results are presented in the desired form of output. A set of precise instructions, called program, is necessary to process the information stored in the computer and convert it into the output. The operations involving calculations, comparisons and those of the logic type are performed in the Arithmetic Logic Unit (ALU). In order to ensure that the information is correctly placed in store, and that the programme is strictly followed in the proper sequence,

and that appropriate data is selected from the memory, a control unit is required. This control unit together with ALU and memory unit form the Central Processing Unit (CPU).

Basically, the computer functions in the following manner:

It receives information (input) ; it processes this information according to the set of precise instructions given (in the CPU); has to store the information in the memory before it can carry out any processing operations. Two kinds of information have to be fed into it the program and the data. The program is the set of instructions which the computer is to carry out, and the data is the information on which these instructions are to operate.

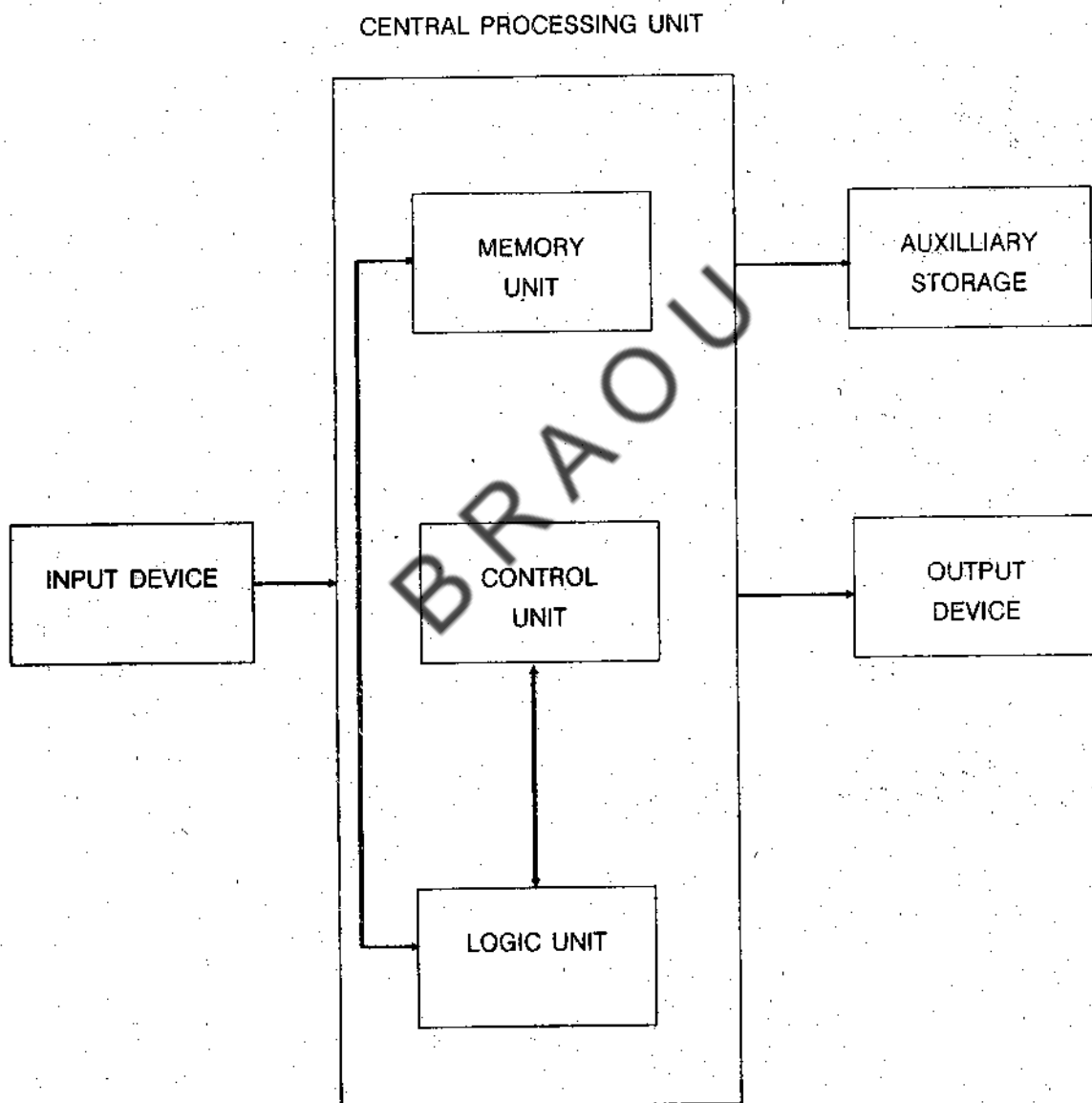


Fig. 9 Components of a Computer

The programme instructions and data are transferred from the input device into the memory under the direction of the control unit. During the programme execution each instruction is received in a proper sequence from the memory and interpreted. The control unit informs the ALU of the precise operation to be performed and directs the transfer to it. The ALU executes all calculations and comparisons, and the results are then passed on to the memory and from there to the output device under the direction of the control unit.

All information is represented within the computer by the presence or absence of signals in the binary form. The binary number system has only two digits, zero (0) (absence of signal) and one (1) (Presence of signal) to express it. This binary coded digit is called a 'bit'. All the familiar characters, numbers, punctuation marks, special symbols which we use in writing are represented in the computer by the combinations of bits. Remember that a blank space is also regarded as a character by the computer. A set containing all these characters is known as 'alphanumeric or alphameric' character set. A set representing only numbers - zero to nine (0 to 9)- is called numeric.

The number of symbols which can be encoded will depend upon the number of signals that is combined for each symbol. A common method of coding is to use a combination of six signals. If one allows six bits per symbol, one can encode upto 64 different symbols, because six bits can be arranged in 64 unique ways. This takes care of the 26 letters of the English alphabet, and 10 decimal digits, and can accomodate upto 28 special symbols to include punctuation marks, mathematical and monetary signs.

Information in computers is also expressed in words. A computer "word" is a group of bits, the length varying from machine to machine, which is predetermined for each machine. The size of the word varies from 8 bits to 60 bits. The larger the number of bits in a word the storage of a longer number in the word is possible. In some computers the fundamental grouping of bits is called a 'byte' instead of a word. A byte is usually shorter than a word, consisting of only 8 bits. The computer memory is used to store both data and the instructions (programme) to execute the job.

11.3.1 Types of Computers

With the rapid developments in computer technology the capabilities of the computers are fast changing. When we talk of first, second, third or fourth generation of computers we refer to the rising levels of development. The volume and speed with which the computers work varies vastly. Generally, computers are classified as super, mainframe, mini and micro. With the latest developments in micro computers (also known as Personal Computers or PCs) the difference between mini and micro computers is disappearing gradually. Computer prices over the years have showed a remarkable fall. The present day PC/ATs can perform better functions than the main frames of the second generation. This has facilitated the use of computers in many areas, especially in libraries and information centres. PCs, PC/XT, PC/AT all come under the category of micros.

Memory of the Computer :

There are various types of memory chips. A micro computer can utilise more than one type. The most common is "Random Access Memory" (RAM). Information can be read from and written into it. When switched off, any information stored in the memory is lost.

Another type of memory is "Read Only Memory" (ROM). Information is 'burnt' into the ROM chip at the manufacturing time. It cannot be altered and fresh information cannot be written into a ROM. It can only be read and transferred for use elsewhere; for example, to RAM. ROMs are used in applications where information never needs to be altered; e.g., the operating system software which controls the use of complete micro computer system.

Memory (RAM) of a micro computer ranges from a few kilo bytes to a few mega bytes. Nowadays we have systems with expandable memory of over 4mb (megabytes) in the case of micros.

11.3.2 Computer Peripherals

Computer peripherals generally include input and output devices and the auxiliary storage devices. Input devices are the means for transferring data and instructions into the computer. These devices include the earlier punched card readers, and the present day key boards with "Visual Display Unit" (VDU). The VDU is a unit which has a key board, like that of a typewriter and a screen like a television receiver. The input is keyed in which it appears on the screen. Magnetic character recognition and optical character recognition devices are the new additions to this. Computer Input Microform (CIM) makes it possible to input information directly from the microfilm.

The line printers and dot matrix printers are the output devices through which the printouts of final outputs are provided. In the line printers one line is printed at a time. At present a wide variety of computer printers with different print types are available. Laser printers give a quality print output which can directly be used as a master for offset printing. The line printers print the entire line at a stroke. The speed may be over 600 lines per minute. In dot matrix printers the printing is by characters. It can be 80 character per second (CPS) or 450 CPS. The technological changes in the field of micro electronics is making it possible to assemble the higher speed printers at lower cost. The number of characters per line may be 80 or 132 or higher. For selecting a printer for your information centre you have to know these basic features. The cost of dot matrix printers with near letter quality printing is within the reach of PC user. Thus many libraries and information centres can easily acquire micro computer with dot matrix printer to improve the effectiveness of its information services. Computer output microfilm (COM) and VDU are other output devices. The COM translates information normally held on magnetic tape into miniature images on microfilm. The information is displayed as characters on cathode ray tube screen. Then using photographic methods this is displayed on a film, usually 16 or 35mm.

Microfiche is small and its speed of recording is 25 to 50 times faster than the average line printer.

Auxiliary Storage :

Apart from the main memory the computer makes use of auxiliary storage units. These are useful in storing large quantities of information which the main memory cannot hold. The use of these auxiliary storage devices helps in performing a number of jobs on the computer with a limited memory. Magnetic tapes, magnetic disks, and floppy diskettes are used as auxiliary memory.

Magnetic tape provides only serial access. It can be referenced many times without replacement. Information can be erased by recording new information in its place. It is similar to the tape used on a tape recorder. The tape has a ferromagnetic coating on a plastic base, and is usually 1/2 inch wide and comes in reels of 50 to 2400 feet. Information recorded on the tape is stored in varying densities such as 556, 800, 1600, or 6250 characters per inch.

Magnetic disk has direct access, resembling the shape of an LP recorder. Its memory may vary from 10 mb to over 1000 mb. Data on this is stored on tracks.

Floppy disks or diskettes, used in micro computers, are small random access disks. They are in the standard sizes of 8 or 5 1/4, or 3 1/2 inches. These can store 125 K bytes to 1.2 mb information. Some floppy disks allow the recording of data on both sides whereas on others it can be recorded only on one side.

Winchester disk drives are another auxiliary storage device. The processing speed of the computer is expressed in Mhz (Mega hertz). The latest technological improvements have enabled the microprocessors to raise their speed from around 8 mhz to 30 mhz. In the mainframe and in supercomputers the speed is many times more. You might have heard about the processing of a few lakh instructions in a few seconds, which a super computer could accomplish.

11.3.3 Computer Software

Computer software refers to computer programmes, procedures, rules and associated documentation and data pertaining to the operation of a computer.

The Software is broadly of two types:

i) System software: This consists of programmes needed for the functioning of the computer and for providing user computer interface. This is generally supplied by the manufacturer.

ii) Application software: These are computer programmes developed to perform tasks specific to the individual user: for example, programme for the preparation of index cards.

11.3.4 How Computers Function?

Information is stored and processed in a computer as indicated here under:

File creation: First of all, one has to analyse the resources at one's command and plan the outputs one wants to generate from processing this data/information. This is called systems analysis. Thorough knowledge of the subject coupled with the knowledge of the way the computer processes information is essential for undertaking systems analysis.

The next step is the organisation of the file. Data relating to a specific application (for example, book ordering, acquisition and processing) is organised as a separate file. Each file is made up of a number of records which in turn contain a number of fields. Each record in a given file pertains to the individual entity in the file and it has the same structure, i.e., the same number of fields, with a given field in each record always containing information about a particular element. The field length may be fixed or variable according to the layout prescribed. In a fixed length field the number of characters are predetermined and the same length remains for each record: e.g., Author field is defined as having 35 characters. If the author's name is shorter than this, the field still takes up the entire space defined for it.

Self Check Exercise-2

Explain computer file, record and field?

- Note :
- i) Give your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

11.4 USE OF COMPUTERS IN LIBRARY OPERATIONS

Computers are increasingly being used in Library operations, viz, cataloging, circulation, acquisition, serial control, as also in management support, i.e., in accounting, budget control, etc.

11.4.1 Books Acquisition and Processing

In the above mentioned file, information about each book is a record whereas in each record there will be a number of fields like Author, title, book order date, vendor, book received date, call number, accession number, etc., A particular record from the file is selected by choosing

one of the fields as key. For example, in the books file each record is selected by the name of the author. However a file may have to be searched in more than one way. In the books' file it may be by title, subject, vendor, accession number or date of order. A search programme can scan the records on file and produce the list according to the requirement. The file created at the time of book selection and ordering is useful in carrying out further processing jobs. Library management involves multiple operations each of which has some common elements, resulting in duplication at every stage. However, the file structure can be designed to avoid this kind of duplication using computers: e.g., Author, title, publisher mentioned in the order file can be used in the preparation of accession lists as well as in cataloguing. Machine readable catalogues are available. You must have heard about MARC tapes. This is nothing but machine readable catalogue of the LC or British National Bibliography. Multiple approaches to the information are also possible by using the same data. Verification for duplicates, sending reminders to the vendors, the recording of receipts, etc., become possible with this single file. This naturally results in the reduction of man hours spent on performing these various library operations manually, besides speeding up the process of search.

11.4.2 Serials Control

This procedure is applicable to serials' acquisition also. The system can be so designed as to send periodically reminders to the suppliers/publishers for non-receipt of serials. This naturally gives tremendous advantages, especially to libraries subscribing to a vast number of serials from different suppliers.

A modern computer-based serials control system is capable of performing the following functions:

- i) Registration or checking-in of incoming serial issues;
- ii) The claiming of overdue issues;
- iii) Preparation of lists of titles ready for binding;
- iv) Printing of lists of currently received titles;
- v) The alerting of the library management about renewals of subscriptions.

11.4.3 Circulation Control

The above mentioned book file could be linked to the borrowers data file to have control over circulation of library material. The system can be programmed so as to send reminders to the defaulters using the same data.

All records resulting from transactions at the circulation counter are processed in the computer at the end of the day to produce several kinds of output. The usual outputs produced are:

- (i) a list arranged by author names of books out on loan containing information on who the borrowers are, due date, etc.;
- (ii) reminder notices to readers for books which are overdue;
- (iii) notices to readers who have made reservations for books which had been on loan and were returned;
- (iv) statistics of book usage.

Besides batch processed circulation control system, the development of microcomputers and VDT's has enabled the development of on-line systems for circulation control systems.

11.4.4 Budget Control

Use of computers helps in having better control over the expenditure under different heads, especially in large libraries and information centers. Payments to different vendors could be verified promptly.

11.5 Use of Computer in Information Work

In the earlier units Information Storage and Retrieval systems were explained. As has been pointed out the IRS involves indexing/classification of documents/information, storage and retrieval. In the computerised IRS also the same stages are involved. We shall now see to what extent the computer is used in these operations:

11.5.1 Indexing

Assignment of indexing terms in a computerised system may be intellectual as in the case of pre-coordinate indexing system. Alternatively, this can be machine assigned as in the case of post-coordinate indexing system like KWIC, KWOC, KWAC or KWIT which are essentially designed to be used in the computerised environment.

In the post coordinate systems the index words in a title are compared with a stop word list to suppress the generation of unnecessary index entries. The stop word list contains which of the entries are not required such as 'them, his, her, and, the, a, etc. Each word in the title or abstract is compared with that in the stop word list and if a match occurs it is rejected. If no match is found, the term is treated as a keyword and used as an entry-word. In this case the machine selects index terms according to a set of instructions. Selection depends on word occurrences and not on the subjective analysis of the content or on the assignment of controlled vocabulary. The index entries so assigned that they can be arranged by the computer alphabetically for the printing of indexes. Index terms also can be arranged within the index entries to generate a series of entries or references from one string of index terms. In the case

of indexes based on intellectually assigned index terms also computers are used. The PRECIS is intended to be useful in the computerised environment. The indexer selects a string of index terms from which the computer prints a series of entries for the document with the help of a programme developed for the purpose.

Controlled indexing languages are used in the indexing systems which are useful in the computerised system, since the computers cannot distinguish between terms as we can do in normal indexing. The controlled vocabulary list or thesaurus is stored in the computer as a separate file.

11.5.2 Storage and Retrieval

Computers are helpful in bringing out the printed cumulative indexes. Over a period of time as the information keeps growing it becomes difficult to manage the entries in proper sequence, especially for depicting the relationship between different terms. Such problems have been solved by the computers. Updation of the indexes is quite simple in computerised indexing systems. The programme developed for this specific purpose automatically arranges the index terms in the proper sequence and context as soon as the index terms for the new document are keyed into the computer.

Retrieval process in the manual or computerised environment is similar. The query has to be analysed into the appropriate index terms and the same have to be fed into the computer. Whenever search terms are assigned manually and the same data are fed into the computer, the programme takes care to convert these search terms into the standard terminology used in that particular thesaurus and generate standard indexes instantly. Thus the time and labour involved in consulting the thesaurus every time manually is automatically reduced. Criteria for Machine Searching are:

1. Identification and analysis of users requests;
2. Translation of request into the system's language;
3. The comparing of the request with the document in the database;
4. Selection of the documents that match the search criteria.

Batch processing : A number of queries can be bunched and asked at one time. This is known as batch processing. In batch processing individual requests have to be filled in the prescribed formats. These requests are processed in batches. Where the volume of requests is small the batch processing is common. However, nowadays every one needs his requirements to be met immediately. Hence even in small information centres the trend is towards providing on line search, which is explained in the next para.

On-line Search : Retrieval of information from a machine-held file may be direct interrogation of the computer file. This is called as "on-line search".

An on-line search is performed at an on-line terminal. In the on-line search a number of users can have access to the information collection at the same time. The main computer is connected to a number of terminals located at different places may be in the same premises, same country, or anywhere in the world. When an on-line terminal is also located inside the premises where the main computer is located it is connected to the main computer through cable lines. If they are outside the city they are connected through the post, telegraph, and telephone network. The on-line search enables the user to modify his search terms when his search has not given him the desired results, besides providing instant reply without waiting for bunching with others' requests. However the on-line search is costlier since a number of terminals have to be provided, besides providing training to the users.

Search strategy : In order to retrieve information at first the request is analysed. Then the search or index terms are selected. Then the search strategy or logic is developed. This is done in the computer by using the Boolean logic or weighted term search logic, the former being the frequently used logic. This logic is the means for specifying the combination of terms which must be matched in retrieval. The Boolean operators are 'OR', 'AND' and 'NOT'. For example, a person needs information about exports of synthetic fibres from India to the European Common Market. Here the information is retrieved by making use of 'AND', since specific information is required. When the query is import statistics for synthetic fibres either from USA or from Japan the logical operator 'OR' helps in retrieving the relevant information. Similarly, if we wish to exclude a particular aspect the same is achieved by using the 'NOT' operator.

11.6 USE OF COMPUTERS IN DOCUMENTATION SERVICES

In the earlier units you have learnt about a number of documentation services. We shall see now how these services could be more effectively provided by using the computers.

11.6.1 Current Awareness Services

In the multi-disciplinary environment we are aware that information is scanned from various sources, and the same is abstracted and indexed. The number of persons processing the documents also may be more than one, and hence the need for consolidating and arranging them in the proper sequence becomes imperative before disseminating the information to the user. In the case of manual preparation the job for that particular period, say month, fortnight or week, has to be completed and the information has to be properly arranged. Then only the final product can be printed. Thus there is considerable time lag between the processing of the individual pieces of information and dissemination, resulting in the reducing of the currency of information. By using the computer for the preparation of current awareness lists, bulletins, etc., this time lag is reduced drastically. Each and every piece of information received could be fed into the computer instantly. Depending upon our requirements we can generate the CAS daily, weekly, or monthly in the readily usable form. Thus the same input is used for producing weekly lists or monthly cumulative lists, thereby saving time and effort. Even lengthy

abstracts could be stored in the computers and reproduced periodically. With the proper designing of the input format, indexes to the abstract also could be generated without involving any additional labour. The production of cumulative indexes for the current awareness lists becomes an automatic feature whereas in manual systems this requires so much additional effort.

11.6.2 Abstracting and Indexing Services

At present a number of international secondary abstracting periodicals are produced using the computers. the *Chemical Abstracts*, *Engineering Index*, *Biological Abstracts*, *The Index Medicus* are a few of them. In preparing indexes the standard for controlled vocabulary is used by storing the appropriate thesaurus in the computer. Thesaurus terms are given corresponding code number. While indexing we only select the appropriate code number, reducing the time and space for each descriptor. The programme takes care to translate these code numbers into the vocabulary at the time of printing the final output. This codification also helps in achieving quicker retrieval of information about which we shall be talking in the next section.

The use of computers in the preparation of current awareness lists/bulletins helps in retaining the currency of information in the age of the information explosion also. The output coming out of the computer could directly be used for publication of in-house information products.

11.6.3 Selective Dissemination of Information

You have already learnt what SDI is and how it is being provided. The Use of computers in this specific service makes it very effective. In the present situation we know that information requirements of the users are growing fast, covering vast areas of knowledge. Likewise, the contents of the documents are becoming increasingly complex, involving a number of interdisciplinary areas. The need for providing specific information within the shortest time to a number of potential users is posing a real threat to the information scientist, since matching the interest profiles of users with the document profiles manually is tedious. Thanks to the use of computers, this job has become simpler and faster. The interest profiles of the users are stored in the computer. In the computer, every operation is performed by using code numbers rather than the full description. For example each user is assigned a code number. In the Master profile of the user information regarding the full name, details of designation, address along with his information requirements are stored in the standard format after converting his interests into the standard terminology of the thesaurus that is being used in the system. Thus each time it is not necessary to type out all the details of the user.

The interest profiles of the user are considered for matching against the input of current information fed into the computer. The on-line SDI is run specifically at the users' request. This can also be run on a regular basis, say at monthly intervals. The on-line SDI permits the user to view and select references or records at the terminal prior to printing the relevant items. In the case of batch SDI, in the absence of any specific request the user automatically gets his print-out at regular intervals. The latter is less expensive from the point of view of information

centres as it may not be within its budget to provide terminals to each user. Computerised SDI service can be provided to either individual users or groups.

By using the computers the input, prepared for the preparation of abstracting and indexing services, is also used for SDI services. Thus there is considerable saving in terms of cost as well as time in the preparation of the input besides the providing of a quicker service to the user.

11.6.4 Retrospective Searches

In the earlier units you have learnt that documentation/information centres provide retrospective searching services. Users come with a specific request and desire to have a comprehensive bibliography or information on a specific item. It may cover a very short period or a longer period. Information requests are analysed and processed either on-line or in batches. Information retrieval for a specific period becomes easier in the computerised system.

Use of computers in searching the database results in considerable economy in respect of time and money in the following circumstances:

- i) The searching of abstracting and indexing journals and directories;
- ii) Where modification of search strategy becomes necessary in the light of knowledge acquired during the search process (iterative searching);
- iii) Where the search strategy involves a complex logical expression linking a series of index terms;
- iv) Searches when an exhaustive bibliography has to be the final output. Here the time and effort involved in searching and printing operation are reduced considerably;
- v) Searches where machine searching of database outside the library's normal collection are involved, especially in the case of special libraries.

In the present day environment computer searches are preferred by the user to manual searches. On account of the input being fed periodically into the computerised information file the retrospective search is facilitated. Thus updation is quicker when the file is stored in the computer. Consultation of the databases of national and international libraries and information centres is being facilitated due to the application of computers in information processing. You will be taught about the databases and information networks in the subsequent units.

11.6.5 Preparation of bibliographies

In specialised information centres the necessity for preparing upto date bibliographies on specific subjects arises quite frequently, especially for the preparing of reports or for conferences,

seminars, etc. This can be done effectively if the database is available on line. Updating the bibliographies is also easier when the computer is used for information processing.

11.6.6 Directory generation

In special libraries and information centres quite frequently the directories giving names and addresses of the manufacturers, suppliers of equipment, processes developed, exporters, importers, etc., are generated. Periodical updation of these is difficult when information is processed manually. However when information is stored in the computer only additions and deletions have to be incorporated into the file and a fresh directory with appropriate indexes can be generated quickly. When information is stored in CD-ROM, without destroying the original data, the information can be deleted from the directory file. This provides an opportunity to have access to the old information as well. The storage space required is also not much. In a compact disk of 550 MB of 4.7 inches the information equivalent to over 90 million words or 2 lakh pages of the full text can be stored!

11.6.7 Other Applications

(1) **Thesaurus** : In the maintenance and the updating of thesaurus/controlled vocabulary, computers play an important part. With the fast developing changes in the fields of science and technology new concepts and new relationships are emerging. The incorporating of the new terminology depicting the relationships between different terms is essential to the providing of a specific information to the users. This is done with considerable ease and speed by using the computers.

(2) **In-house Publications** : The present day information centres are bringing out a number of publications like abstracting and indexing periodicals, manuals, newsletters, and training materials. Use of computers helps in providing a neat output in the shortest possible time. DTP or Desktop Publishing software available in the market enables the information centres to bring out all these publications.

(3) **Index Cards** : In our country it may take at least another decade to provide terminals to all the users. Even if the terminals are provided the user does not have the necessary training to use them. Hence, whatever may be the level of the use of computers in the information field still the need for the preparation of card indexes exists to enable the user to browse through the collection of information available. With the help of the appropriate programmes the index cards with multiple entries could be generated from the computer file without any extra effort. This naturally saves a lot of typing/printing time and labour, while at the same time it provides the facility for browsing the indexes manually to the users with which they are acquainted. Computers are very effective in indexing and retrieving information regarding patents, standards and specifications, newspaper clippings and many other non-book material.

Self Check Exercise-3

What are the areas in which computers can be used in providing information services?

- Note :
- i) Give your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

11.7 SOFTWARES AVAILABLE FOR LIBRARY AND DOCUMENTATION OPERATIONS

A number of packages are used for information retrieval and these are the database management systems (DBMs). Packages which are specifically designed to retrieve text are also available readily. These packages can be used on mainframes, minis as well as microcomputers. Nowadays the prices of these packages are within the reach of even the small libraries and information centres. Information centres can easily use these packages, thus obviating the need for detailed programming techniques.

A few of the packages readily available in the field of library and information services are mentioned below:

- 1) BIBLIOTEK with text editing facilities;
- 2) CDS/ISIS from the UNESCO;
- 3) MICROD CAIRS by RTZ Computer Services (UK);
- 4) MICRO-QUERY from Advisory Unit for Computer Based Education;
- 5) LIBRARYMATE from Geosystems Inc., USA; and
- 6) SUPERDOC by Thermodata, France.

A number of programming languages are used in the information storage and retrieval. The most commonly used languages are BASIC, dbase III, dbase III plus, Cobol, PLAN, PL, etc. Word processing facilities with mailmerge are used for text processing.

Caution while using the computer

In order to use effectively the computer in the information field great care has to be taken in the preparation of the input. Validation of data fed into the computer is essential. Otherwise, one may have to face strange results. The Computer function according to a set of instructions given to it through programmes, and these cannot recognise any errors which our naked eye can detect. For instance, small mistake in punctuation mark or for that matter even an extra space or no space between the words would make all the difference to the retrieval of information. Even in the case of the letters also it makes all the difference to the arranging of the index entries. One has to use the same term on the same format for both storage of data/information and retrieval. Never forget the GIGO (Garbage in Garbage Out) Principle while using the computer!

11.8 SUMMING UP

The need for accessibility to specific information with high precision and recall ratios from the vast material within the shortest period has made it imperative for the information centres to use the computers in information storage, retrieval and dissemination. The availability of a wide range of computers as well as software packages to suit the different types of needs and budgets has facilitated the computerisation of the information services.

Use of computers helps in avoiding duplication in input preparation for different information services which are being provided. The proper designing of the system helps in using the same input for a number of information products, thus enhancing the service capabilities of the information centre. We have seen that with a comprehensive system design we can provide CAS, SDI as well as retrospective search service by using the same input. Deletions and additions to the information file is very easy in the computerised environment. With the availability of on line information services the computers also help in overcoming the geographical as well as language barriers in accessing the ever growing information sources. The computer has become an essential tool in the field of information storage and retrieval.

11.9 MODEL ANSWERS

1. (i) Retrieval is faster, more comprehensive and more accurate than in manual searches. (ii) With a single input multiple outputs could be obtained: eg., abstracting journal indexes, bibliography, author list, subject list (iii) On ~ line search of different databases and networking is possible only in computerised environment. (iv) Updating of information files becomes easier and faster.

2. Data relating to a specific application is organised as a separate group, which is known as a file: eg., books file, current literature file, reports file, etc. Each file is made up of a number of records. Each record in the file deals with the individual item which comprises a

file: eg., In our current literature file each article has a separate record. Each record in a given file has the same structure, i.e., the same number of fields. A field in each record always contains information about a particular property, eg., in our current literature file, each record contains title and source fields.

3. i) In preparing Indexes;
- ii) In providing current awareness lists;
- iii) In SDI service;
- iv) In retrospective search;
- v) In the generation for various directories.

11.10 ASSIGNMENTS

1. Describe important components and peripherals of a computer.
2. Describe in detail how information is retrieved using various sort keys like author, title, subject from the computer file.

11.11 RECOMMENDED BOOKS

GILCHRIST, Alan. (ed.). *Minis, Micros and terminals for libraries and Information Services*. Chichester: Wiley Heyden, 1981.

HUNT, Roger and Shelly, John. *Computers and Commonsense*. 3rd ed. New Delhi: Prentice Hall of India, 1984.

KUMAR, P.S.G. *Computerisation of Indian Libraries*. Delhi: B.R. Publications, 1987.

RAJASEKHAR, T.B. "Computer Software for library and information work". IN *Handbook of Libraries, Archives and Information Centres in India*, Vol.5 Information technology Industry and Networks, ed. by Gupta B.M. et al. New Delhi: Information Industry, 1987. P. 241-250.

ROWLEY, J.E. *Computers for libraries*. 2nd ed. London: Clive Bingley, 1985.

11.12 GLOSSARY AND ABBREVIATIONS

ALU	"Arithmetic Logic Unit" in which the computer handles arithmetic and logic operations.
BIT	Binary Coded digit.

CD-ROM	Compact Disc/Read only Memory.
CDS/ISIS	Computerised Documentation Services/Integrated system for Information Storage.
COM	Computer output Microfilm.
CPS	Characters per second.
CPU	Central Processing Unit.
DTP	Desk Top Publishing
Hardware	Physical Unit which comprises a Computer System.
Mega byte	One million bytes.
Micro Second	One millionth of a second.
PROGRAM	A set of instructions for execution of a specific job.
RAM	Read and write memory.
ROM	Read only memory
Software	A collection of programs written to bring the hardware of a computer system into operation.

BLOCK IV - DOCUMENTATION CENTRES & SERVICES

There are four units in this block (unit 12 to 15). The first unit introduces the concept of an information centre and explains its functions and types.

In Unit-13 we describe you databanks, databases and on-line information services with examples.

In Unit-14, we explain you the documentation centres in India, viz., Indian National Scientific Documentation Centre (INSDOC), National Social Science Documentation Centre (NASSDOC) and Defence Scientific Information and Documentation Centre (DESIDOC).

The last Unit deals with information systems and networks at the national and international levels. At the national level it covers National Information System for Science and Technology (NISSAT), National Informatics Centre (NTC), UGC Information Centres and Information and Library Network (INFLIBNET). AGRIS, INIS, DEVSIS, etc., are covered at the international level.

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UNIT 12 - INFORMATION CENTRES - TYPES AND FUNCTIONS

- 12.0 Aims and Objectives
- 12.1 Introduction
- 12.2 Information centres
 - 12.2.1 Types of Information centres
 - 12.2.2 Functions of Information Centres
- 12.3 Summing up
- 12.4 Model Answers
- 12.5 Assignments
- 12.6 Recommended Books

12.0 AIMS AND OBJECTIVES

In this unit the types of information centres and their functions are explained. It is also shown how the specific functions of the information centre is dependent on the type of the centre concerned. On going through this unit you should be able

- to describe various types of information centres and their characteristic features; and
- to explain their respective functions.

12.1 INTRODUCTION

Nowadays information is recognised as a vital resource in the process of socio-economic development. Information is now considered to be the fifth factor of production, the other four being the conventional factors viz., Land, labour, capital and organisation. Further with the shift in the economic structure from production oriented industries to service-oriented industries, information has to become recognised all the more important in planning and policy making. It is a well known fact that the quality of planning and decision making depends on the quality and reliability of the information available at the particular point of time. As the importance of information has been realised in Developed countries efforts are being made to develop systems for developing and providing information as a resource on as wide scale as possible since information and socio-economic development have become inseparable. Application of scientific and technical knowledge is responsible for the industrial development of the Developing countries. It is therefore, necessary for the Developing countries in the world to emulate the example of these Developed ones in the use of information to achieve the goal of socio-economic development of their respective regions.

Knowledge or information is generated on a wide variety of documents, viz., journal articles, books, research and development reports, dissertations, project reports, brochures, pamphlets, directories, encyclopaedias, etc. Besides these traditional printed publications, information is also available in microforms like microfilms, microfiche, microcards, computer output

micro films, etc. The developments in the computer and tele-communication technology have made it possible to have access to a number of bibliographic as well as non-bibliographic databases, about which you will learn in detail in the next unit. The information is thus growing at a geometric proportion.

In order to have the latest information the researcher, the planner or the policy maker has to spend considerable part of his time in searching for the available information. This is necessary for avoiding unnecessary duplication in his research and development efforts, as also for sharpening his own skills by making use of the available information relevant to his problem. The number of research workers is also growing. The concept of welfare state has resulted in the broadening of socio-economic developmental programmes undertaken by the government. Thus the planners and policy makers have to have access to the latest information in their respective fields. At the same time they should be able to get the pertinent information from all the available sources at the right time. Thus the necessity for providing effective information services to these users calls for the building up of a suitable infrastructure, wherein the information centre has to play a key role.

12.2 INFORMATION CENTRES

Traditionally, libraries have been acting as repositories of knowledge by collecting all types of publications, processing them and supplying them to the users. However, the increasing complexities in the information requirements of users and the exponential growth of publications have made it difficult for these libraries to meet the demands of the users. The type of documents which the users need have taken new shapes with which the traditional libraries cannot cope; e.g. drawings and plans for industrial enterprises, operating instructions, specifications, trade literature, etc., The shift has been from the provision of documents to information. This necessitated the analysis of the subject content of the document. The traditional library tools have not been adequate to meet this type of specialised information requirements.

Special libraries to some extent try to meet their requirements. The users at times need the final information products in the readily usable form requiring to further modification in its format or content. Digests and statistical analytical reports are a few examples of this type. Documentation/information centres have emerged in course of time to meet the information requirements of specialists. Information centres do make use of the library resources to meet the demands of users. However, the library resources could be only one of its many sources of information. Thus these centres have wider functions than those of the traditional libraries.

12.1.1 Types of Information Centres :

Information centres can be categorised by the pattern of ownership, by the subjects and disciplines with which they deal, or by different levels to which they cater. In the following paragraphs these are briefly described.

(i) **By Ownership :**

a) Public documentation centres : These are set up from public funds. These are generally owned and supported by different organs of the government. All these centres may not be accessible to general public, e.g., Defence Documentation Centre in India.

However, it is open for use by a section of the public. In most cases the services offered may be free of cost or at a nominal price. Hence these centres may not be self-supporting. Many of the public documentation information centres are attached to or associated with special libraries. However, of late one could see a number of information centres functioning independently and at supra of juxts position to the special libraries.

b) Semi-public centres : These are established by learned and professional societies, trade and industry associations. Though primarily these are established to cater to the needs of their members they may be accessible to others also. These are founded by the members and they generally specialise in the areas of interest to their members.

c) Private centres : There are a number of varieties of private centres:

(i) These generally function to meet the needs of the particular commercial or industrial establishment. Their resources are funded by the particular organisation. Its services are strictly limited to that particular organisation/institution and outsiders cannot have access to its resources and services.

(ii) Private information centres to cater to the needs of individual users for a specified fee. These are the latest additions to the types of centres. Sometimes these are known as information brokers. Information resources are built up by private funding and services are available to subscribers or on payment to these seeking these. These centres are managed on commercial lines and any user in need of information can have access to their services, the only condition being payment for service.

Eg: PREDICASTS, INC: This is a business information and market research company providing information on products and services designed for executives, researchers as well as decision makers.

It offers a wide variety of information services and its information products include hard copy publications as well as magnetic tapes available on-line.

(ii) **By Subject/Discipline:**

a) Subject : A number of documentation/information centres specialise in collection, organisation and dissemination of information in a particular subject/discipline like agriculture, social sciences, science and technology, etc. These centres specialise in information collection, organisation and dissemination in the specified subject areas in which they operate.

b) **Types of material:** Information centres sometimes limit their activities to specific types of documents, patents, standards, trade literature, engineering drawings, translations, dissertations, etc.

c) **Kinds of Information:** the information centres may deal with different kinds of information; e.g., R & D information, management information, industrial information, statistical information. e.g. SENDOC (Small Enterprises National Documentation Centre) provides information on small industry.

NISSAT plan of Government of India envisaged the setting up of mission oriented information centres. The result was the setting up of specialised information centres for Leather, Food Technology, Machine Tools, Drugs, etc. For collection and dissemination of information in the Government sector in India the National Informatics Centre has been set up.

d) **By Areas:** Some information centres deal with information pertaining to a particular area/region. For example, Russian information Centre of INSDOC deals with literature/information of the USSR. So also in some universities specialising in the studies of particular region. e.g., African studies. This type of centre plays a very useful role in meeting the information requirements of the researchers.

(iii) By Different Levels:

a) **International Documentation Centres:**

These centres are established by

i) International organisation to cater to the requirements of international community. A few of the well known centres of this category are the INIS, AGRIS, DEVSIS, UNESCO and UNIDO.

(ii) The National agencies, which provide services on an international scale like the ISI, Chemical Abstracts Services (CAS) and Medical Analysis and Retrieval Systems (MEDLARS).

(iii) Common agency or group of countries like the Commonwealth Agricultural Bureau (CAB), OECD, EEC, SAARC, etc.

b) **National Documentation Centres:** These centres are set up by the respective countries to serve the information requirements of their people; e.g., INSDOC, PANSDOC, KORIS-TIC, NIDOC, THAIDOC, VINITI, OMKDK, etc.

c) **Regional Centres:** These centres serve the information needs of a particular region within a country. Examples of this kind can be seen in our own country; e.g., regional centres of INSDOC and NASSDOC (National Social Science Documentation Centre).

d) **Branch Information Centres:** These are devoted to specific discipline or mission like branch Information centres in the Soviet Union and the NISSAT in India, built around the

nucleus of an individual information centre which has already developed a strong base but the services of which are more available on a national scale for those engaged in the particular discipline or mission.

e) **Local Documentation Centres:** These are the centres attached to individual organisations for meeting the information requirements of the particular organisation. We are all familiar with this type of information centres.

From the foregoing description of types of information centres one can see that three types are overlapping. A national centre can be a public information centre as well as a specialised centre in a particular discipline. Thus each information centre can be further classified under each type. We can have a variety of documentation centres taking one element from each of the three major types.

Self-Check Exercise-1

What are the types of information centres?

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this Unit.

12.2.2 Functions of Information Centres

The functions of documentation/information centres are invariably linked to the information requirements of its clientele. Some of the functions and services of these centres are common to all the types whereas certain functions are mainly undertaken by particular types of centres. Thus the functions of a national information centre can be similar to those of a local centres to some extent or it can have an entirely different set of functions.

Providing different types of services to the users is the main function of any information centre. You have already studied about different documentation services in the earlier units. Hence without going into the details of the techniques employed for these services the functions of the information centres in a general way are explained in the following paragraphs. One has to apply his mind to select the functions/services suitable for a particular type of centre.

1) The information function common to all types of centres is the providing of anticipatory as well as responsive services. Thus through its current awareness services it brings to the attention of its specialist users the latest literature/information relevant to their work. Abstracting and indexing services as well as SDI functions help in providing anticipatory services. Responsive service involves exhaustive search of its information collection/database to provide relevant and comprehensive information in response to a specific request.

Retrospective search involves retrieval of information from the entire file. The information centre has to preserve the archival information as well. The building up of a strong database in the areas which are of interest to it thus becomes the primary responsibility of an information centre.

2. The Analysis of information at times has to be done by the information centres. Especially for the centres dealing with numerical data and statistical information, this function assumes great importance. Information analysis involves condensation, consolidation, and repackaging. This activity does not involve the creation/generation of primary information but only the repackaging of the available information to meet a variety of demands. For the analysis of numerical data the analyser needs to have the knowledge of statistical techniques as well. This function is going to assume increasing importance in the context of developmental plans and programmes being undertaken by the government.

3. Information centres have to prepare state-of-the-art reports, analytical reports, digests, etc., depending upon the requirements of the users. In the case of centres of research, industry and marketing organisations this function has to be undertaken quite often.

4. The information centres have to prepare bibliographies on specific topics of interest to their users. In most of the cases these bibliographies have to incorporate the nascent information collected from all types of documents. The trends in literature on a particular subject also have to be presented. This is important in the field of science and technology, since the information explosion in this area is phenomenal.

5. Providing access to external databases on-line. This function is generally undertaken in the case of information centres in the fields of science and technology as well as industry. A national centre may have to provide extensive services in this line. An example of it is the National Informatics Centre (NIC) in India. This centre mainly aims at providing information generated in the government sector through its regular developmental and regulatory activities to the potential users on on-line. Each district information centre is expected to be linked with central system via communication system. This enables all the modal centres to have direct access to the relevant information without any interruption besides feeding the main computer with the locally available information with them.

6. Document procurement for the users from the external sources is an important function in the case of research as well as R & D information centres. National information

centres undertake this service for the benefit of the general public. This function is extensively undertaken by the INSDOC. In educational as well as university centres this function has great relevance to their activities.

7. Provision of copies of relevant documents is also one of the functions undertaken by many information centres. This function is quite often required in the centres whose clientele are researchers and R & D personnel.

8. Language should not be a barrier to disseminating information. Thus many information centres provide translation services to their clientele, especially in research and R & D centres. Many national as well as international centres also offer such a service. In R & D organisations this function is very important, since the researcher should have access to exhaustive information irrespective of the language in which the information is available. The labour and time involved in translation of documents is thus eliminated for the user when it is done by the information centre.

9. A national information centre has to bridge the gap in the information sources available in the country by securing books as well as serial publications from abroad. A national information centre functions as clearing house (CH) for all the participating centres. The Clearing House is a central agency for collection, classification and distribution of information. Thus CH becomes a resource to the specialised information centres. This function is aimed at complementing the information services of the mission-oriented agencies.

The ERIC serves as the clearing house for the educational community. In India the INSDOC through its NSL (National Science Library) is performing this job in the field of science and technology.

10. The National as well as regional centres have to prepare union catalogues of periodicals, directories, non-book materials, etc., so that all the individual centres will be in a position to identify the relevant information sources in time.

11. Computerisation is essential for providing an effective information service. The national centres should be able to extend the necessary support to individual centres in acquiring software as well as hardware. The local and individual centres have to train the users in the handling of computers for accessing information and the national and international centres their information scientists in the use of computers. The national and international centres also have to develop and build up information network for exchange of information between different centres through the computer.

12. The national and international information centres develop national and international information plans and programmes and advise the respective governments in the planning and framing of the information policies.

13. The National and International information centres have to perform the function of developing the necessary standards for information organisation. This is to ensure free flow of information between different information centres.

14. The development of necessary tools for classifying and indexing information is also one of the important functions of the information centres. As the individual and local units, operation in this area is limited national and international centres have to play major role in it. The development of different thesauri for vocabulary control has been undertaken by many specialised national as well as international centres. There is no need to go into the details of various thesauri developed by them, since they have been explained already in the previous units.

15. Training and manpower development are the responsibilities of national as well as international centres. The increasing complexities in information gathering and processing have to be matched with the growing information demands of a multitude of users. The skills required by the information handlers are undergoing rapid changes. An information scientist now has to have subject specialisation as well as specialisation in the information handling techniques, further, he needs to have knowledge of computers in the present day environment. He also needs to have some management skills to run the information centre. Thus in providing of skills of so many dimensions is not an easy task. The national as well international centres have to carefully plan and train skills in the changing environment. This is also essential. The success of information centre depends on the professional coexistence and capabilities of the personnel manning it.

International information centres are concerned with the mechanisms of information transfer, particularly at the international level. Since the effectiveness of international information transfer depends to a large extent on the efficiency of information centres at the national level, the international centres have to plan for the promotion of scientific and technical information services as also for developing education and research in information work.

The UNISIST (the United Nations Information System for Science and Technology) of the Unesco programme is aimed at achieving this objective. It is to serve as a forum for the discussion of aid programmes for information services in Developing countries, propose guidelines for establishing and managing information networks, and extend help in designing projects to assess different ways of linking Developing countries with UNISIST. Thus UNISIST programme serves as a model for co-ordination, planning and functioning of the information infrastructure on a national scale. The Unesco proposed world information system for development which was named DEVSIS and its functions were worked on the lines similar to those of UNISIST.

12.3 SUMMING UP

Of late information has been recognised as a basic input for research and development activities. The need to harness information to support various activities relating to research,

development, planning, policy making has necessitated the setting up of information centres in various areas and at different levels. Though the functions of all the information centres are common to some extent, the national and international information centres have to play a major role in the organisation and dissemination of information.

12.4 MODEL ANSWERS

i) Information centres are classified mainly by (1) the type of ownership, (2) the subject/discipline covered (3) the different levels of organisation.

12.5 ASSIGNMENT

What are the functions of national information centre?

12.6 RECOMMENDED BOOKS

1) CHANDLER, George. *International and National library and Information services: A review of some recent developments 1970- 80*. Oxford: Pergamon Press, 1982.

2) PARKER, J. Shephen: *UNESCO and Library Development Planning*, London: Library Association, 1985.

3) RAJAGOPALAN, T.S: *Versatile Integrated information system and Services: A science of Current Developments In the Library and Information Science Horizon*, Ed., by B.Gupta. New Delhi: Allied, 1986.

4) UNESCO and International Council of Scientific Unions. *UNISIST Study report on the feasibility of a world Science Information system*. Paris: Unesco, 1971.

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UNIT 13 - DATA BANKS AND DATABASES; ON-LINE SERVICES

Contents

- 13.0 Aims and Objectives
- 13.1 Introduction
- 13.2 Data Banks and Databases: Definition
- 13.3 Types of Databases/Data banks
 - 13.3.1 On-line Databases
 - 13.3.2 Bibliographic Databases
 - 13.3.3 Data Banks or Non-bibliographic Databases
- 13.4 Suppliers of Databases
 - 13.4.1 Selection of Databases
- 13.5 Products of Databases/Data banks
- 13.6 Organisation of Databases/Data banks
 - 13.6.1 The International Scene
 - 13.6.2 The Indian Scene
- 13.7 Summing Up
- 13.8 Model Answers
- 13.9 Assignments
- 13.10 Recommended books

13.0 AIMS AND OBJECTIVES

In this unit the concepts of data banks, databases and the difference between them are described. The availability of on-line services in the international arena as well as in India are mentioned.

After going through this unit, you should be able to:

- Distinguish between data banks and data bases
- Describe various types of data bases/data banks
- Mention some of the important international data bases available on-line; and
- Describe the Indian scene vis-a-vis on-line data bases

13.1 INTRODUCTION

The use of computers in the processing of bibliographical information has resulted in the on-line access to bibliographical as well as non-bibliographical databases. We all know that computers in the early sixties were used to produce printed abstracting and indexing services. This naturally resulted in the machine readable databases. With the rapid technological developments in computers remote terminals have come into use. From these terminals information scientists as well as users could interact conversationally with the machine readable databases in on-line searching. The availability of on-line searches is directly dependent on the technological developments in the computer technology as well as telecommunication facilities.

Often there is confusion in distinguishing between data banks and data bases. We all know what a bank is. In a bank money is deposited and whenever the need arises the eligible depositors, or on their order others can draw money from the bank. In the case of data bank also users, whether depositors of information or those authorised by the data bank, could draw the available information from the data bank. The analogy between the commercial bank and the data bank ends there. In the case of commercial banks money gets exhausted with every withdrawal. But in the case of a data bank unlimited number of clients can draw information without depleting it. What the user wants is only the access to the database/bank. We shall see how this access is provided.

13.2 DATABASES AND DATA BANKS - DEFINITION

Libraries and information centres have always compiled bibliographies, catalogues, lists of borrowers and indexes. All these are in a way databases. Broadly, databases are defined as a set of computer held structured records which can be approached by keywords. These records are inter-related. Databases generally provide details of bibliographic references which the searcher uses as keys in order to consult the original source literature so as to obtain the detailed knowledge he is seeking.

Databases may be classified into 'reference' and 'source' databases. Both 'bibliographic' and 'reference' databases may be subsumed under reference databases. These databases are usually created as by products of computer produced indexing and abstracting services. These become the basis of the on-line database. Under the 'reference databases' come online directories and reference sources such as *Ulrich's periodicals directory*.

Source or non-bibliographical databases are called data banks. Data banks concentrate on factual information and give direct answers without any further reference to the original source. These include numeric, textual-numeric, and full-text databases. Numeric data banks usually comprise statistics like those concerning production, exports, imports, etc. The non-bibliographical databases or data banks are more important in the fields of business, economics,

trade and commerce than databases. These are far more expensive to access than the bibliographic databases.

Local databases vs external databases : Librarians and information centres generate internal databases in the course of their day-to-day operations. However, when the clientele consists of special interest groups information has to be collected from outside its collection. This calls for access to external databases.

Self Check Exercise-1

What is the difference between data banks and data bases?

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

13.3 TYPES OF DATA BASES/DATA BANKS

All the databases came into existence as a result of the efforts of individual libraries/information centres. In order to provide effective information services these centres started using computers for the processing of voluminous information coming into its possession. The gradual building up of individual information sources have resulted in the growth of databases/data banks. The need to share information by different users resulted in the providing of access to these individual databases. The result was the exchange of machine readable tapes between the different database producers after loading the information into their own computers and developing the necessary software for batch processing of current awareness and retrospective searches. However, this caused delays in information dissemination, besides requiring special skills for the development of software for the use of each database.

13.3.1 On-line databases

The current awareness and retrospective searches are run in the 'batch mode' in information centres. The Batch processing of searches are economical in terms of machine time but it has some serious disadvantages. It results in delay in providing information to the user and the searcher cannot test on sample basis whether the references retrieved by the search strategy formulated by a search analyst at the information centre are relevant.

In order to overcome the problems of batch processing on-line searching has been resorted to. On-line databases enable the user to communicate directly with the database that is being searched. Thus, online database, whether bibliographic or referral, is a collection of records held on-line in a rapid access computer disk store. The access to database from terminals is via post, telephone, telegraph lines or satellite.

Systems Development Corporation [SDC] developed the on-line searchers in 1965. Until the early seventies it remained in the experimental stage. The NASA database was the first database to run as a service in 1966. The ERIC was the first database to be offered on public access basis. Searching is through interaction between the searcher and the host computer via the search strategy. The search strategy describes the end users information needs expressed in a series of terms, and the relationship between these terms. Interaction with the host computer is in the conversational mode. The searcher goes on modifying his search strategy until he gets the desired references, or the information. The logic used in search is Boolean which has been explained in the previous unit.

Advantages of having on-line access to databases:

1) The amount of time spent on searching the literature is greatly reduced. While on-line the searcher can search the entire contents of a database with the help of suitable search strategy, which is not possible in the manual searches. The state-of-the art search can be undertaken at any time within a few minutes.

2) On-line search offers more access points;

3) On-line access ensures complete file integrity;

4) On-line access eliminates the barriers of geographical location. The room where the terminal is located itself becomes an information centre as it gives access to millions of references in the databases to which it is connected;

6) On-line search gives the user an earlier access to references than manual search since he need not wait for the appearance of printed matter;

7) On-line access gives scope for the information centre to serve a larger clientele, since the amount of time required to search information is considerably reduced;

8) In terms of costs also in the near future the on-line search has an edge, since the cost of paper, printing, storing the bulky indexing and abstracting publications is also going up. On the other hand, the costs involved in both computer storage and on-line communication are falling.

Thus speedy access to vast information across the world is possible due to on-line facility. Reference to the bulk of published literature as well as factual information in the various

branches of knowledge have become available to the searchers due to the availability of on-line databases. Interaction with the system to improve recall and precision in the search is possible.

Self Check Exercise-2

What are the advantages of having on-line access to databases?

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

Requirements for on-line searching :

The searcher should have knowledge of the subject as well as the knowledge of databases likely to be searched. A detailed knowledge of the command languages of the systems used is essential. The searcher should be trained in each system that is being used.

The online service has three segments:

- (1) The producers of databases;
- (2) The service suppliers or vendors; and
- (3) The users.

The producers of databases are generally the learned societies and institutes and the government departments. The machine readable databases produced are leased from their producers by service suppliers or vendors. The latter have developed software to enable users to search the machine readable databases. The libraries and information centres utilise the services offered by the producers of the databases and the service suppliers to provide information for users in various fields which are of interest to them.

MEDLINE was one of the first online bibliographic databases developed and made available to the users [1971]. In Europe the European Space Research Organisation (ESRO) established Space Documentation Service which provided access to a number of databases in the field of space research and technology. EURONET/DIANE became operational in 1980. EURONET is the data transmission facility by the post, telegraph and telephone authorities of EEC countries to provide access to bibliographical and referral databases (data banks). Direct Information Access Network for EUROPE (DIANE) is the association of service suppliers available within the EEC.

Components of on-line search:

Hardware: The searcher communicates with the host computer into which database is loaded by using a workstation. This workstation may be a form of tele-type terminal with a separate printer to produce a hard copy printout or a screen (VDU) to read the output or a mini computer which acts as a terminal for on-line searching. Instructions are given to the host computer via the terminal keyboard.

Communication: Information is transmitted between the host computer and the terminal by direct dialling or via Posts and Telegraph (P&T) in conjunction with a data communication network or a telephone line. The databases available from the service supplies are generally accessed over telecommunication networks.

Costs: The cost of terminal varies according to the type and the functions. Online searching costs fall under 3 heads:

- i) **Communication costs:** This includes telephone call to the host computer and the communication network costs;
- ii) **Database access charges;**
- iii) **Print charges per reference, online or offline.**

Online search time depends on the nature of search. It generally varies between 6 and 30 minutes.

Format of databases:

There are groups of organisations with common subject interests who cooperate in the creation of international databases. The online databases are essentially based on the principle of cooperation between different users. In order to facilitate the cooperation and exchange of information some amount of standardisation of format of records is essential. INIS, CAS, BIOSIS and AGRIS are some of the databases available on-line. All these networks have standard record formats, although they all operate to different standards.

The record formats in local systems supported by software packages are many. Almost all the software packages offer the purchaser the opportunity to evolve a record format which suit a specific application.

The record format for full-text databases is different from the format required for indexing and abstracting database. Again, there may be differences in format between different large databases.

The UNISIST Reference manual for machine readable bibliographic descriptions and the record format that it proposed - UNIBID, is an attempt to offer a standard record format for use by abstracting and indexing services. The UNESCO'Ss CDS/ISIS and MINISIS are available internationally. This software is important to the implementation of record format, especially in Developing countries.

13.3.2 Bibliographic databases

These can be divided into the following categories:

- 1) Large discipline-oriented databases corresponding to a major abstracting journal, such as the INSPEC;
- 2) Inter-disciplinary databases with coverage normally based on key or core journals; e.g., SCISEARCH
- 3) Cross disciplinary databases: e.g., METADEX
- 4) Smaller, more specialised databases serving a particular technology, including those generated by research associations, research and data-analysis centres. e.g., Population Abstracts, World Textile Abstracts.
- 5) Databases covering specific types of publications, such as CLAIMS/CHEM, Comprehensive Dissertation Abstracts.

Many databases are not produced by one single organisation, but they are the outcome of cooperation between different organisations, spread all over the world.

13.3.3 Data banks or Non-bibliographic Databases

The majority of machine readable databases store actual information rather than the references. These data banks provide answers, facts and data. These are accessible via the same channels as bibliographic databases that are publicly available.

As mentioned earlier, these data banks include numeric, textual, numeric, and full-text databases.

Numerical databases incorporate some computational techniques since the data has to be analysed and manipulated, according to the requirement. The system generally uses a very user-friendly command language to facilitate the retrieval.

The demand for numerical data is felt acutely by the planners, policy makers as well administrators, besides the researchers. The complexity of the planning process requires access to a number of data elements with the establishment of necessary co-relationship between

the different elements. The need to have speedy access to data for these users cannot be overemphasised. The constant updating of the data is essential to make the data bank all the more useful.

Textual-numeric databases consist of a combination of statistical information accompanied by textual commentary. Full-text databases provide access to the complete text of documents. For example, legal databases contain the full texts of statutes and law reports.

Sources of Data: Numerical data is generated by

(1) Government departments and organisations: In the day to day functioning of the departments a lot of useful data is generated. However, most of the data remains unutilised due to the use of poor storage and retrieval techniques.

(2) Research Institutes: Whenever research studies are conducted a lot of primary data from socio-economic surveys are collected from the field, besides those collected from secondary sources.

(3) Commercial and Trade organisations who collect data on commercial basis.

(4) Professional bodies: A number of professional organisations collect data to meet their member's requirements.

Identification of appropriate data services is essential to build up a good on-line data bank in a particular subject area.

13.4 SUPPLIERS OF DATABASES

On the international scene there are a large number of suppliers who provide access to databases commercially. Retrieval systems used by all the major suppliers are based on inverted files, contents of each document surrogate being posted to index-terms held within the computer allowing post coordinate indexing. Database producers/owners make available magnetic tapes on lease or for sale.

Some of the major international suppliers of bibliographic databases are:

1) DATA STAR of Radio Suisse offers over thirty databases in the fields of Science and Technology as well as Business.

2) DIALOG: Information Services Inc., of Lockheed, USA: It holds more than 200 databases and is accessed by direct dialling or by commercial data transmission networks.

3) ESA/IRS: It is the Information retrieval Service of the European Space Agency. It is based in Italy. The IRS has centres in several countries in Europe which provides back-up services. It holds over 35 databases.

4) Infoline of Pergamon: The host computer is in Slough, UK. It has over 30 databases.

5) ORBIT of System Development Corporation: This system is based in California. It is accessed by direct dialling or by commercial data transmission network. It offers over 70 databases.

6) BLAISE: This is split into BLASE-LINE and BLAISE LINK. BLAISE- LINE offers access to a number of bibliographic files in the UK BLAISE-LINK provides access to files in biomedical and toxicological areas available with the NLM.

There are a number of suppliers of non-bibliographic databases apart from those mentioned above:

Viewdata provides access to information via a modified television set, telephone and a keypad.

Teletext services are broadcast information services which may be accessed in non-interactive mode with a television and telephone line. This is mainly restricted to summaries of financial and business statistics, news and weather.

13.4.1 Selection of Databases

The number of databases available on-line in 1972 was only 7. By 1976-77 their number rose to 75 and is now over 2500 mark.

There is tremendous growth in the amount of bibliographic information available on line. In 1968 only 0.25 million records were available on-line whereas this had gone up to 20 million in 1976, 77 million in 1982 and 159 million in 1986. It is estimated that the growth per annum within the next decade is about 10 million unique references.

The span of the coverage differs from database to database. Retrieval systems used by all major online service suppliers are based on inverted files.

Multiple searching is searching a cluster of files predetermined by the supplier to form a natural group. In the case of distributed database technology, search is from one host to the other. In this search system protocols and languages are becoming more user-friendly and full text is searched rather than the surrogates. There is considerable overlap between databases in its coverage. Some of the in-house databases are derived partly or fully from more comprehensive databases. The user should decide as to the database for which he wants to subscribe, taking into account his subject interest. A large database may not give comprehensive reference to

a specific subject whereas a small database pertaining to that specific area may give better output. The following criteria may be used for selection of a data base.

1) **Coverage:** Subject covered and the type of material included in that particular database should be comprehensive and relevant to the user.

2) **Frequency of update to retain currency:** Majority are updated monthly or more often, but some are updated quarterly or less often.

3) **Ease in use:** The software used should be user friendly so that he could use it with considerable ease.

4) **Capability to give multiple outputs :** Elements included in the records show the amount of bibliographic information included in the database. The presence of abstracts in the database may at times obviate the need to obtain the copy of the original.

5) **Indexing language used** and the number of access points to have better retrieval performance. In depth indexing which is comprehensive and exhaustive results in better retrieval.

6) **Cost of subscription :** Cost of accessing different databases should be taken into consideration.

7) **Machine compatibility :** Computer system available with the user should be compatible with the system being used by a particular database.

13.5 PRODUCTS OF DATABASES/DATA BANKS

Machine readable database offers the facility for having a variety of information services by formatting the same input. Each service is tailored to meet a separate demand. Some of the database products to mention are:

Selective Dissemination of Information (SDI)

Printed Abstracting and Indexing Services

Batch Retrospective Searching

On line Retrospective searching

Review services

Thesauri

Classification schemes

Reports

Computer software

13.6 ORGANISATION OF DATABASES/DATA BANKS

For organising a databank/database one has to decide whether to have a centralised one, or have a network of data banks/databases. A centralised system requires greater amount of resources in terms of skills, equipment, etc. Alternatively, the existing data banks/databases created by research centres, academic libraries, industry, government departments, etc., could be integrated into the system.

The following factors may be taken into consideration for organising a data bank/database:

1) The type and number of potential users: Data bank/Database is to serve the needs of its users. The type and extent of information to be covered by a particular data bank/database depends upon the requirements of its clientele. Hence a survey of the potential users is essential. In government planners and policy makers need precise information at a very short notice. On the other hand researchers and academicians need comprehensive information or bibliographic references. Industrial enterprises and administrators need a different database. If it has to serve a larger clientele the type of equipment and search techniques to be used also will be different.

2) The type and volume of data that may be required to serve users: Organisation of facts and statistical data requires different techniques as against the organisation of bibliographic references.

3) Identification of data sources, primary and secondary agencies, published and unpublished documents: Collection of statistical data has to be done from different sources, may be government institutions, research institutions, scientific laboratories, or from published sources. So is the case for results of research and development activities. In the case of unpublished literature also various sources have to be tapped.

4) Frequency of data collection (e.g., daily, weekly, monthly, etc.): Again, in the case of numerical data as well as literature pertaining to developmental activities frequent updation may be required.

5) Data elements that have to be collected: This is particularly important in the case of numerical data. Definition of concepts, standardisation of units of measurement is also important.

6) Techniques (e.g., indexing) of data storage, organisation and retrieval: The type of equipment to store as well as the indexing techniques to be used should be planned. Since computers are used development of suitable codes is necessary.

7) The type of dissemination and the end products : The type of final products to be provided to the searchers has to be planned. These could be computer printouts, bulletins, data sheets, technical reports, state of the art reports, etc.

8) **Training of personnel to impart necessary skills:** The persons manning a data bank/database should have knowledge of the subject being searched, besides the knowledge of computer processing. This is essential to ensure better retrieval and dissemination. Hence training the personnel assumes importance.

13.6.1 International Scene

A large number of databases both bibliographic as well as non-bibliographic are available online in the world in almost all the disciplines and subject areas. In science and technology field the availability is mostly confined to bibliographic databases, though some dealing with chemical and physical properties are available as non-bibliographic databases. Some of the widely known internationally available on-line bibliographic databases are:

AGRICOLA	National Agricultural Library. Agriculture and related subjects.
AGRIS	Food and Agriculture Organisation of the UN. Agriculture.
BIOCODES	Biological Abstracts. Biosis - codes.
BIOSIS PREVIEWS	Biological Abstracts. Biology, life science.
BOOK REVIEW INDEX	Gale Research Company. Book reviews.
BOOKS IN PRINT	R R Bowker. Books in print (US)
BTI	British Technology Index
CAB ABSTRACTS	Commonwealth Agricultural Bureaux. Agriculture.
CANADIAN NEWS INDEX	Information Access. Canadian news.
CAS	Chemical Abstracts Service.
CHEMICAL ENGINEERING ABSTRACTS	Royal Society of Chemistry. Chemical engineering.
COMPATENTS	Compton Data Company. Patents- US.
COMPENDEX	Compendex Engineering Index. Engineering and Technology.
COMPENSIVE	University Microfilms International.
DISSERTATION INDEX	Dissertations
CONFERENCE PAPERS INDEX	Cambridge Scientific Abstracts. Conference proceedings.

ERIC	Educational Resources Information Center. Education.
EXCERPTA MEDICA	Excerpta Medica Foundation. Medicine.
GEMS	Global Environmental Monitoring System.
ICRS	Index Chemicus Registry System. Chemical Compounds
INIS	International Atomic Energy Agency. Nuclear science.
INSPEC	Institution of Electrical Engineers. Physics, electrotechnology, computers and control.
MARC	Library of Congress/British Library. Bibliographies, UK and US
MEDLINE	National Library of Medicine. Medicine.
METADEX	American Society of Metals/The Metals Society. Metallurgy.
NATIONAL NEWSPAPER INDEX	Information Access Corporation. Index to USA newspapers.
NTIS	National Technical Information Service. Science and technology.
PHARMACEUTICAL NEWS INDEX	Data Courier, Inc. Drugs and cosmetic industry.
POPINS	Population Information System. Demography
SCISEARCH	Institute for Scientific Information. Science and Technology.
SOCIAL SCISEARCH	Institute for Scientific Information. Social sciences.
TOXLINE	National Library of Medicine. Toxicology.
TRADE AND INDUSTRY INDEX	Information Access Corporation. Business, trade, industry.
TULSA	University of Tulsa. Oil, natural gas.
WORLD PATENT INDEX (WPI)	Derwent Publications Ltd. Patents.
WORLD TRANSINDEX (WTI)	International Translation Centre. Translations.
ZOOLOGICAL RECORD	Biosciences Information Service/Zoological Society. Zoological literature.

In the field of business and economics numeric databases dominate the scene, especially in the fields of financial statistics, industry - specific statistics and corporate financial information. A number of directories and other sources in full-text form are available on-line.

Following are some of the non-bibliographic databases (databanks) available internationally on-line from commercial suppliers:

BI/DATA FORECASTS

BI/DATA TIME SERIES

BLS CONSUMER PRICE INDEX

BLS EMPLOYMENT, HOURS AND EARNINGS

BLS PRODUCERS INDEX

PTS INTERNATIONAL FORECASTS

US EXPORTS

In the field of economics and business a large number of directories and other sources are available on-line. Some of these are:

ICC database

Dun and Bradstreet-Dun's Market Identifiers

D & B Principal International Business

EIS Industrial Plants

LEXIS from Mead Data Central (legal information)

EUROLEX (legal information)

A large number of general directories are also available online. To mention some:

American Men and Women of Science

Biography Master Index

Encyclopaedia of Associations

Marquis 'Who's Who'

Ulrich's International Periodicals Directory

The number of non-bibliographic services available is growing very fast.

13.6.2 Indian Scene

In India the efforts at setting up on-line bibliographic databases has made considerable progress. National Informatics Centre (NIC) has started building up database for patents. It is procuring magnetic tapes from International Patents Documentation Centre, Vienna. In the field of science and technology Indian National Scientific Documentation Centre (INSDOC) has started providing online bibliographic information through main frame computer installed at it's regional centre at Madras on an experimental basis.

The Science and Technology Plan envisaged the setting up of mission oriented and discipline oriented national information centres during the Fifth Five year Plan under the NISSAT. As a part of this programme bibliographic databases in the fields of leather, food technology, machine tools, drugs and pharmaceuticals, defence sciences etc have come into existence. The particular laboratories which are to act as the centres for these areas have been building up the information using the computers. In course of time these centres will be able to provide on-line services in the areas of their specialisation. In the field of social sciences Indian Council for Social Sciences Research has started building up machine readable bibliographies from 1974 onwards. These could be available on-line in course of time.

The efforts at making available non-bibliographic information in India have shown considerable progress. The Government has concentrated on building up databanks for agriculture, industry, manpower, small industries, trade information, etc. The initiative made in late seventies has shown considerable progress towards the end of eighties. Different Organisations have been identified as modal agencies for collection, storage, retrieval and dissemination of information/data in specific areas.

For data on production, imports, exports, and number of units in the small scale sector Small Industry Development Organisation (SIDO) is responsible. For data on industrial licensing DGTD is the agency. For electronics information Department of Electronics has build up an online data bank.

National Informatics Centre through its vast network of computers throughout the country is building up an online information system for the district centres. The developmental information it collects encompasses the entire socio-economic field. This ambitious project of NIC intends to link all the district centres in the country to the main computer via satellite network. This will enable the planners and policy makers to have direct and instant access to the latest information which in turn will help them in arriving at the fruitful decisions for the development of that region of the country. NIC has acquired large computers. Besides the national centre it has set up regional centres in places like Calcutta, Madras and Hyderabad. In the years to come NIC is expected to play an important role in the building of strong database in India.

The Registrar of Companies has started building up databank giving details of companies registered with it. The information file is computerised and proposes to make it available on-line.

Export and import statistics collected and analysed by the Ministry of Commerce will also become available on-line shortly.

The Ministry of Industry collects information on industrial licences, the letters of intent issued as well as the schemes registered with the Directorate General of Technical Development. This is being computerised and on-line search facility will be available to the user departments.

We all know about the population census. The data collected is stored in the computer, analysed and a number of reports are generated. This data bank is very useful to the planners and policy makers since they can have access to the entire population statistics.

The efforts are on to build up data banks on public enterprises to effectively monitor their functioning.

In the day-to-day functioning of government departments vast amount of data is generated which is useful for decision making and policy formulation. Now there is increasing realisation on the part of government to build up data banks using computers so that valuable data could be available in time to the users. Hence in the next decade we may see the growth of a number of databanks in the government sector in India.

Standards data: Bureau of Indian Standards has developed on-line database for thousands of standards. An on-line query system based on over 25000 keywords has been developed. The standards information on magnetic tapes is available. Within this decade we may expect to get standards data on-line.

Manpower data bank: In order to match the talents available in the field of science and technology in our country with the ever increasing requirements, the office of the Director General, Council of Scientific and Industrial Research (CSIR) has been building up a data bank of scientific and technical personnel in the country with their full biodata.

Others: Apart from the government operated data banks/databases the eighties have witnessed the beginning of the commercial services. INDONET project of Computer Maintenance Corporation of India is intended to provide on-line commercial information. This service has come into operation in select cities on an experimental basis. Many private consultants are also building up private databases/data banks which may become available on-line in the coming decade.

12.7 SUMMING UP

The use of computers in information storage and retrieval started in the early sixties has grown phenomenally during the last two decades. This coupled with the technological developments in communication field has accelerated the building up of databases/data banks throughout the world. The advantages of on-line search of databases has accelerated the pace of expansion, coverage as well as diversification of computerised databases. In India attempts are on to build-up different computerised databases. However in India the availability of on-line services to these databases has a long way to go. In this unit for the benefit of the students the major suppliers of international databases as well as on-line international databases available are mentioned.

13.4 MODEL ANSWERS

1) Database generally provides details of bibliographic references which the searcher uses key words to retrieve them and helps consult the original source literature so that he can obtain the detailed knowledge he is seeking. Thus it is basically a set of computer held structured records which can be approached by keywords.

Data banks on the other hand provide factual information and provides direct answers without any further reference to original source.

- 2) i) Search is faster
ii) Offers more access points
iii) Search results are presented in a standard format
iv) Ensures complete file integrity
v) Eliminates the barriers of geographical location.
vi) Offers scope for serving a larger clientele

13.5 ASSIGNMENT

- 1) Mention atleast ten International bibliographic databases available on-line.
2) Describe some of the data banks in operation in India.

13.6 RECOMMENDED BOOKS

1. HENCY, W. M. et al. *Online searching : an introduction*. London: Butterworths, 1980.
2. HOUTON, Bernard and Convery, John. *Online information retrieval systems*. 2nd ed. London: Clive Bingley, 1984.
3. *ONLINE bibliographic databases : A directory and source book*. 4th ed., edited by James L Hall. London: Aslib, 1986.
4. ROWLEY, J.E. *Computers for libraries*. 2nd ed. London: Clive Bingley, 1980.

UNIT 14 - NATIONAL DOCUMENTATION CENTRES

Contents

- 14.0 Aims and objectives
- 14.1 Introduction
- 14.2 INSDOC: Indian National Scientific Documentation Centre
 - 14.2.1 Objectives and Activities
 - 14.2.2 Organization and Management
 - 14.2.3 Information Services
 - 14.2.4 Information Dissemination
 - 14.2.5 National Centre for the International Serials Data System (ISDS)
 - 14.2.6 National Sciences Library (NSL)
 - 14.2.7 Manpower Development for Information Work
 - 14.2.8 Advisory and Research Service
 - 14.2.9 International and National Collaboration
- 14.3 NASSDOC: National Social Sciences Documentation Centre
 - 14.3.1 Objectives and Activities
 - 14.3.2 Information Services
 - 14.3.3 Information Dissemination
 - 14.3.4 Other Activities
- 14.4 DESIDOC: Defence Science Information and Documentation Centre
 - 14.4.1 Objectives and Activities
 - 14.4.2 Organization and Management
 - 14.4.3 Information Services
 - 14.4.4 Information Dissemination
 - 14.4.5 Manpower Development for Information Work
 - 14.4.6 National Collaboration
- 14.5 Summing Up
- 14.6 Model Answers
- 14.7 Assignment
- 14.8 Recommended Books

14.0 AIMS AND OBJECTIVES

In this unit, you are introduced to three important national level documentation centres in the fields of Science & Technology, Defence Sciences and Social Sciences, viz., INSDOC, NASSDOC and DESIDOC. Since the establishment of the INSDOC in 1952, the documentation and information services have been introduced in different subject fields and various sectors of the national economy. To meet exclusively the defence needs the DESIDOC has started

functioning since 1967. The establishment of NASSDOC by the Indian Council of Social Science Research (ICSSR) reflects the national concern for documentation and information services to support social science research.

After studying this unit, you should be able to:

- give a historical account of the growth and development of the three important national level documentation centres, viz., INSDOC, DESIDOC and NASSDOC;
- Explain the organization and management highlighting the information services, dissemination services, research and training activities, reprographic and other activities; and
- describe the computerisation activities in the three centres.

14.1 INTRODUCTION

In general, a documentation centre brings to the attention of the specialist users the current and recent literature of value to them, culls from the information sources, and indicates precisely the right kind of information at the right time to the right users. It is realised that the socio-economic development of a country depends on the availability of reliable information for decision making. India has already in existence national centres of information in Science and Technology, Medicine, Agriculture, Defence Science, Small Industries, Social Sciences, etc. They have emerged over the past three decades and some of them are well known nationally and internationally for the progress they have achieved. These centres provide the necessary infrastructure support to R & D activities in the fields of Science & Technology, Defence Sciences, Social Sciences, etc. These centres are essentially service institutions. The increasing scientific and planned development activities after the attainment of independence created a great demand for the providing of documentation and information services at the national level. These national centres are mission-oriented and are responsible for organising and providing service at national level in large sectors of national endeavour.

14.2 INDIAN NATIONAL SCIENTIFIC DOCUMENTATION CENTRE (INSDOC)

During the World War II the Government of India began to take interest in the development of scientific research in the country. It had set up a bureau to survey industrial activity which actually the fore-runner of the Council of Scientific and Industrial Research (CSIR) established in 1947. The scientific research received further impetus, with the growth in the number of scientific societies, scientific literature, scientific journals, etc. The Government of India evinced keen interest in developing documentation and information services as a necessary infrastructure support to R & D activities. The most significant development on the Indian scene of documentation in the early fifties was the establishment of the Indian National Scientific Documentation Centre

(INSDOC), at New Delhi, in 1952 by the Government of India in cooperation with the UNESCO for providing a full range of documentation services to the existing and projected national laboratories, scientific and technological institutions, universities, industries, etc.

14.2.1 Objectives and activities

The Centre established under the aegis of the Council of Scientific and Industrial Research (CSIR) has the following objectives:

- i) To receive and retain all scientific periodicals required in India;
- ii) To inform scientists and engineers of literature which may be of value to them by issuing a monthly bulletin of abstracts;
- iii) To answer specific enquires from information available at the centre;
- iv) To supply photocopies/translations of articles required by laboratories of individual workers;
- v) To be a national depository for reports of the scientific work of the nation, both published and unpublished;
- vi) To be a channel through which the scientific work of the nation is made known and available to the rest of the world.

Over the years, the INSDOC has also diversified its activities and has gone through various phases. In the first phase, the INSDOC remained under the administrative control of the Director of the National Physical Laboratory with a limited range of activities. Around 1963 it expanded its activities in view of the growing information requirements of the country. It was given the status of a full-fledged independent laboratory within the CSIR framework. A full time director was appointed.

These changes ushered in the second phase of development. New services and new publication programmes were added. New avenues were constantly explored. As a result, a few regional centres were established. Presently, the Regional Centres of the INSDOC are functioning at Bangalore, Calcutta and Madras. The Regional Centres help in mobilising the resources available in major cities/regions for supporting the document copy supply service. These also help in collecting data for Union Catalogues, and other compilations of the INSDOC. The user clientele scattered in various parts of the country find it convenient to approach the regional centres for availing themselves of INSDOC services.

Self Check Exercise-1

State the objectives and main activities of the INSDOC in about five lines.

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

14.2.2 Organisation and management

The activities of the INSDOC are carried out under the general direction of an Executive Committee. In scientific and technical matters a Scientific Advisory Council advises the Executive Committee. In addition to these statutory committees, a number of advisory committees such as Library and Documentation Committee, Translation Services Advisory Committee, Reprography Services Advisory Committee, Information Retrieval Advisory Committee, etc., are constituted every two years to advise on matters relating to the functioning of the INSDOC.

14.2.3 Information Services

As a service institution since its inception, the INSDOC has been offering a number of documentation and information services in response to specific requests from the user clientele. The services are being availed of by the R & D organizations, universities, industrial establishments, government departments and individual scientific workers. The services of the INSDOC are offered at nominal rates.

i) Document Copy Supply Service:

Scientists and technologists are often in need of copies of scientific papers and reports which are not readily available to them at their places of work. For this purpose, the document copy supply service has been offered by the INSDOC and its regional centres, since its inception. To meet these requests the holdings of the INSDOC's own National Science Library, and some major libraries in the country have been serving as main resource libraries. In addition, most of the science libraries in the country are cooperating with the INSDOC in making their resources available for operating the service. In extreme cases, copies of documents are ordered from abroad.

ii) Bibliography Compilation Service:

Scientific and technical workers, institutions and industrial establishments who have no means of finding out what has already been published in their areas of work/subject of interest, approach the INSDOC for the compilation of ad-hoc bibliographies on specific topics. This service has particularly been availed of by organizations in small-scale sector and also by individual research workers. In addition, the INSDOC also provides answers to technical enquiries which are normally of fact-finding type.

iii) Translation Service:

It is estimated that nearly 50% of the world's scientific literature is published in languages other than English. The R & D workers in India, are therefore, need of translations to keep themselves abreast of the developments taking place in non-English speaking countries. For this reason, the INSDOC since its inception has been offering translation service. Currently, facilities for translating from 20 foreign languages are available. In addition, the services of a panel translators are availed of to supplement the output and to develop subject expertise.

iv) Reprography Service:

The Reprography Section of the INSDOC has a full range of microfilms, microfiche and photocopying equipment including slide-making facilities.

v) Printing Service:

The printing section of INSDOC is well equipped to meet the printing needs of the publications of the INSDOC, the CSIR, its other establishments, and a few other scientific organizations. The section has at present six small offset units with the necessary ancillary equipment. In addition to a process camera, the section is equipped with dry copying equipment. The section has a few IBM electric typewriters and two composers providing the back-up for cold composition. The Art unit is responsible for the cover design, illustrations and layout of the publications printed at the INSDOC.

Self Check Exercise-2

List three different types of information services rendered by the INSDOC.

Note: i) Give your answer in the space provided below.

ii) Compare your answer with the model answer given at the end of this unit.

14.2.4 Information dissemination

The current activities of the INSDOC in the area of information dissemination are described below:

i) Indian Science Abstracts (ISA):

Initiated as a monthly abstracting journal in 1965 it is to ensure comprehensive coverage of scientific publications published in India as well as to cover papers of Indian scientists published in foreign periodicals. The ISA serves the twin objectives of acting as a stocktaking of national achievements as well as a feeder service to the international abstracting periodicals. It covers around 700 Indian scientific periodicals, proceedings of conferences and symposia, monographs, theses, patents, standards, and other adhoc publications. The ISA has been made a fortnightly since January 1985 due to an increase in the number of articles to be covered in the journal.

ii) Russian Science Information Service:

A Russian Science Information Centre (RSIC) was set up at the INSDOC in 1971 to implement a part of an agreement between the Government of India and the USSR Academy of Sciences so as to collect and make available Russian scientific literature to scientists and institutions of higher education and research in India. The centre is currently receiving about 3000 publications and 230 Russian periodicals in all fields of sciences and technology annually. For the dissemination of the contents of these materials, two bulletins are being issued regularly, viz., (i) *Russian Scientific and Technological Books: An Accession List*; and (ii) *Contents Lists of Soviet Scientific Periodicals*. From 1978 onwards the INSDOC has been bringing out a quarterly periodical *Russian Science Digest* appearing in two series, viz. the Natural Resources Survey and Exploration and Agricultural Science. For the future, the INSDOC is planning to bring out one or more series of digests in the areas of relevance to national development.

iii) National Index of Translations:

The publication of *National Index of Translations* was taken up as a monthly service. This index is a classified index of citations of translations made at the INSDOC and 280 other institutions in the country. To avoid duplication of translation effort, the INSDOC has been maintaining microfilm copies of translations done in a number of institutions. Recently, all these have been organized into a Translation Bank.

iv) Annals of Library Science and Documentation:

It is a quarterly periodical published by the INSDOC giving original contributions in the fields of library classification, cataloguing, bibliographical organization, documentation techniques,

mechanical methods of documentation and information retrieval, bibliographical standardization, reprography, etc.

v) Computer-based Information Retrieval:

For data processing work, three computer systems have been made use of. They are the IBM 360/44 system of the Delhi University Computer Centre, IBM 370 system of IIT, Madras, and the Cyber 170/720 system of the National Informatics Centre, New Delhi. A HCL workhorse word processor has also been acquired recently. The computer is currently being used for (i) preparation of indexes of the INSDOC publications and their cumulations, (ii) preparation and processing of Union Catalogue data, (iii) preparation of databases for SDI service; and (iv) Centralized Acquisition of Periodicals.

vi) SDI Service:

INSDOC is currently subscribing three databases, namely, CA search, INSPEC, and COMPENDEX for undertaking SDI services. A new search programme is currently under development for searching the INSPEC database in the Cyber 170/720 system of NIC of Electronics commission. Further, in collaboration with the Science Information Centre of the Indian Institute of Science, Bangalore, the SDI service from the INSPEC database has been initiated as a joint endeavour. A new search programme to give SDI service from COMPENDEX database is also being planned.

vii) Union Catalogue Processing:

INSDOC has developed its own package of programmes for the processing of Union Catalogue data on the IBM 360/44 systems. It has been building up the Union Catalogue database in machine readable form. The keyword subject index and author index of Indian Science Abstracts are processed in the in-house HP-1000 computer systems.

The INSDOC initiated a project for centralized acquisition of periodicals for the CSIR aided institutions in 1975. The work pertaining to this project is being computer processed. A computer readable database has been created to facilitate the updating of data in future revision of the directory type of publications, i.e., *Directory of Scientific Research Institutions in India*, *Current research projects in the CSIR Labs*, etc. Considerable data on the serial holdings from more than 750 scientific libraries have been collected in the form of Union Catalogues. The *Union Catalogue of current scientific serials in India* was brought out in December 1982. The INSDOC has also brought out a pilot fascicule of *Union Catalogue of scientific conference proceedings* available in the country. The INSDOC also created and published information tools and packages in the areas of Indian Scientific Institutions, Periodicals, Data Centres, Information Services & Facilities, Testing Facilities, Translators etc.

Self Check Exercise-3

Describe any five types of information dissemination services of the INSDOC.

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

14.2.5 National Centre for the International Serials Data Systems (ISDS)

The INSDOC is entrusted with the responsibility of registering serials published in the country. Under the purview of the ISDS, on physical verification of an issue of a serial, the ISSN has to be assigned and a detailed record for incorporating in the ISDS database is to be prepared. It is contemplated to automate the procedures of the centre, to develop a total system for creating records, using CDS/ISIS software package through IBM compatible PC/AT.

14.2.6 National Science Library (NSL)

A nucleus of the National Science Library (NSL) has been functioning at the INSDOC since 1964. The aim of the National Science Library is to have at least one copy of every worthwhile scientific publication published within the country, no matter where it is kept. The library will specialize in material which are not usually acquired by other science libraries in order to supplement the national collection.

The NSL has over the years been continuing its collection building programme with emphasis on periodical collection, conference proceedings, reference books, state-of-the art publications, reports and theses, and sources for acquiring publications.

Self Check Exercise-4

Write five lines about the National Science Library.

- Note: i) Give your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

14.2.7 Manpower Development for Information Work

Owing to the realization of the need for new skills and techniques to handle and disseminate information, the INSODC has started a full time training course leading to the award of Associateship in Information Science since 1964. The objectives of the INSODC course have been to train personnel and equip them with the necessary skill and technical know-how to plan, organise, manage, control, supervise, and evaluate documentation and information services in R & D, industrial and other cognate establishments.

In addition, the INSODC has also been offering ad hoc short-term training courses and on-the-job training to employed candidates from India and abroad.

14.2.8 Advisory & Research Services

The INSODC has been rendering advice to a number of institutions in technical matters, in drawing plans/ blueprints for development of information systems, services and products. Besides, enquiries on choice of reprography, printing and cold composition equipment and on the selection of certain practices and techniques in information field have regularly been received and attended to.

The centre functions as a NISSAT project to create Science and Technology citation database of Indian contributions appearing in the Indian journals.

14.2.9 International and National collaboration

India has been represented by the INSODC as a national member of the International Federation for Documentation (FID) since the early fifties. It maintains close cooperation with the UNESCO. It is also a member of the International Council of Reprography. The INSODC is closely collaborating with VINITI, Moscow in the Russian Science Information Project under the Cultural Exchange Programme.

At the national level, the INSODC is closely collaborating with the Bureau of Indian Standards, Department of Science and Technology, NISSAT Programme of DSIR, Electronics Commission, NIC Centre, etc.

The INSODC has been identified as the focal point from India for the SAARC Documentation Systems. The CDS/ISIS software package will be used for data entry, Universal Decimal Classification for classifying and the ROOT Thesaurus for the selection of keywords. Each focal

point will prepare a profile of institutional users including their special areas of interest and the expertise available with them.

14.3 NATIONAL SOCIAL SCIENCE DOCUMENTATION CENTRE (NASSDOC)

With the growth of social science research in India in post-Independence era, the need has been felt for establishing some mechanism at the national level for coordinating and strengthening the social science research. The Indian Council of Social Science Research (ICSSR) was established in 1969 to achieve these objectives. The ICSSR took steps in 1970 to set up the Social Science Documentation Centre (SSDC), now renamed as NASSDOC, to provide information and documentation support to the national level social science research activities.

14.3.1 Objectives and Activities

The NASSDOC objectives are to sponsor and promote research in Social Sciences and to facilitate its utilization with the help of the following programmes and activities:

- i) The building up of a collection of reference materials and referral services;
- ii) Collection of un-published theses approved by the Indian Universities, and research reports of the projects undertaken by the ICSSR and other social science research institutions assisted by the ICSSR;
- iii) Establishment of duplicating, reprographic and micro-filming units;
- iv) The making of effort for bibliographic control over social science materials;
- v) Providing of select bibliographies on request;
- vi) The awarding of study grants to scholars for working at libraries of their interest.

14.3.2 Information Services

The NASSDOC provides the following services to patrons in order to ensure access to and for optimum use of published and unpublished materials and equipment:

- i) **Inter-library loan:** Through inter-library loan, the NASSDOC has access to library materials available elsewhere in Delhi, and other places to serve the information needs of their clientele.
- ii) **Reprography services:** Provides single or multiple copies of articles/texts from documents, for research purposes.

iii) **Technical enquiry services:** The centre provides short bibliographies on specific subjects on demand at nominal charges. Reference queries in the Social Sciences are entertained on telephone, in person and through correspondence. In the event of lack of/or insufficient material at the library, the users are directed to other sources, where his needs can be adequately met. Advice and guidance for proper development of documentation activity of research organisations in Social Sciences is provided.

iv) **Computerization Activities:** The data generated by ICSSR funded projects have been acquired and organized in a standard machine readable form in Data Archives. A national information grid has been planned to link centres of excellence in Social Sciences in the country and give expeditious service to the seekers of information. This scheme is designed to assist Social Science researchers to solve their data processing problems, specially with the help of computers. The services include the devising of code-books/card designs, selection of appropriate statistical technique for a given problem and computer programming. These facilities are available at eight institutions in different parts of the country besides the Data Archives.

These computer facilities will be made available to the ICSSR supported research institutions, scholars working on Council's funded projects, doctoral and other fellows of the ICSSR and other researchers in order of priority subject to the availability of excess capacity.

14.3.3 Information Dissemination

A number of projects have been taken up as a part of information dissemination activity, viz., union catalogues' compilation, bibliographies on areas, research information series and indexes to Indian periodicals in Social Sciences, etc.

i) Union Catalogue Compilation:

Since its inception the NASSDOC has been actively engaged in the compiling of Union Catalogue of Social Science Serials available in important libraries in the country. It is being updated from time to time.

As a supporting activity, a *Union Catalogue of Newspapers* reflecting the holdings in Delhi libraries was brought out.

A retrospective *Cumulative Index of Indian Social Science Periodicals* has been compiled to provide bibliographic control of periodical literature published in the country during the last 100 years.

ii) Area Studies Bibliographies:

Aims at bringing together all Social Science material of research value pertaining to the different States and Union Territories available in any form and language.

iii) Language Bibliographies:

Seeks to cover research material in all disciplines in Social Sciences in Indian regional languages.

iv) National Register of Social Scientists in India:

The first volume of the *National Register of Social Scientists in India* containing relevant information on 7,500 social scientists has been published.

v) NASSDOC Research Information Series:

1. *Acquisition Update* (M)

To inform the user of new arrivals in its library the Acquisition Update lists monographs, reports added to the centre from time to time.

2. *Paging Periodicals: Preview of Contents* (Bi-M)

Brings every two months the contents of a whole range of Social Science periodicals and select books to the notice of readers.

3. *Bibliographic Reprints* (irregular)

4. *Bibliographies on Tape* (irregular)

5. *Conference Alert* (Q)

6. *NASSDOC Dockers* (M)

7. *Samajik Vigyan Samachar* (M) in Hindi

8. *Social Science News* (M)

9. *Social Science Research Index* (irregular)

10. *Indian Diary of Events* (Q)

vi) Index to Indian Periodicals: Sociology & Psychology:

This is a combined retrospective index to the contents of over 40 Indian journals from their respective first volumes to those of the year 1970. It gives access to more than 25,000 items published in these journals.

Self Check Exercise-5

Describe some of the information dissemination services of the NASSDOC organised for the benefit of social scientists.

Note: i) Give your answer in the space provided below.

- ii) Compare your answer with the model answer given at the end of this unit.

14.3.4 Other Activities

The ICSSR/NASSDOC provides grants-in-aid for the compilation of indexes and bibliographies. The NASSDOC also awards study grants. The purpose of the study grant is to provide financial assistance to scholars in the field of Social Sciences for visiting libraries to collect material for research. Requests for assistance under the scheme are considered only in respect of those scholars whose applications have been sponsored/recommended/endorsed by University Deptt./Research Institution/Organization.

14.4 DEFENCE SCIENCE INFORMATION AND DOCUMENTATION CENTRE (DESIDOC)

R & D activity in the Ministry of Defence, Government of India was started on a regular basis in 1948 with the formation of Defence Science Organization, which was reorganized in 1958 as Defence R & D Organization (DRDO). DRDO laboratories/establishments which are under the control of the headquarters are located at different stations and work on various defence R & D projects.

Information activity started with the formation of Defence Science Organization in 1948. With the setting up of Scientific Information Bureau (SIB) in 1958 some more activities like translation and publications were added. SIB was reorganized in 1967 when it became the Defence Scientific Information and Documentation Centre (DESIDOC) which functioned under the administrative control of the Defence Science Centre. In 1970, the DESIDOC was declared as a self-accounting unit and became one of the establishments under DRDO, headed by a Director.

14.4.1 Objectives and Activities

The Centre established under the Ministry of Defence has the following objectives:

- i) to provide information to the units at the headquarters, the laboratories/establishments of DRDO and other agencies of the Ministry of Defence and Coordinating scientific information programme of DRDO;

ii) Publications :

The DESIDOC brings out R & D publications such as journals, brochures, proceedings of seminars/conferences such as (i) *Defence Science Journal* (ii) *Popular Science and Technology*; (iii) *DESIDOC Bulletin*; (iv) *DRDO Newsletter*. In addition, the DESIDOC has compiled a *Directory of Defence Libraries/TICs in India*.

iii) Union Catalogue Project:

For effective resource-sharing among Defence R & D establishments the compilation of Union Catalogue was started in computerized format, viz.,

- a) *Union catalogue of periodical holdings of DRDO labs.*
- b) *Union Catalogue of patent holdings of DRDO labs.*

Self Check Exercise-7

Mention the current awareness activities of the DESIDOC.

- Note:
- i) Give your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

14.4.6 National Collaboration

The DESIDOC maintains a close liaison with libraries/TICs of the DRDO labs. A working manual on library procedures has been planned for use by the TICs to maintain uniformity in work.

14.5 SUMMING UP

In this unit we have

- i) described three important national documentation centres, viz., INSDOC, NASSDOC and DESIDOC and explained their objectives, functions and publications.
- ii) briefly mentioned the origin, organization, activities and their services.

14.6 MODEL ANSWERS

1. The main activities of the INSDOC are
 - i) to receive and retain all scientific periodicals required in India;
 - ii) to issue a monthly bulletin of abstracts
 - iii) to answer specific enquiries and supply photocopies/translations to individual workers;
 - iv) to be a national depository for reports of the scientific work of the nation, both published and unpublished;
 - v) to be a channel through which the scientific work of the nation is made known and available to the rest of the world.
2. The three important services rendered by the INSDOC are:
 - i) Document copy supply service.
 - ii) Bibliography Compilation service.
 - iii) Translation Service.
3. The important information dissemination services of the INSDOC are:
 - i) *Indian Science Abstracts (F.N)*;
 - ii) Russian Science Information Service;
 - iii) SDI Service;
 - iv) Union Catalogues and Directories Compilation;
 - v) National Index of Translations.
4. The National Science Library (NSL) has been functioning at the INSDOC since 1964. The aim of the NSL is to have at least one copy of every worthwhile scientific publication published within the country, no matter where it is kept. The library will specialize in materials which are not usually acquired by other science libraries.
5. The information dissemination services of NASSDOC are
 - i) the compilation of a union catalogue of social science serials, newspapers;
 - ii) compilation of areas studies bibliographies and language bibliographies,
 - iii) compilation of NASSDOC research information series,
 - iv) compilation of retrospective index to the contents of over 40 Indian journals in Sociology and Psychology from their first volume to that of the year 1970.

6. The following are the Computerisation activities of DESIDOC:
- i) has developed a software package called DRDO IRS which is being used for information retrieval and SDI service;
 - ii) is working out the modalities for forming a network for Defence R & D laboratories and establishments named Defence Science Information Network (DESINET);
 - iii) is engaged in on-line searching of 270 foreign databases through DIALOG information service for providing information required for R & D projects.
7. The current awareness services of DESIDOC are
- i) R & D Digest;
 - ii) Defence Science Alerts;
 - iii) Clippings from Indian Newspapers

14.7 ASSIGNMENT

Visit any of the national information centres described (or its branch offices) and write an account of its activities in your own words.

14.8 RECOMMENDED BOOKS

1. GUPTA, BM and Natham, S.S. etc. *Handbook of Libraries, Archives and Information Centres in India*, Vol. 7: Science and technology information systems and centres. Delhi: Aditya Prakashan, 1990.
2. KHANNA, J.K. *Advances in Librarianship*. New Delhi: Ess Publications, 1985.
3. AGARWAL, S.P. Social Science Data Services, *Financial Express* Nov. 27, 1982.

BRAOU

UNIT 15 - INFORMATION SYSTEMS AND NETWORKS :

NATIONAL & INTERNATIONAL

Contents

- 15.0 Aims and objectives
- 15.1 Introduction
- 15.2 UNISIST
- 15.3 National information systems and services
 - 15.3.1 NISSAT
 - 15.3.2 NICNET
 - 15.3.3 INFLIBNET
- 15.4 International Information systems and services
 - 15.4.1 INIS
 - 15.4.2 AGRIS
 - 15.4.3 DEVSIS
 - 15.4.4 Other systems
- 15.5 Summing Up
- 15.6 Model Answers
- 15.7 Assignments
- 15.8 Recommended Books

15.0 AIMS AND OBJECTIVES

In this unit we highlight the need and importance of international cooperation in the development of information systems and services and the efforts made by United Nations in this regard. We shall also describe briefly the efforts made towards the establishing of international and national information systems and networks.

By studying this unit you will be able to:

- explain why international cooperation is needed for the smooth flow of information;
- describe the salient features of international information systems like INIS, AGRIS, DEVSIS, etc.; and
- highlight the efforts made in India in this direction: eg., NISSAT, NICNET, etc.,

15.1 INTRODUCTION

Literature embodies knowledge and the yearning to have an access to all the published literature is not a new phenomenon. Since the time published literature became the primary media for communicating new knowledge and new ideas there has been a continuous growth of literature. As the volume of literature reached unmanageable levels, efforts towards bibliographic control intensified. Earlier efforts were aimed at preparing universal bibliographies covering all the literature published till then in the world. These efforts were initiated by individuals and later by organisations. The efforts could not be sustained and very soon it was realised that the task is a gigantic one which could be achieved not by individual efforts but by collective efforts. The experience of the disruption of these efforts caused by the First and the Second World Wars highlighted the need for a decentralized approach.

Moreover, the Wars have brought new challenges to the tackling of the problem of international bibliographic control. The power of knowledge was realised and large investments were made by nations in developing their science and technology base. This resulted in the proliferation of scientific and technological institutions, the tremendous growth in research activity, all leading to exponential growth of literature.

The rapid strides made by the developed countries, and the role of science and technology in their economic development made the other nations decide their priorities for investment. Even the developing countries now started investing vast resources in the development of a science and technology support for economic development which further increased the literary output. Not only the exponential growth of literature, but also the increasing use of new types of literature like Technical reports, Patents, etc., for scientific communication, the growing interdisciplinary nature of research resulting in the boundaries of the subjects changing all the time, also made the task of bibliographic control more complex than ever before. All these developments increasingly emphasised an urgent need to organise these vast resources of knowledge, to develop new tools for accessing and for making use of this vast resource, as also to minimise duplication of efforts as any effort spells investment.

However, the high investments in science and technology have helped in developing new technologies such as computers and communication technologies which offer new opportunities for using them as tools for achieving the goal of international bibliographic control.

While all these developments were taking place, there was no slackening of the efforts to identify an organisational setup suitable for international cooperation. The United Nations became interested in it resulting in the undertaking of a joint study by the UNESCO and the ICSU leading to the formulation of the programme of the UNISIST. The UNISIST was formally established by the UNESCO General conference in 1972.

15.2 UNISIST

UNISIST is a programme which provides guidelines for establishing a flexible and loosely connected network of information systems and sources based on voluntary cooperation.

The UNISIST programme offers a framework, within the United Nations family, in which national and international information systems can develop. The programme does not itself presume to be the unique system providing all scientific and technological information to users. Its role is rather to offer assistance to nations and to international organisations in the development of science and technology information systems and this in the social sciences as well as in the natural and exact sciences.

UNISIST can thus be considered as contributing to the achievement of a world system of information, based on voluntary cooperation among the different nations.

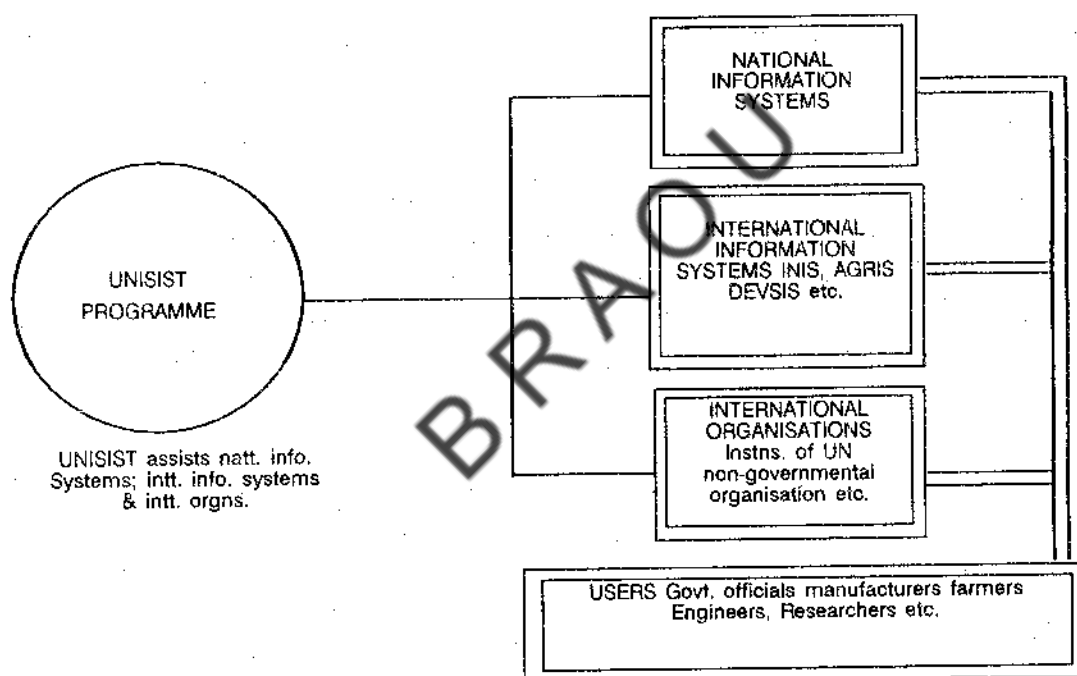


Fig. 10 UNISIST Programme.

Principally, the UNISIST attempts to serve as a catalyst to the development of information systems.

Based on the past experiences, it was felt that decentralization in organisational setup, voluntary cooperation, and specialization in coverage should be the guiding principles for developing international information systems and services.

Several programmes have been initiated by the United Nations for developing discipline, mission and referral oriented system in the fields of agriculture, health, labour, atomic energy, patents, etc., as also for the training of specialists and users, and the establishment of the infrastructure at the national, regional and international levels necessary for the development of information systems. Some of the international institutions involved in these activities are the IAEA, FAO, ILO, and WIPO.

The programme objectives of the UNISIST can be broadly summarised as hereunder:

- 1) Improvement of tools of system interconnection (survey of resources; standardization; unique codes for serials; system standardisation; communication technologies);
- 2) The strengthening of the role of institutional components of information transfer chains like libraries; abstracting, indexing and translation services; information analysis and data centers;
- 3) Development of specialised manpower through the identifying of various groups and the undertaking of research in information science;
- 4) Development of scientific information policies and structure — recommendations made to the Governments to provide the necessary infrastructure such as the creating of a focal point; the developing of national information systems and networks facilitating access to each mode; and the removal of the administrative barriers affecting the access to information;
- 5) Provision of assistance to developing countries in the development of scientific and technical information infrastructures such as the establishment of central technical information agency; cooperative agreements; the establishing of a common forum for discussing the relevant developments in the field; and then development of networks by providing assistance for their establishment.

The General Information Programme (PGI) adopted at the 19th session of the General conference of the UNESCO highlighted the activities which were identified at the national and the international level for successful and easy networking of information resources.

The activities identified at the national level are:

- formulation of information policies;
- creation of the infrastructure and the strengthening of the existing organisations;
- establishment of special information systems, if necessary;
- establishment of training programmes capable of meeting the needs of all categories of personnel;
- adoption of standards facilitating satisfactory access to external sources.

The UNISIST has laid much stress on building up the national foci and the strengthening of the national infrastructures. Activities in developing countries were emphasised, especially those leading to the establishment of information systems in member states.

Self check exercise-1

Enumerate the objectives of UNISIST?

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

15.3 NATIONAL INFORMATION SYSTEMS AND NETWORKS

Supporting the development of National Information Systems (NATIS), the UNESCO has published several guidelines for the designing and planning of national information systems. One of the documents dealing with the objectives of national and international action discusses topics which include;

- National information policy;
- Design and the planning of national information systems (NATIS);
- Methodology of analysis of users' needs and inventory of the existing information sources;
- Establishment of a legislative framework for the implementation of the NATIS;
- Methodology of cost analysis for the efficient implementation of the national plan for the NATIS (in the context of its contribution to national development)

The essential infrastructural components identified for a national information system are a national library system, a national system of archives, and a system of general / or specialised documentary sources.

If we examine the situation in India, the country has already established during the last four decades a strong institutional infrastructure for the national library system.

There are already in existence national libraries, viz., the National library at Calcutta, the National Science library, the National Medical library, the Indian Agricultural Research library, as also a wide-spread infrastructure of public library services, libraries belonging to educational

institutions at various levels, and special libraries attached to research institutions/laboratories, industry, business, Government departments/Ministries.

The country has also established the National Archives and institutions offering to specialised information and documentation services, viz., INSDOC, DESIDOC, NASSDOC, SEN-DOC etc.

Some of the major information systems developed, and envisaged are discussed in the following sections.

15.3.1 NISSAT

The efforts for establishing a National Information System for Science and Technology were initiated during the fifth Five Year Plan. Realising the need and the importance of such a system to support science and technology activities the National Committee on Science And Technology asked the CSIR to develop a plan. The CSIR availed itself of the services of the UNESCO consultant, Dr. Peter Lazar who after examining the existing infrastructure and facilities prepared the report. The report formed the basis for the establishment of the NISSAT.

Aims and Objectives of the NISSAT

- to help development of efficient information systems and services to support science and technology activities;
- to promote optimum utilization of the existing information systems and services and the developing of new ones in the areas required;
- to promote ways and means by which various information systems and services are made compatible with each other for facilitating the interlinking and sharing of resources;
- to ensure the reduction of the duplication of efforts and the optimal utilization of the existing systems;
- to augment the existing systems with the necessary facilities so as to enable them serve user needs at national level;
- to promote use of modern technologies for information handling and the training of manpower to handle them;
- supporting research in the field of information science and technology.

The NISSAT programme has received fresh impetus in the seventh Five Year Plan. Since 1985, the responsibility of the implementation of the NISSAT has been given to the Department of Scientific and Industrial Research (DSIR).

The implementation of the NISSAT programme is through the identifying of organisations/agencies at different levels having a specific role to play in the overall realization of the objectives. The levels identified are national, regional, sectoral and local. At the national level the organisations identified for providing information services are the INSDOC, DESIDOC, SENDOC, ICAR, ICMR, etc.

i) Sectoral Centres of the NISSAT:

The sectoral centres specialize in acquiring, processing and disseminating information on a discipline or a product or a mission. These centres are strengthened with facilities so as to enable them to meet the information needs of the users at the national level in these specialised areas.

All these sectoral centres more or less perform the following activities:

- analyse their users' needs and requirements;
- build up comprehensive collections, collections of special materials relevant to the area/field they are operating in;
- generate current awareness services;
- conduct literature searches, compile select bibliographies;
- maintain comprehensive database with some information centres maintaining even specialised databanks;
- provide access to international databases;
- offer referral, translation and reprographic services;
- conduct user education and in-house training programmes;
- maintain liaison with other national and international organisations working in the field;
- enter sometimes into collaborative agreements with international organisations to provide inputs regarding Indian contributions to the field.

The sectoral centres established by the NISSAT are;

- 1) The National Information Centre on Machine Tools And Production engineering (NICMAP), established at the Central Machine Tools Institute (CMTI), Bangalore;
- 2) The National Information Centre for Drugs And Pharmaceuticals (NICDAP), established at the Central Drug Research Institute (CDRI), Lucknow;
- 3) The National Information Centre for Textiles and Allied Subjects (NICTAS), established at Ahmedabad Textile Industry Research Association (ATIRA), Ahmedabad;

- 4) The National Information Centre on Chemistry and Chemical Technology (NICHEMS), established at the National Chemical Laboratory (NCL), Pune;
- 5) The National Information Centre for Food Sciences and Technology (NICFOS), established at the Central Food Technology Research Institute (CFTRI), Mysore; and
- 6) The National Information Centre for Leather and Allied Industries (NICLAI), established at the Central Leather Research Institute (CLRI), Madras.

The following sectoral centres have been newly established:

- 7) The National Information Centre on Bibliometrics (NICOB), established at the Indian National Scientific Documentation Center (INSDOC), New Delhi;
- 8) The National Information Centre on Compact Disks (NICOCD), established at the National Aeronautics Laboratory (NAL), Bangalore.
- 9) The National Information Centre on Advanced Ceramics, established at the Central Glass & Ceramics Institute, Calcutta.
- 10) The National Information Centre on Crystallography, established at University of Madras, Madras.

The criteria which have led to the establishment of these new sectoral centres are discussed below:

Bibliometric studies have become one of the most important methods of evaluating research outputs. An excellent tool which helps in conducting such studies is Science Citation Index brought out by the Institute of Scientific Information (ISI), Philadelphia. The coverage of Indian journals in this tool is not adequate to provide a realistic estimate of India's science and technology activities. A project to develop the National Citation Index has been undertaken by the INSDOC with the active cooperation from the DESIDOC and the ICMR. The new sectoral centre, the NICOB, has been established to serve this purpose.

Another emerging technology which is going to play a crucial role in information storage and retrieval activity is CD-ROM Information Centre at the National Aeronautical Laboratory, Bangalore, to provide the required information support to the users interested in acquiring and using this media.

The establishment of another sectoral centre is reported to have been considered by the NISSAT for Tea.

ii) Information Analysis and Data Centres:

The importance of hard data in science and technology hardly needs to be emphasised. Keeping this in view, the NISSAT has encouraged the development of the following centres:

- 1) The National Information Centre on Crystallography (NICRYS), established at Madras University, now supported also by the NISSAT and the UGC.

- 2) The National Information Centre for Advanced Ceramics (NICAC), established at the Central Glass and Ceramics Research Institute, Calcutta.

iii) Information Products and Services:

The NISSAT has implemented a plan of action to update and maintain the database, NUCSSI (National Union Catalogue of Scientific Serials in India), on the national networks like the INDONET or the NICNET for online retrieval of information.

The NISSAT is also planning to provide online access to international databases by establishing online search facilities on a permanent basis, again making use of networks like the INDONET and NICNET. Five centres namely, the INSDOC, New Delhi; the NCL, Pune; the NAL, Bangalore; the CLRI, Madras; Indian Association of Cultivation of Science, Calcutta; have been identified for the purpose.

iv) Other Activities:

The NISSAT has taken up library networking in some areas for better utilisation and sharing of resources: e.g., CALIBNET.

The NISSAT has been identified as the agency by the UNESCO for coordinating the distribution of the CDS/ISIS package for information storage and retrieval. Two versions of the package, a VAX version and another, a micro version are being distributed to organisations interested in using this package. NISSAT has organised several training programmes to educate the users as to how this computer software package can be used and implemented.

15.3.2 NICNET

The acronym NICNET stands for the National Informatics Centre Network. The objective of the computer networking is to facilitate easy exchange of information for efficient decision making in the Government. The network aims at linking the Centre and the States, the States and their districts. Besides these, the network seeks to maintain links between different Ministries and Departments so that information can be easily exchanged, as also to provide access to useful information for benefit of the general public.

The concept of Governmental data network originated in 1973 and the NICNET was commissioned in 1977 by the National Informatics Centre (NIC) supported by the United Nations Development Programme (UNDP).

The network facilities

- the monitoring of socio-economic projects;
- online retrieval from databases and updating;
- optimum utilisation of expensive computer resources;
- emergency communication system;
- the sharing of the latest software tools; and

- dissemination of information and exchange of messages and information between Central Govt., State Govt. and District administrative units.

One of the crucial factors in the efficient functioning of a network is the choice of communication network besides the computer hardware and software options. The satellite based communication system facilitates inter-nodal network, i.e., between the districts, states, regional centres, and the national headquarters. The terrestrial network provides communication facilities around each node.

The NIC has installed four super computers at Delhi, Pune, Bhubaneshwar and Hyderabad in the first phase. These are the four main nodes of the network. The Delhi system functions as the main host. Mini computer systems, and personal computer systems are being installed/planned for installation at the district and block levels.

15.3.3 INFLIBNET

The acronym, INFLIBNET, stands for Information and Library Network. The INFLIBNET is expected to become a cooperative communication network of libraries, bibliographical information centres of higher learning covering all disciplines, R & D institutions and national organisations. It is also expected to offer a variety of services like cataloguing services, database services, collection development, document supply and communication based services.

Presently, large collections of information resources are being built up at various universities involving large investments and processing efforts. No library can achieve self-sufficiency, however, large the collections may be. Moreover, a library cannot afford to be self-sufficient, owing to financial constraints. Additionally, there is an urgent need to avoid duplication of efforts in respect of collection development, technical processing, and generation of services. Most importantly, the vast national resources need to be optimally utilized, and be made easily accessible. In the USA and Europe, the networking efforts have brought about a qualitative improvement in the nature and variety of information products and services, while at the same time minimizing duplication of efforts.

Realising the need for efficient sharing of resources, the University Grants Commission constituted a national committee on library networking to examine the feasibility of establishing a network. In December 1988, the committee after examining the various aspects published a project proposal for the establishment of an Information and Library Network, in short, called INFLIBNET in the country during the 8th Five Year Plan (1990-95) period. The report entitled "*Development of an Information and Library Network: Report of the Interagency Working Group*" discusses 1) the standardisation in library and information practices; 2) the infrastructure needed for the network, such as the computer hardware and software options, the communication network architecture; 3) the type of data inputs and their preparation; 4) the retrospective conversion of records; 5) the type of services envisaged; 6) the personnel training requirements; 7) the

management mechanism; 8) the maintenance and implementation of the network; and 9) the cost implications.

The network is expected to operate at different levels, viz., national, regional, sectoral and local levels. There would be a national centre and four regional centres (North, East, West and South) which will maintain catalogues of the holdings of the libraries belonging to the region and databases of projects, institutions and specialists. At the sectoral level the UGC Information Centres and the sectoral centres of the NISSAT offer a variety of information products and services. At the local level, colleges and universities cater to the needs of their users.

The catalogues of library will be aggregated bottom-upwards, i.e., from college/department to university library and to regional centres).

About 100 libraries (University and R & D institutions have been identified to serve as document resource centres).

The other efforts include the introduction of automation in 170 university libraries and 500 college libraries.

The INFLIBNET is envisaged to fulfil the objectives which include:

- optimal utilisation of vast information resources being built up by the university libraries and information centres by developing the necessary tools required for the purpose;
- maintenance of an online catalogue of the holdings of the libraries, a Union catalogue;
- providing access to databases maintained by the NISSAT sectoral centers and UGC information centres;
- providing Online access to international databases;
- evolve methods to facilitate document delivery service;
- minimise duplication of efforts in document processing by developing methods for shared cataloguing;
- evolve uniform standards for adoption by different participating organisations for computerisation efforts;
- evolve common communication protocols for easy exchange and sharing of information; and
- use this network for sending and receiving electronic mail messages and conducting teleconferencing, etc.

Self check exercise-2

Mention the names of sectoral centres of NISSAT.

- Note: i) Write your answer in the space provided below.
ii) Compare your answer with the model answer given at the end of this unit.

15.4 INTERNATIONAL INFORMATION SYSTEMS AND NETWORKS

To conceptualise and evolve guidelines for international cooperation is one formidable task, and to successfully implement it is another herculean task. For the successful implementation of international cooperative information systems the tasks include the defining of the scope, coverage, the priorities of the information system, and the deciding of the type of organisational setup, the technology infrastructure, the intellectual efforts, and the standardisation procedures needed for it.

International cooperative systems emerged as a result of the experience gained from the attempts at bibliographic control, coupled with the new opportunities provided by the availability of new technologies like computers.

It was realised that a decentralised setup was the most suitable organisational setup for international cooperation. It was felt that a single agency would not be able to identify, select, organise, and process information sources emanating from different parts of the world. Some responsibilities had to be taken up by the participating agencies and some others by the central agency for ensuring the smooth functioning of the international cooperative systems. Moreover, at the same time the benefits of cooperation have to be passed on to the participating agency. So, decentralised inputs, centralised processing, and decentralised outputs form the basic principles on which these systems have been designed. Another factor to be reckoned with is that having realised the futility of developing information systems covering all areas of knowledge, it was felt that development of mission oriented information systems would be a better alternative.

Though the systems described in the following sections differ from one another, they all follow more or less the above mentioned common ideologies and principles. Some of the common features of the cooperative systems are mentioned below:

- They are mission oriented systems accepting inputs relevant to the mission irrespective of the discipline they belong to ;

- They are based on the principle of decentralised inputs, centralised processing and decentralised outputs;
- A participating agency is identified for each country for it to contribute inputs;
- The participating agency has the autonomy for the identification and selection of material for the input to be contributed to the system;
- The system provides standard guidelines to the participating agency for selecting and recording the bibliographic details, for analysing the text, for indexing and abstracting the information sources;
- The central processing agency receives the inputs from the participating agencies and processes them using computers, and maintains the central database by periodically updating it;
- Before adding the inputs to the main system the inconsistencies in the inputs received are removed;
- Periodically the system of the central agency generates comprehensive information products and services from the database and distributes them to the participating agencies;
- The products are available both on paper media and on magnetic tapes;
- Document delivery is ensured whenever the original document is emanating from channels other than the normal ones.

In the following sections some of the important international cooperative systems are discussed.

15.4.1 INIS

The acronym, "INIS", stands for International Nuclear Information System. The objective of INIS is to provide a comprehensive nuclear information announcement and abstracting service.

The feasibility of international cooperative information systems was amply demonstrated first by INIS. The system was a pioneer in many ways, and acted as a model for other systems like AGRIS, DEVSIS, etc. The INIS started functioning in April 1970.

The institution responsible for the crystallisation of the idea was the International Atomic Energy Agency, Vienna. The institute in collaboration with 67 member states of the IAEA and active participation of 14 international organisations such as the ISO, the FAO, and the UNESCO is facilitating the efficient functioning of the system. The system is responsible for the storage and retrieval of information and document availability in the field of nuclear science and technology.

The INIS ensures bibliographic control in the field of nuclear science and technology through decentralised input. The central database is located at the IAEA, Vienna, and the par-

ticipating agencies include the INIS member states or organisations identified in each country to provide inputs. Bhabha Atomic Research Centre, Bombay, is acting as the nodal point for coordinating and reporting India's contribution to nuclear science and technology literature.

i) INIS Inputs:

The inputs are prepared after screening, collecting, and selecting the literature pertaining to nuclear science and technology. The categorizing, cataloguing, indexing and abstracting of the literature selected is done as per the INIS standard requirements. One of the most important features of the INIS is the provision of original documents. This is facilitated as the participating agency needs to send one copy in readable form of each document which it has reported and which is not available through normal publication channels.

ii) Standardisation efforts:

The INIS has evolved and adopted several standardisation procedures again in conformity with the international standard conventions in information handling. These efforts serve as a model for other international cooperative systems. The standardisation efforts ensure a high level of quality and uniformity of inputs, participation and sharing of resources. In this connection, it may be mentioned that the INIS reference series includes nineteen reference manuals dealing with various aspects of the INIS, provide guidance and information to participating agencies.

The thesaurus used for the vocabulary control for the system is the *INIS Thesaurus*, which is very comprehensive.

iii) INIS outputs:

A bibliographic database of literature comprising references to literature from 1950 to date is maintained at the central agency at Vienna. Online searching of database is possible. The database is available on magnetic tape for use by participating agencies.

The *INIS Atomindex* is the abstracting and indexing service reporting literature in the field of nuclear science and technology. The product is also available on magnetic tape for participating agencies.

BARC generates a variety of information products and services from the database which includes INIS/SDI service to its users.

15.4.2 AGRIS

The acronym, "AGRIIS", stands for International Information System for Agricultural Science and Technology. The tremendous growth of literature in Agriculture, the uncoordinated way the resources are being up built results in a great deal of duplication of efforts. This prompted the Director General of the FAO way back in 1969 to conceptualise an international information

system. A study group was appointed to study the feasibility of establishing such a system during a meeting at Rome.

The study group made the following recommendations;

1. To establish an international information system for agriculture sciences and technology as soon as possible under the authority of the FAO.
2. To organise the system at two levels.

It was conceptualised that the system should be at LEVEL-I, a comprehensive documentation service providing Current Awareness Services and at LEVEL-II, act as a network of services grouped by special fields or missions, including specific information services which would provide specific information through abstracting services, extensive indexes and other forms of individual and direct services to users across national borders and barriers.

The AGRIS is a mission oriented system covering the entire field of Agricultural science and technology. Being a mission oriented system, any information relevant to the system is accepted irrespective of the basic discipline in which it is discussed. Moreover, agriculture like any other technology has no national barriers. The international information system aims at being a multilingual, multidisciplinary and truly international system by encouraging as many countries as possible, both Developed and Developing, to participate and contribute to the system.

The AGRIS intends to act as a media for sharing, exchanging knowledge and techniques, experiences, pertaining to the field of Agriculture and technology. Increased emphasis of national governments on application of scientific thinking and technology to the agriculture sector as also increasing realisation that comprehensive coverage of information on such a vast sector is very difficult, has given the necessary impetus to the AGRIS system. Currently, 122 countries are participating in the AGRIS of which 117 are contributing inputs to the AGRIS. In addition, 14 multinational centres and the FAO's own documentation centre which covers the whole U.N. family as well as the ISO are contributing inputs.

The central processing is done at the FAO, Vienna. In India, the Indian Council of Agricultural Research (ICAR) is the nodal point. The Agricultural Research Information Centre attached to the ICAR, New Delhi, provides the inputs based on 100 journals being published in India.

1) AGRIS Inputs:

Inputs to AGRIS are sent by each participating country after identifying the relevant source, cataloguing and indexing based on the conventions identified for the system. These inputs are sent in the form of worksheets or even floppy disks. The inputs are checked and inconsistencies removed before accepting them for information into the main system. Since

1985, abstracts have been included and the inclusion of abstract has been made compulsory for organisations providing inputs. Presently, the carrier language of the system is English.

ii) Standardisation efforts:

Realising the importance of vocabulary control, the AGRIS system has developed a multilingual thesaurus called the AGROVOC for use by its participants.

Besides preparation of the thesaurus, the efforts for standardisation includes preparation of manuals, training programmes comprising training materials and educational tools for both input providers and users; the holding of seminars and workshops; the conducting of intensive training programmes at the headquarters as well as the individual centres.

iii) AGRIS Outputs:

The bibliographic database created and maintained at the IAEA is available online with the IAEA and other online vendors. One of the information products of the system is AGRINDEX, a current awareness service. The AGRIS 1 database is available on magnetic tape to subscribers to enable participating agencies to generate SDI service from these tapes.

The Agricultural Research Information Centre has compiled the National Agricultural Bibliography (1975-84) and several other subject bibliographies. It also generates Current Awareness Services from the Agris database.

15.4.3 DEVSIS

The acronym, "DEVSIS", stands for Development Science Information System. It attempts to provide access to world wide resources on social and economic aspects of development. It aims at meeting the information needs of all the groups involved in the planning and implementation of developmental activities.

The DEVSIS system emerged as a result of a sponsored feasibility study undertaken by the Organisation for Economic Cooperation and Development (OECD), the United Nations Development Programme (UNDP), the International Labour Organisation (ILO), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), and the United Nations Department of Economic and Social Affairs.

The DEVSIS is a mission oriented international cooperative system. As it is not a discipline oriented system, any item dealing with Social and Economic development, irrespective of the basic discipline in which it figures, is included.

The DEVSIS central unit is located at the International Development Research Centre (IDRC) in Ottawa, Canada. The Centre for Development of Instructional Technology (CENDIT), New Delhi, has been identified as the participating agency for India.

i) DEVSIS Inputs:

Though it is easy to organise published literature, it requires a lot of effort to identify and organise unpublished material. Moreover, in the field of development science, vast resources of information exist in the form of unpublished material. The wide variety of information sources include feasibility and investment studies, project or reports, working papers, proposals, theses and research reports. The wide variety of information generators include, Government Departments, Ministries, banks, research institutes, university departments and a number of voluntary organisations. The types of information includes a part from published literature, facts and data regarding socio-economic environment; developments and activity information on agriculture, industry, transport, education, social welfare and public health education. The information is available on a variety of media which includes audio visual media like film strips, sound recordings, and computer readable data.

ii) Standardisation efforts:

To standardise the vocabulary, a Macrothesaurus has been developed by the OECD and has been identified as the thesaurus to be used by all participating agencies. The thesaurus has also been adopted by the IDRC, the ILO, the UNIDO, etc., for use while designing their information retrieval systems.

iii) DEVSIS Outputs:

The central processing agency at the IDRC, Ottawa, receives the inputs, does quality and standardisation checks, and carries out the necessary corrections before adding it to the master file. The programmes on the computer also produce an error list in case it comes across mistakes in the input. Thus, a high level of consistency is maintained in the master file. At the end of each production cycle, the DEVSIS central unit produces machine readable files containing all the new records. Copies are sent to participating countries and organisations.

The records are arranged category-wise and within each category by geographic area. Copies of the bibliographic tapes are made available to the subscribers to tape service.

DEVINDEX is the printed product of the DEVSIS system.

Self check exercise-3

Mention the names of central processing agency and the Indian nodal point of the INIS and the DEVSIS.

- Note :
- i) Write your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

15.4.4 OTHER SYSTEMS

i) INFOTERRA:

The Infoterra was originally the International referral system of U.N. environment programme meant for critical assessment of the global environment. In January 1979, the name, "Infoterra" was adopted. The system primarily offers referral service and operates through a decentralised network of environmental information system operating in each country. It has national focal points (NEP) in each country; regional focal points coordinating the activities of a group of countries; sectoral focal point designated by the UNEP providing in-depth information in specialised sectors. The Infoterra programme activity centre is at UNEP headquarters at Nairobi.

The system maintains an inventory of resources and guides the users to the appropriate source of information regarding environment.

In 1982, the Government of India has established Environmental Information Systems (ENVIS) with the central focal point is located in the Dept. of Environment. Around ten ENVIS centres have been established to serve as nodes in different regions to cover the subject areas adequately.

ii) INPADOC

The INPADOC (International Patent Document Centre) resulted from a treaty concluded in 1972 between Republic of Austria and the World Intellectual Property Organisation (WIPO). The INPADOC's head office is located at Vienna, Austria. The INPADOC generates a wide variety of indexes for the patent information sources. The INPADOC centre offers online patent search services to users. Several services are offered on the COM (Computer Output in Microfiche), the most important of which are Patent Classification Service - generation of a list of all patents pertaining to a particular field of technology; Patent Family Service and INPADOC patent gazette. Besides these, the INPADOC maintains a large collection of patents and provides either a paper copy or a microfiche copy based on the user's choice.

The national patent office provides inputs to the database maintained at INPADOC. The Govt. of India has established a Patent Information System (PIS), which is located at Nagpur.

iii) POPIN

The need to establish an International cooperative system on population was felt by the United Nations Population Commission, and the recommendation for a Population Information Network was made during a meeting convened by the International Cooperation on National Research in Demography (CICRED) at Mexico city in 1975. A population coordination unit was established in 1981 within the U.N. Population Division in the United Nations Secretariat to carry out the project.

The POPIN is a decentralised network comprising libraries, information centres, and clearinghouses acting as members dealing with population information. In India, the National Institute of Health and Family Welfare acts as the nodal point for the POPIN in providing inputs.

Self check exercise-4

Mention the names of international information system dealing with environment and population.

- Note:
- i) Write your answer in the space provided below.
 - ii) Compare your answer with the model answer given at the end of this unit.

15.5. SUMMING UP

- * The efforts towards universal bibliographic control have started a long time ago. They were initiated by enthusiastic individuals and individual organisations. They could not be sustained as their efforts could not match with the pace of literature growth.
- * The two World Wars not only interrupted these efforts but also their after effects made the task all the more complex.
- * The United Nations worked on the nature of organisational setup required to tackle the issue. As a result of a joint study undertaken by the UNESCO and ICSU, the UNISIST programme emerged.

- * The UNISIST programme offered several guidelines for the development of international information systems based on voluntary cooperation and for the development and establishment of National information systems.
- * The NISSAT emerged as a result of these efforts. It has established several sectoral centres and information analysis and data centres in India.
- * The major national information networks operational and those envisaged include the NICNET and the INFLIBNET.
- * International information systems have emerged, based on the principle of decentralised inputs, centralised processing and decentralised outputs.
- * Some of the major international information systems in which India is participating are the INIS, the AGRIS, and the DEVSIS.

15.6 MODEL ANSWERS

1. The programme objectives of UNISIST can be broadly summarised as hereunder:
 - a) Improvement of tools of system interconnection;
 - b) The strengthening of the role of institutional components of information transfer chains;
 - c) Development of specialised manpower;
 - d) Development of scientific information policies and structure - recommendations made to the Governments to provide the necessary infrastructure;
 - e) The providing of assistance to Developing countries in the development of scientific and technical information infrastructure.
2. The names of sectoral centers identified by the NISSAT are:
 - a) The National Information Centre on Machine Tools and Production Engineering (NICMAP);
 - b) The National Information Centre for Drugs and Pharmaceuticals (NICDAP);
 - c) The National Information Centre for Textiles and Allied Subjects (NICTAS);
 - d) The National Information Centre on Chemistry and Chemical Technology (NICHEMS);
 - e) The National Information Centre for Food Sciences and Technology (NICFOS);
 - f) The National Information Centre for Leather and Allied Industries (NICLAI).
3. The central processing agency for the INIS is located at the International Atomic Energy Agency, Vienna, and the Indian nodal point is Bhabha Atomic Research Centre, Bombay.

The central processing agency for the DEVSIS is located at the International Documentation Research Centre, Ottawa and the Indian nodal point is the Centre for Development of Instructional Technology, New Delhi.
4. The international information system which is acting as a referral system for the field of environment is the INFOTERRA. The International Information System dealing with population is the POPIN.

15.7 ASSIGNMENTS

1. List out the information products and service offered by any one sectoral centre of the NISSAT. Mention the names of the centres, their location and the subject areas they are catering to.
2. Select the printed products and services of any two International Information Systems. Prepare a brief write up on its product/service.

15.8 RECOMMENDED BOOKS

GUHA, B. *Documentation and Information*. 2nd ed. Calcutta: World Press, 1983.

GUPTA, B.M. and others (ed.). *Handbook of Libraries, Archives and Information Centres in India*. Vol.6: International Cooperative Information Systems, Networks, Programmes. New Delhi: Information Resource Centre, 1989.

GUPTA, B.M. and others (ed.). *Handbook of Libraries, Archives and Information Centres in India*. Vol.7: Science and Technology Information Systems and Centres. New Delhi: Aditya Prakasan, 1990.

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COURSE-8 : LIBRARY CATALOGUING PRACTICE

This book deals with the topics in Library Cataloguing Practice included in the syllabus for the Bachelor Degree in Library and Information Science (BLISc) offered by the Dr. B.R. Ambedkar Open University. This is a revised edition of the course material published in 1985. These the topics cover the 'core area' of the subject to be studied. The syllabus for the sake of convenience is divided into blocks and units. There are two blocks in this course : Block-I Anglo-American Cataloguing Rules, 2nd edition (AACR2) and Block-II Classified Catalogue Code (CCC). Each Block is further divided into Units. Each unit generally covers a specific areas of the subject. The units are prepared in accordance with a format so designed as to enable you read and understand them without much difficulty. Each unit begins with a contents list, and is followed by aims and objectives of the Unit, and introduction to the content. The subject matter has been sub-divided into smaller units with subheadings. Self check exercises are provided to test your progress of understanding the content.

A catalogue is the tool of library which unfurls the holdings of the library. A catalogue can answer number of questions if it is based on scientific principles. To this end many individuals and organisations have attempted to compile rules and have published several catalogue codes. Among them AACR2 and Dr. S.R. Ranganatham's Classified Catalogue Code are popular and used in our libraries.

The present book deals with Block-II Classified Catalogue Code (CCC).

BLOCK-II : CATALOGUING OF DOCUMENTS BY CLASSIFIED CATALOGUE CODE (CCC)

This block deals with cataloguing of documents using *Classified Catalogue Code*, Edition 5. CCC is an international code with scientific basis. Ranganathan was of the firm belief that subject approach through a classified portion of the catalogue is more helpful in satisfying the users' needs than the alphabetical approach. Thus the code was originally planned for the classified catalogue. However the code was later extended with additional rules for dictionary catalogue code. The history and development of the code is dealt in detail in Course-4: Library Cataloguing Theory. In this unit we are concerned with the application of the rules and the preparation of different catalogue entries.

We have divided the block into eight units. Each unit covers the specific area, grouping similar problems encountered in the cataloguing practice. We have made an attempt to provide you with varied examples to the extent possible to explain you the major rules in the code.

The first unit gives you an introduction to CCC, covering its structure, style of writing, main entry preparation, etc. The second unit explains the chain procedure and the preparation of class index entries.

Unit-3 deals with Personal Authorship. Though the rendering of names of personal authors in the Heading Section is similar to that of AACR2, the style of writing is somewhat different. Unlike AACR2, CCC does not accept more than two authors.

Collaborators and Pseudonyms are covered in Unit-4.

Unit-5 deals with Series and Multi-Volumed books. CCC recognises Various Kinds of series, such as independent series, interdependent series, alternate series and pseudo series. A few examples have been worked out.

There are several books with more than two contributions, each with its own title and not forming a continuous exposition of the subject. CCC has included such works in Composite books. Unit-6 deals with the cataloguing of Composite books.

Unit-7 deals with Corporate authorship. Books are authored by not only personal authors, but also the responsibility of creating them rests with government, institutions, committees, commissions, seminars/conferences, etc. Such bodies are called Corporate authors.

Unit-8 covers the cataloguing problems with regard to simple Periodical publications.

CONTENTS

Block/ Unit No.	Title	Page No.
BLOCK-II :	CATALOGUING OF DOCUMENTS BY CLASSIFIED CATALOGUE CODE (CCC)	
Unit-1 :	Introduction to Classified Catalogue Code	1
Unit-2 :	Class Index Entries	20
Unit-3 :	Personal Authors	34
Unit-4 :	Collaborators and Pseudonyms	75
Unit-5 :	Series and Multi-Volumed Books	116
Unit-6 :	Composite Books	167
Unit-7 :	Corporate Body	212
Unit-8 :	Serials	270

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UNIT 1 : INTRODUCTION TO CLASSIFIED CATALOGUE CODE (CCC)

Contents

- 1.0 Aims and Objectives
- 1.1 Introduction
- 1.2 Classified Catalogue Code
 - 1.2.1 Genesis
 - 1.2.2 Scientific basis
 - 1.2.3 Structure
 - 1.2.4 Nature of Classified Catalogue
 - 1.2.5 Description and Style
- 1.3 Types of Entries
 - 1.3.1 Main Entry
 - 1.3.2 Added Entries
- 1.4 Examples
- 1.5 Terminology used in CCC
- 1.6 Summing Up
- 1.7 Answers to Self Check Exercises
- 1.8 Assignment
- 1.9 Recommended Books

1.0 AIMS AND OBJECTIVES

In the introduction to this book we have stated that you have to practice cataloguing of documents according to Classified Catalogue Code (CCC), Edition 5. In this unit we are introducing some fundamental concepts of the CCC.

After studying this unit you will be able to

- discuss the nature of classified catalogue;
- explain how to prepare the main entry;
- describe the different parts of an entry.

1.1 INTRODUCTION

You have studied how to prepare different catalogue entries for books and serials by the *Anglo-American Cataloguing Rules, Edition 2*. Classified Catalogue Code (CCC) is another international catalogue code developed and first published by the Great Indian Librarian, Dr. S.R. Ranganathan in 1934. It has been stated that it is the first code complete in every respect for a classified catalogue. The foundation of the code is based on the normative principles and the canons of cataloguing which Dr. Ranganathan evolved in his "Theory of Library Cataloguing".

CCC was originally devised for classified catalogue. Though the rules were later extended to dictionary catalogue by providing additional rules, it has been mainly used for classified catalogue.

In classified catalogue the main entries are arranged in a classified order and hence it is called classified catalogue or classified part. The added entries are known by different names : Class Index Entries, Book Index Entries, Cross Reference Index Entries and Cross Reference Entries. These entries are arranged alphabetically and hence it is called

Alphabetical catalogue or alphabetical part. Since the classified catalogue contains two parts or two sequences of entries it is called a Bipartite catalogue. We will discuss about these in detail in the succeeding sections.

1.2 CLASSIFIED CATALOGUE CODE (CCC)

1.2.1 Genesis

In Ranganathan's own words "the classified catalogue owes itself to the sense of revolt induced in the mind while learning cataloguing in 1924-25 in the School of Librarianship of the University College of London". The London School of Librarianship was teaching the Anglo-American Code of 1908 without any reference to any other codes then in existence, nor telling the drawbacks of the 1908 code. There was no reference to the beautifully produced classified catalogues of the Carnegie Library of Pittsburgh and the Mitchell Library of Glasgow.

On his return to Madras, Ranganathan delved himself to cataloguing the Madras University Library Collection. With full freedom at his disposal, in a period of six years between 1926 and 1932 nearly 70,000 volumes were classified and catalogued. The first edition of the *Classified Catalogue Code* came out in the year 1934 and since then it had undergone several changes and it is now in its 5th edition, published in the year 1964. In 1974 some amendments were brought in and also few more clarifications were published in *Library Science with a slant to Documentation*. However the units that follow are restricted to the 5th edition of Classified Catalogue Code.

1.2.2 Scientific basis

The outstanding feature of the CCC is that in one comprehensive volume it includes canons and normative principles applicable to cataloguing. Ranganathan applied the normative principles in a systematic manner to the rules of cataloguing so as to tackle the problems of cataloguing practice. In other words, the normative principles have conditioned the rules in CCC on the basis of scientific method. The new types of documents emerging with march of time can normally be catalogued by the interpretation of the given rules. In case the complexities transcend the capacity of rules, then the rules can be either amended or extended in the light of the normative principles to achieve the pragmatic solutions.

The normative principles are grouped into three groups : i) General Laws, ii) Five Laws of Library Science, and iii) Canons of Cataloguing.

There are five general laws of library cataloguing: Law of Interpretation, Law of Impartiality, Law of Symmetry, Law of Parsimony, and Law of Local variation.

There are nine canons of cataloguing. They are Canon of Ascertainability, Canon of Sought heading, Canon of Context, Canon of Permanence, Canon of Currency, Canon of Consistency, and Canon of Recall value. (The normative principles are discussed in detail in Course-IV : Library Cataloguing Theory, Unit-4).

1.2.3 Structure of the Code

The whole code is divided into 19 parts. Each part is denoted by Roman Capital letters A to U (excluding I and O).

- A Introduction
- B Canons of Cataloguing
- C General Normative Principles

- D Evolution of the Catalogue
- E Recording
- F Terminology
- G Conflict of Authorship
- H Name of Person
- J Rendering of Names
- K Class Index Entry
- L Cross Reference Index Entry
- M Single-Volumed Simple Book
- N Composite Book and Multi-Volumed Book
- P Periodical Publications
- Q Union Catalogue of Books
- R Union Catalogue of Periodical Publications
- S National Bibliography
- T Indexing Periodical
- U Abstracting Periodical

Each part is divided into number of chapters. Chapters are denoted by two Roman capitals, in which the first letter denotes the part and the second letter denotes the chapter. For example, the notation JA represents the specific chapter on 'Personal Name' in Part J Rendering of Names.

CCC is the only code in English language meant for a classified catalogue. However it also provided certain rules for the construction of a dictionary catalogue (chapter PZD); rules relating to Union Catalogues, National Bibliography, Indexing Periodicals, abstracting Periodicals, and Incunabula and Non-Book Materials. (These parts are out of the scope of the syllabus of this Course).

1.2.4 Nature of the Code

In classified catalogue some entries are number entries and some entries are word entries. Thus the catalogue prepared according to classified catalogue code consists of two parts: the Classified part and the Alphabetical Part.

The Classified part of the catalogue contains all its entries as number entries. The numbers are call numbers or class numbers. The entries are arranged in a logical order by their call numbers and class numbers and they serve as a classified or systematic subject catalogue. It helps a reader to have a view of all documents in a specific field of subject. The main entry and the cross reference entry are number entries and hence forms part of the classified section.

The Alphabetical part of the catalogue contains the word entries. The word entries are arranged alphabetically as in a dictionary. Book Index entry, Class Index entry and Cross Reference Index entries are word entries. This part serves as a alphabetical index to the classified part.

1.2.5 Description and Style

The Code is oriented to the cataloguing of print media (books and periodicals) with minimum description in libraries of all sizes irrespective of the languages of the materials.

CCC gives much importance to the title page and its over-flow pages. We have to omit certain descriptive portion of the entry as CCC prescribes 'Simplified Cataloguing'. Information like the place of publication, name of the publisher, collation, certain types of notes seems to be unnecessary according to the Code. But year of the publication of the book is taken for the construction of book number.

Library Hand:

Catalogue entries are to be written in library hand, i.e., all words and numerals in entries are to be in a bold upright hand, the letters and digits being detached from one another.

Abbreviations and Designations :

Abbreviations or contractions, designations in entry headings, individualising elements, capitalizations are mandatory according to the code. The contractions to be used in writing entries are given in Chapter EC. Some of the frequently used contractions are reproduced here :

Abridged	Abr	Edited	Ed
Annotated	Annot	Editor(s)	Ed
Annotation	Annot	Edition	Ed
Annotator(s)	Annot	Illustration	Ill
Assistant	Assis	Illustrator(s)	Ill
Author(s)	Auth	Introduction	Introd
Before Christ	BC	Joint	J
Century	Cent	Number(s)	N
Commentary	Comm		
Commentator(s)	Comm	Page(s)	P
Compiled	Comp	Pseudonym	Pseud
Compiler(s)	Comp	Report	Rep
Dedicated	Ded	Reporter(s)	Rep
Dedicatee(s)	Ded	Revised	Rev
Dedication	Ded	Revisor(s)	Rev
Director	Dir	Special	Spl
		Translated	Tr
		Translation	Tr
		Transtor(s)	Tr
		Volume(s)	V

Lines and Indentions:

The code prescribes multiple card system, i.e., different formats for the different entries prepared for a document. As you have seen in Block-I: AACR2 Practice, the catalogue cards of 5" x 3" (12.5 x 7.5 cm) size are used for preparing the entries. The first and second vertical lines serve as First and Second Indentions, while the horizontal line is used as Leading line.

Typography and Punctuation:

The following are the basic rules for the typography and punctuation to be used in the entries :

- i) Entry Elements are to be written in Block letters;
- ii) A Directing Element is to be underlined. In print, it is to be in italics;
- iii) A Descriptive Element is to be underlined. In print, it is to be in italics.

- iv) Secondary Elements are to be enclosed in a set of circular brackets. If initials appear in the Secondary Element do not use full stop as in ordinary prose, but leave space after them.
- v) Individualising Elements, if any, are to be enclosed in a sperate set of circular brackets;
- vi) Descriptive Elements are to be written using the prescribed abbreviations and they should be preceded by a comma in the Entry;

Book Size:

The Code does not include physical description of the document such as extent of material, illustration, etc. However, it indicates the size as under-sized, over-sized, and abnormal-size. In the case of under-sized document the same is indicated by underlining the book number. An over-sized document is indicated by over-lining the book number. An abnormal document is shown by both under-lining and over-lining the book number. Similarly documents in different collections are indicated by a collection symbol placed above the class number or below the book number.

Continuation Card:

If an entry exceeds the space on a card it is continued in another card. The connecting phrase "Continued in the next card" is added at the right end of the bottom most line of the first card. The word "Continued" is written at the right end of the top of the following card. The leading section is repeated in all the continued cards.

Self Check Exercise-1 :

What are the different types of entries that go into the classified catalogue ?

Note : i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

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1.3 TYPES OF ENTRIES

You already know how to prepare different catalogue entries as per AACR and their names. The classified catalogue code uses different terminology to identify different entries. You have to acquaint yourself with the terminology used in CCC. As far as the type of entries are concerned there are wide variations. Such variations are explained with examples in the succeeding sections.

1.3.1 Main Entry

According to CCC "an entry is the ultimate unit record in a catalogue". The main entry according to CCC" is the specific entry giving maximum information about the whole of a document. All the other entries - Specific or general - relating to the document, are normally derived from the Main entry". Hence the Main entry is the basic entry for the document.

The main entry in CCC is prepared under the class number and book number. The leading section in the entry is occupied by the call number or class number of the document. All the main entries are arranged according to these numbers in the classified catalogue. This arrangement help the users to know what documents are available in the library on any given topic.

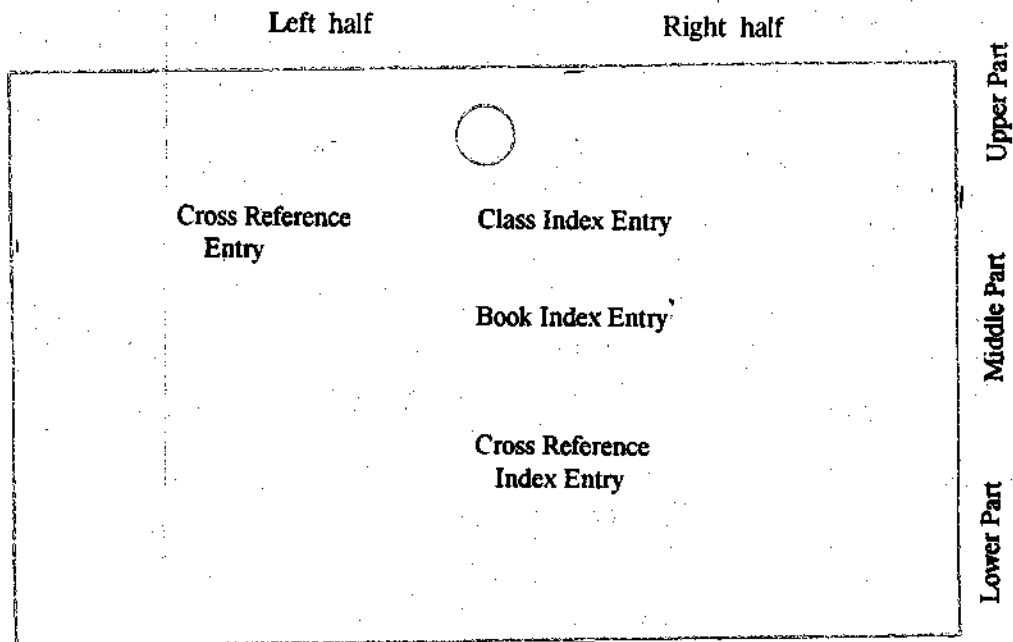
The parts of the Main entry are as follows :

- (i) **Leading Section :** This is represented by the call number of the document. The call number is entered in the first horizontal line starting from the first indention. The class number and the book number are separated by two spaces.
- (ii) **Heading Section :** The name of the author (Personal or Corporate) or any other substitute is entered in this section. Here Author includes single or joint author, corporate body, collaborator, pseudonymous author and in a few cases the title of the document can be the heading. It starts from the second indention on the second horizontal line.
- (iii) **Title Section :** This section includes 3 parts - Title, edition and collaborators. Title is written on the next horizontal line after the heading. It starts from the second indention and continuation of the line from the first indention. Initial articles like 'a', 'an' and 'the' are to be omitted from the title.
- (iv) **Note Section :** This section consists of series note, extract note, change of title note and any other information.
- (v) **Accession Number :** Accession Number is given on the bottom most line starting from the first indention.
- (vi) **Tracing Section :** Tracing is given on the verso (back) of the main entry card. The purpose of tracing is to furnish information as to what additional entries have been made for the document in addition to the main entry. The back of the main entry card is divided (imaginary) into two vertical parts. On the left half the class number of each cross reference entry is recorded. The right half is again to be divided into three parts by two imaginary lines. The upper part contains the headings of class index entries; the middle part contains the headings of book index entries; and the lower part contains the headings of cross reference index entries.

The above sections are shown diagrammatically in a skeleton card.

	Leading section
	Heading Section Title Section Note Section
Accession No.	

Back of the Main Entry Card



Self check Exercise - 2

Define 'Main Entry'. What are the different sections that constitute a main entry of classified catalogue ?

Note : i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

1.3.2. Added Entries

An entry other than the main entry is an added entry. The added entries are derived from the main entry. The number and type of added entries that are to be prepared depend on the nature of document to be catalogued. The added entries in CCC are known by different names. They have been divided into four groups :

- i) Cross reference entries
- ii) Class index entries
- iii) Book index entries; and
- iv) Cross reference index entries

Book index entries and cross reference entries are specific entries; and cross reference index entries and class index entries are generic entries.

Cross reference entry is a specific subject entry, which begins with the class number of the subject. It gives only the class number for a portion of document. It is a part of the classified section of the catalogue. It is also called Subject Analytical Entry'.

Class index entry is a verbal subject entry which refers from the name of a class to its class number. In other words a class index entry is a word entry, derived from the class number of the main entry or a cross reference entry by chain procedure. Class index entry helps in directing the users to the class number of the subject he is searching in the alphabetical part of the catalogue.

Book index entry is an added entry given for an author, editor, translator, and also under the name of the series. In some cases, it is given under the title.

Cross reference index entry is a generic entry. In this you are directed from one word or group of words to another synonymous word or set of words in the alphabetical part of the catalogue. *See* and *See also* words are used for directing the readers from one heading to another heading.

1.4 EXAMPLES

What is discussed above can be shown practically by taking an example.

Example-1

SOCIOLOGY

Jon M. Shepard

University of Kentucky

WEST PUBLISHING COMPANY

St. Paul New York Los Angeles San Francisco

Other Information :

Call No. Y M1

Accession No. 5009

Main Entry

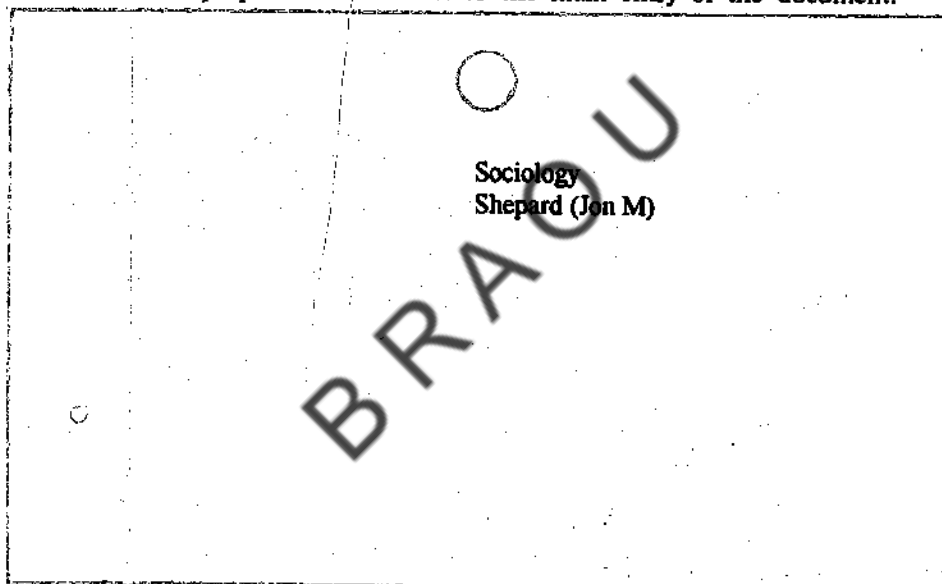
	Y M1	
		SHEPARD (Jon M). Sociology.
	5009	○

In the above example, the leading section in the main entry has the call number. It is made up of the class number and book number. The class number is derived by colon classification. You can see in the body of the entry, no date of publication is shown. In CCC the book number is based on date of publication. In this example M1 is 1981. It was worked out from a separate table given in *Colon Classification* (Edition 6; page 1.13). The class number in the main entry starts from the first vertical and after two spaces the book number is entered.

In the Heading Section the entry element of the name of the author is written in block letters from the second vertical line. The initials secondary elements are put in parenthesis (Circular brackets). The Rule is initials are to be expanded as far as possible. CCC does not use full stop after the initials. The date of birth of the author is to be given as individualising element if available. In case, the Heading section cannot be accommodated in one line, the continuation should start from the first vertical (on the next line).

In the above example, the title of the book "Sociology" is entered in the Title Section. The title is written from the second vertical and a fullstop is added at the end of the title.

Accession number is entered on the last line of the catalogue card starting from the first vertical. Tracing is to be given on the back of the main entry card. Tracing indicates all the entries to be prepared in addition to the main entry of the document.



Here the headings for the class index entry (subject) and book index entry (author) are shown. Only these two types of entry headings are applicable. Cross reference entry and cross reference index entry are not applicable to this particular document taken as example.

We will explain you in detail in the next unit about how to derive the headings for the class index entry and how to prepare class index entries. Preparation of other added entries are discussed here.

Added Entries

According to CCC all entries other than the main entry are added entries. CCC further makes a distinction between a specific added entry and general added entry. A specific added entry mentions a particular document whereas a general added entry does not mention any document. All book index entries are specific added entries. The class index entries and cross reference index entries are general added entries. Entries prepared under the name of author, Editor, Translator or any other collaborator are book index entries. Cross reference index entries are *See* and *See also* entries.

For the workedout example two added entries are called for : one class index entry and one book index entry. The class number of the book is re-translated into subject terms. The class number 'Y' stands for 'Sociology' in Colon classification. Hence 'Sociology' is taken as index term for the class index entry.

Class Index Entry

		SOCIOLOGY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Y

The Author Book Index entry is shown below. The leading section in this case is the name of the author and the Index number (i.e., call number) is to be written in the same line if there is sufficient space, otherwise it is to be written on the next line in the extreme right side.

Book Index entry (Author)

		SHEPARD (Jon M)
		Sociology. Y ME

CCC does not recommend Title Book Index Entry except in cases where they are-

- i) fanciful title;
- ii) if they contain a proper noun;
- iii) if they are treated in usage as a proper noun.

Even to the above three recommendations, title entry need not be prepared if it has already been used as the Heading of the main entry or as a Heading of a class Index entry.

In the example under study the title becomes a class index entry and as such there is no necessity of giving a separate title entry. (preparation of class index entries is shown in Unit-2).

Self Check Exercise - 3

Name the items for which book index entries are provided.

Note : i) Write your answer index entries are provided.

ii) Compare your answer with the model answer given at the end of this unit.

.....

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Example - 2

D.H. LAWRENCE PLUMED SERPENT

Edited by
Ronald G. Walker

Other Information :

Call No. O111,3M85,P M3
Accession No. 8575
Year of Publication 1983
Series : Penguin English Library
D.H. Lawrence was born in 1885

The main entry and added entries for the above example are worked out below:

Main Entry

Class Number	O111,3M85 M3	
Author	LAWRENCE (D H) (1885)	
Title	Plumed serpent. Ed by Ronald G Walker.	
Collaborator	(Penguin English Library).	
Accession number	8575	

Book Number
Date
birth
Series

Explanation : The Leading section in the main entry has the call number, made up of the class number and book number. It may be seen that in the body of the entry, no date of publication is shown. In CCC the book number is based on date of publication. In the above example M3 is 1983. The class number in the main entry starts from the first vertical and after two spaces book number to be entered.

In the Heading section name of the author is written in block letters from the 2nd vertical. The initials are put in circular bracket. The rule is initials are to be expanded as far as possible. CCC does not use full stop after the initials. The date of birth of the author is to be given as individualising element. In case, the Heading section cannot be accommodated in one line, the continuation should start from the first vertical.

In the above example the title of the book is "The plumed Serpent" and CCC omits the initial article and hence "The" is omitted. The title ends with a full stop and the editor is written as a continuation by the word Ed without a full stop after Ed. Name of the collaborator written as it is without inverting, and ends with a full stop. The title is written in the second vertical and all continuations will be from the first vertical.

Series note is written in bracket from the second vertical and if there is any continuation, it starts from the first vertical. CCC recommends to give a series number in case such a number is not provided to the series. The suggestion is to coin a number according to the sequence of the accession numbers or in any convenient sequence.

The accession number is entered on the last line of the catalogue card starting from the first vertical.

Tracing

Plumed Serpent, Lawrence (D H) Lawrence (D H), Fiction Fiction, English English, Literature Literature Lawrence (D H) Walker (Ronald G), Ed. Penguin English Library
--

Tracing is done to know what other cards are made for a book. It is essential specially when you have to withdraw the cards from the catalogue. It is better you make the tracing immediately after making the main entry. This helps you to know what additional entries are to be made for the book on hand. For example for D.H. Lawrence's book the tracing will be as follows :

In the above tracing, there are five class index entries. These class index entries are derived from class numbers through chain procedure. We will explain you in detail how to derive class index entries and the preparation of added entries for these index terms in the next unit.

The added entries for the example worked out are given below :

Book Index Entry (Author Entry)

		LAWRENCE (DH) (1883).
	Plumed serpent.	O111,3M85,P M3

In the above author entry the leading section is occupied by the name of the author and the second section is the title. The Index Number is written in the same line of the title.

Book Index Entry (Collaborator)

		WALKER (Ronald G), <i>Ed.</i>
	Lawrence : Plumed serpent.	O111,3M85,P M3

In the above collaborator entry, the name of the editor is written on the leading section and the name of the original author is entered in the second section. Only author's short name without the initials is written and it is followed by a colon and the title of the book. The Index Number (i.e., call number) is written on the same line.

The descriptive element used in the Heading to be underlined if written in hand or typed and in print it should be written in italics.

Book Index Entry (Series)

		PENGUIN ENGLISH LIBRARY.
		Lawrence : Plumed serpent. O111.3M8,P M3

In the above Series entry, the name of the series is entered on the leading line in block letters. The second section is written as in the collaborator book index entry. (Series added entries will be discussed in detail in Unit-4)

Self Check Exercise-4

When the title book index entry is given ?

Note : i) Write your answer in the space given below.

ii) Compare your answer with the model answer given at the end of this unit.

1.5 TERMINOLOGY USED IN CCC

To facilitate the study of the Classified Catalogue Code, some of the important terms used by SR Ranganathan are given below. You have to be familiar with these terms to understand the Code (See also part F of CCC)

Abbreviated Title : *See* Short title

Abridgement : Reduced form of a work got by condensation and / or omission of details, but retaining the whole general sense and the unity of the original work.

Adaptation : A version of a work, re-written for a particular purpose, but not so changed as to be deemed an independent work on the basis of the quality of its thought and expression.

Added Entry : Entry other than main entry.

Alternate title : A substitute introduced by "or" or its equivalent, and forming part of the title.

Anonymous Work : Work of unknown authorship either personal or corporate.

Artificial Composite Book : Composite book without a generic title to denote all the contributions collectively.

Author : *Sense - 1* Person creating the work, that is, the thought and the expression constituting it. *Sense - 2* corporate body owning responsibility for a work that is, for the thought and the expression constituting it.

Author Analytical : Specific added entry referring from the name of the author and the title of a contribution occurring in a host document to its Locus, that is, the host document and the place of occurrence in it.

Binder's Title : Short title usually found tooled on the spine of a book.

Book Index Entry : A specific added word entry.

Chain Procedure : Procedure for deriving class index entry from a class number, in a more or less mechanical way.

Class Index Entry : Subject entry which refers from the name of a class to its class number.

Collaborator : A person or corporate body associated with a work and / or its author or authors in a secondary capacity not amounting to authorship - for example, director, guide, assistant, commentator, illustrator, engraver, translator, reviser, editor, reporter, writer of introduction or foreword, epitomiser, adapter, libratist, etc.

Compiler : Author (personal or corporate) making a work by collecting information from various sources and arranging them in a particular way.

Composite Book : Book with two or more contributors, each with its own title, not forming a continuous exposition and often, (though not necessarily) by different authors.

Consolidated Entry : Two or more entries consolidated into a single entry.

Consolidated General Entry : General entry replacing two or more general entries.

Consolidated Specific Entry : Entry mentioning two or more specific documents.

Contributions : Work forming a part of a composite book or a periodical, or a serial.

Corporate Body : A number of persons (or organisations) taken collectively - usually as united or organised, or coming together informally, in a common cause or for common action. Examples are Government, Institution, Conference, Committee, etc.

Cross Reference Entry : Specific subject entry which mentions a portion of a document, in which the subject is treated. (It may also be called subject analytical).

Cross Reference Index Entry : General added entry referring from one word or set of words to another synonymous word or set of words.

Document : Embodied thought (Record of work on paper or other material fit for physical handling, transport across space and preservation through time)

Edition : One of the different printings or reproductions of a document with or without change in thought content and each being distinguished or by some other term like "New" "Revised" and "Enlarged". Besides "Arden Edition", "Variorum Editon", "Memorial Edition" and "Leob classics" are the other forms of Edition with a proper noun.

Entry : Ultimate unit-record in a catalogue or a document list.

Fanciful Title : Title that does not disclose the subject of the work.

General Entry : Entry not mentioning any specific document.

Half Title : Title, usually, short, given on the page of a printed book, usually found before the page containing the full title of the work.

Heading Section : Leading section of a word entry; or second section of a main entry, or third section of a cross reference index entry.

Host Document : A Macro document is called the Host Document for each of the micro documents embodied in it. For example, a periodical is a macro document. Each article in it is a micro document.

Index Number Section : The section in an added entry where the call number or class number is given.

Joint Authors : Two or more authors (personal or corporate) sharing responsibility for the thought and expression constituting the work.

Leading Section : The first section of an entry.

Library Hand : All words and numbers in an entry are written in a bold upright hand, their letters and digits being detached from one another.

Locus : The exact position of a microdocument in a host document.

Main Entry : Specific entry giving maximum information about the whole of a document.

Multi-volumed Book : Book in two or more volumes giving a continuous exposition, of thought content and compelling the treatment of all the volumes as an inseparable set.

Number Entry : Entry beginning with a call number or a class number

Over-flow of title page : Page(s) immediately succeeding or preceding the title-page of a document or a volume of it and containing part of the information usually given on the title page.

Proper Name title : Either a Fanciful Title or a Title beginning with a proper noun and for this or other reason having the status of a proper name.

Pseudonymous author : An author assuming a false or fictious name or any other specification different from the real name.

Running title : Short Title usually found printed in the top line of each verso page or all the pages of a book.

Serial : Periodical publication of which each volume or each periodical group of volumes embodies more or less the same kind of information.

Series : A set of books (not constituting a multi-volumed book) issued successively by one publisher or by one sponsoring body or person, in a uniform style, and having some similarity of subject or standard or purpose.

Short title : The name of a work, more brief than its full title, without prejudice to intelligibility and help in identifying the work.

Specific Entry : Entry mentioning a specific document

Specific Added Entry : Subject entry which mentions a document in which the subject is treated.

Sponsors : Person or corporate body with whose good will, authority, or finance or under whose auspices a work is published. The responsibility of thought content rests solely on the author of the work but not on the sponsor. (A sponsor is not author).

Sub-Title : A secondary or (subordinate title usually explanatory, and forming part of the title.

Subject Analytical : See Cross reference entry.

Subject Entry : Entry giving information about a subject.

Tell-tale Title : Title that discloses the subject of the work.

Title : Name of work. There are several attributes to titles. Some of them are - Abbreviated Title, Alternative Title, Fanciful Title, Half Title, Proper Name Title, Running Title, Short Title, Sub-title, Tell-Tale Title, Uniformised Title, etc.

Title Analytical : Specific Added Entry referring from the title of a contribution occurring in host document, to its locus, that is, the host document and the place of occurrence in it.

Title Page : Page of a document or a volume of it, containing its Title-statement. Usually, it also contains the author-statement, the collaborator-statement, and the imprint. It also indicates the Edition in many cases.

Title Section : Section of a main entry, giving the title of the document catalogued, along with the names of collaborators and Edition if any.

Tracing Section : Back of a main entry card, indicating all the Added Entries of a document.

Uniformised Title : Title uniformised by popular or cataloguing usage in lieu of listless, and often unintended, variants of the title of one and the same work in different editions or the titles of different volumes of one and the same work.

Word Entry : Entry beginning with a word, (or in rare cases, with a symbol given in the author-statement of a document as a substitute for name of author).

1.6 SUMMING UP

In this unit we have discussed about the genesis and nature of classified catalogue code evolved by S.R. Ranganathan. It is a unique contribution of Ranganathan. It is an international code based on the normative principles and the canons of cataloguing.

The CCC has established a 'Symbiosis' of classification and cataloguing. The class index entries (subject entries) are derived from class numbers through chain procedure. There are

two distinct parts : Classified Part (number entries) and Alphabetical Part (word entries). Main entry and its sections and different entries and their preparation have been explained in this unit. The chain procedure and the preparation of class index entries will be explained in Unit-2.

1.7 ANSWERS TO SELF CHECK EXERCISES

1. The classified catalogue consists of two parts : the Classified Part and the Alphabetical Part. The classified part contains all the number entries (main entry, cross reference entry) and the alphabetical part contains word entries. The word entries are class index entries, book index entries and cross reference index entries.
2. The CCC defines the main entry as "the specific entry giving maximum information about the whole of a document. All the other entries, specific or general, relating to the document are normally derived from the main entry". The main entry constitutes five sections. They are leading section, heading section, title section, notes section and tracing.
3. Book index entry is an added entry given for an author (joint author), collaborator (editor, translator, compiler) and also under the name of the series. In some cases, it is also given under the title.
4. CCC has not recommended title book index entry except in cases where they are -
 - i) fanciful title,
 - ii) if they contain a proper noun.
 - iii) if they are treated in usage as a proper noun.

1.8 ASSIGNMENT

Catalogue the following books. The title page and other information are provided.

Assignment-1

CHEMISTRY

Structure and Dynamics

FRANCIS MORION MILLER

McGraw-Hill Book Company

New York

1985

.....

Other information :

Call No. E M5

Acc No. 91661

.....

MODERN MATHEMATICS

J.F. Talbert

Other Information :

Call No. B L7

Acc No. 15892

Success in examinations certificate series

1.9 RECOMMENDED BOOKS

RANGANATHAN, S. R. *Classified catalogue code : With additional rules for dictionary catalogue code*. Bangalore: Sarda Ranganathan Endowment for Library Science, 1988.

SHARMA, C D. *Practical cataloguing: Classified catalogue*. Delhi : Metropolitan book, 1980.

VARMA, A. K. *Classified catalogue code : Entries and procedure*. New Delhi : Criterion publications, 1988.

UNIT 2 : CLASS INDEX ENTRY

Contents

- 2.0 Aims and Objectives
- 2.1 Introduction
- 2.2 Purpose of class index entries
- 2.3 Methodology of chain procedure
 - 2.3.1 Guidelines for deriving CIE
 - 2.3.2 Recording of CIE
- 2.4 Examples
- 2.5 Summing Up
- 2.6 Answers to self check exercises
- 2.7 Assignment
- 2.8 Recommended Books
- 2.9 Glossary

2.0 AIMS AND OBJECTIVES

In the previous unit we have stated that class index entries are subject entires and they are derived from class number. Subject approach is one of major approaches users use to locate books on a topic in any library. In this Unit we are discussing the method of deriving class index entries with examples. This method is known as chain procedure or chain indexing in CCC.

After studying this unit you should be in a position

- to explain methodology of chain procedure;
- to derive class index entries through chain procedure;
- to provide tracing in order to prepare class index entries.

2.1 INTRODUCTION

Classified catalogue entries are arranged into two differemt sections. One section contains only the entries with call number or class number. The second part of the catalogue contains only the word entries arranged in the alphabetical order of the words. The subject entries are by class numbers and a reader must have thorough knowledge of the scheme of classification to trace a book in the catalogue. To overcome this dufficulty classified catalogue also provides subject headings, but not pre-coordinated as Sears of LC Subject Headings. Ranganathan devised a new technique to derive subject headings. It is based on the class number of the document and derived in a mechanical way. It is named as Chain Index and the entries derived by Chain indexing are called Class Index entries. They have been dealt in detail in Library Cataloguing Thoery.

2.2 PURPOSE OF CLASS INDEX ENTRIES

In the previous unit we have worked out one example but we have not explained you in detail how to workout class index entries. Instead we have stated such details would be further explainted in this unit.

As explained in the previous unit, the leading section in the main entry is made up of call number and all the entries in the classified part of the catalogue are arranged by these numbers. If a reader wants to refer to the documents on a particular subject he/she should

know the call number or class number represented by the subject of his interest. Take the example given in the previous unit. The leading section of the main entry was occupied by the call number O111,3M85,P M3. Don't you think it is difficult to understand such numbers? To overcome such a difficulty CCC also provides word entries. A word entry prepared on the subject of a book is class index entry. Dr. S.R. Ranganathan has devised a method to derive class index entries from the class number of a document. He called this method as *Chain Procedure*. This method has become very popular in subject indexing. Even *British National Bibliography* used it to provide feature headings to documents in the bibliography during the years 1950 to 1970. Then it was replaced by PRECIS for a different reason.

2.3 METHODOLOGY OF CHAIN PROCEDURE

Chain Procedure has been dealt extensively in chapter K of Classified Catalogue Code by S.R. Ranganathan. It has also been dealt in detail in Library Cataloguing Theory (See Course-4). Hence we will discuss in brief as how to derive entries with the help of a few examples.

Chain procedure is a semi-mechanical way of deriving class index entries from the class number of documents. It is also called chain indexing as the index terms are derived as a chain. Knowledge of classification scheme is essential for those preparing the chain index. See the following two examples worked out from the class numbers.

Examples :

O111,3M85,P *Plumed Serpent*

Before drawing the chain we can interpret the above class number as follows:

O111	English Literature
O111,3	English Fiction
O111, 3M85	English novelist born in the year 1885 (i.e., D.H. Lawrence)
O111, 3M85,P	P is for the work number by alphabetical device (i.e., Plumed serpent)

Each digit in the class number forms a link in the chain for the above class number. The terms (words) representing the digit are taken from the scheme of colon classification (CC).

O	=	Literature (Sought Link)
	↓	
O1	=	Indo-European Literature (Unsought Link)
	↓	
O11	=	Teutonic Literature (Unsought Link)
	↓	
O111	=	English Literature (Sought Link)
	↓	
O111.	=	False Link
	↓	
O111,3	=	English Fiction (Sought Link)
	↓	
O111,3M85	=	D.H. Lawrence (Sought Link)
	↓	
O111,3M85,	=	False Link
	↓	
O111,3M85,P	=	Plumed Serpent (Sought Link)

In the above chain we come across three types of links i.e., sought link, unsought link, and false link.

Sought Link is a part of the class number representing a subject. The terms in the sought links are likely to be looked up by the readers in the library catalogue. Only sought links are used for preparing class index entries. For Example: Literature, English Literature, English Fiction, etc.

Unsought Link is also a part of a class number representing a subject, but which is not likely to be looked up by a reader. Hence unsought links may not demand an entry.

For Example : Indo-European Literature, Teutonic Literature, etc.

False Links are mainly connecting symbols. For example : Comma or compound class numbers which do not have a term in the verbal plane. They do not represent subject in the classification scheme. Time isolate which represent Time itself is also a false link.

In the above example all the entries of the class are shown but it is not necessary to draw up, once you know which are sought links. As you handle more and more class numbers, you automatically learn this. In the above case only the sought links are drawn below:

O	=	Literature
	↓	
O111	=	English Literature
	↓	
O111,3	=	English Fiction
	↓	
O111,3M85	=	D.H.Lawrence Fiction
	↓	
O111,3M85,P	=	Plumed Serpent of D.H.Lawrence

For the above example, class index entries are required for the following terms:

LITERATURE
ENGLISH LITERATURE
ENGLISH FICTION
D.H. LAWRENCE
PLUMED SERPENT

Self Check Exercise-1

Draw the chain index for the following class numbers :

- a) O111,3M12,D *David Copperfield*, by Charles Dickens
- b) O111,2J64,51 *Hamlet*, by William Shakespeare

Note : i) Write your answer in the space given below.

ii) Check your answer with the model answer given at the end of this unit.

.....

.....

.....

.....

2.3.1 Guidelines for deriving Class Index Entries

Though we often state that chain procedure is a mechanical method to derive class index entries, infact it is a semimechanical method. The cataloguer has to use his intellect in judging the sought and unsought links. We are giving below some guidelines which will help you in deriving class index entries.

- i) In some cases where unsought links may become specific subject of a document demanding an entry. When such local variations exist, the cataloguer has to judge its requirement and provide them.
- ii) In the class number, if an isolate is derived through Chronological Device, it should be treated as a single isolate. In our example, Plumed Serpent by D.H.Lawrence, the Author isolate is worked out by chronological device as M85. This number is to be interpreted as 1885 (Author's year of birth) and not separately. (digit by digit) as M, M8, M85. Likewise isolates of Geographical Device, Subject Device and Phase relations are to be interpreted.
- iii) The terms used as headings or subheadings should be standard and current ones. The terms used in the classification scheme should be taken. The Normative Principles suggest the use of canon of currency.
- iv) The heading or subheading should be in noun form. We take the sought links from the chain in the reverse order i.e., the sought terms from the last link first, and the terms from the first link in the last, proceeding though the other links in the chain.

For Example : Plummed Serpent, Lawrence, (DH), Fiction, English, Literature.

Each term used as a heading should be supported by atleast one broader term. For Example: Fiction, English; English Literature.

- v) There should be no duplication of class index entries. There should be only one class index entry for a class number. That means class index entries need not be prepared for every document. If subject entries already exist for a class number in a catalogue, they may be omitted. If you have drawn, say ENGLISH LITERATURE for a book it serves for all other books on the same subject. Thus avoiding duplicate entries reduces the bulk of the catalogue.
- vi) There should be three sections in the class endex entry card. The leading section should be occupied by class index entry terms, derived from the class number. The second section should consist of the directing element and the third section for class number. The class number should be appropriate to the subject or the term in the leading section. The directing element is as follows:

For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number

- vii) Class index entry cards can be printed on different coloured cards can be used to easily distinguish them from the other cards arranged in the alphabetical section.

2.3.2 Recording of class index entries

Once you have worked out the sought links from the chain, you have to prepare the class index entries for them.

For Example *Plumed Serpent*, by D.H. Lawrence the following entries are required :

PLUMED SERPENT, LAWRENCE (D H)
LAWRENCE, (D H), ENGLISH
ENGLISH, LITERATURE
LITERATURE

The above terms are to be first shown in the tracing given on the back of the main entry card.

Plumed Serpent, Lawrence (D H) Lawrence (D H), Fiction Fiction, English English, Literature Literature

		PLUMED SERPENT, LAWRENCE (D H).
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,3M85,P

		LAWRENCE (D H), FICTION
		For documents in this Class and its Subdivision see the Classified Part of the catalogue under the Class Number. O111.3M85

		FICTION ENGLISH
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,3

		ENGLISH LITERATURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111

		LITERATURE
		For documents in this Class and its Subdivision see the Classified Part of the catalogue under the Class Number

2.4 EXAMPLES

Some examples are worked out below for your practice of preparing class index entries.

Example - 1 :

J3751:7:84.44 *Cold storage of mangoes in India*

The chain for the above class number is

J	=	Agriculture (sought link)
	↓	
J3	=	Food (sought link)
	↓	
J37	=	Fruit (sought link)
	↓	
J375	=	Unsought link
	↓	
J3751	=	Mangoes (sought link)
	↓	
J3751 :	=	False link
	↓	
J3751:7	=	Harvesting of mangoes (sought link)
	↓	
J3751:7:	=	False link
	↓	
J3751:7:8	=	Storage of mangoes (sought link)
	↓	
J3751:7:84	=	Cold storage of mangoes (sought link)
	↓	
J3751:7:84.	=	False link
	↓	
J3751:7:84.4	=	Unsought link
	↓	
J3751:7:84.44	=	Cold storage of mangoes in India (sought link)

Based on the above chain, the following class index entries are required for the document:

INDIA, COLD STORAGE
COLD STORAGE, HARVESTING
HARVESTING, MANGOES
MANGOES, FRUITS
FRUITS, FOOD
FOOD, AGRICULTURE
AGRICULTURE

India, Cold Storage
Cold Storage, Harvesting
Harvesting, Mangoes
Mangoes, Fruits
Fruits, Food
Food, Agriculture
Agriculture

		INDIA, COLD STORAGE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number J3751:7:84.44

		COLD STORAGE, HARVESTING
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number J3751:7:84

		HARVESTING, MANGOES
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number J3751:7

		MANGOES, FRUITS
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number J3751

		FRUITS, FOOD
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number J375

		FOOD, AGRICULTURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number J3

		AGRICULTURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number

Example-2

Y33-57.44 *Urban slum dwellers in india*

The chain for the above class number is

Y	=	Sociology (sought link)
Y3	=	By residence (unsought link)
Y33	=	Urban (sought link)
Y33-	=	False link
Y33-5	=	By birth or status (unsought link)
Y33-57	=	Slum, Urban (sought link)
Y33-57.	=	False link
Y33-57.4	=	Asia, Slum (unsought link)
Y33-57.44	=	India, Slum, Urban (sought link)

Based on the above chain, the following class index entries are required for the document:

INDIA, SLUM DWELLERS
SLUM DWELLERS, URBAN
URBAN, SOCIOLOGY
SOCIOLOGY

Now you know how to prepare class index entries, hence we are not providing Class index entry catalogue cards for the examples 2 to 4.

Example-3

Q0aS :7 *Personality and Religion*

The chain for the above class number is

Q	=	Religion (sought link)
Q0	=	False link
Q0a	=	General phase relation, Religion (sought link)
Q0aS	=	Psychology in relation to Religion (sought link)
Q0aS:	=	False link
Q0aS:7	=	Personality in relation to Religion (sought link)

Based on the above chain, the following class index entries are required for the document:

PERSONALITY in relation to RELIGION
PSYCHOLOGY in relation to RELIGION
RELIGION

Example-4

XM, 8(J):61.44'N7

Cooperative Marketing in
agriculture in India brought
upto 1970s.

The chain for the above class number is

X	=	Economics (sought link)
	↓	
XM	=	Cooperation (sought link)
	↓	
XM,	=	False link
	↓	
XM, (8A)	=	Cooperative industries (sought link)
	↓	
XM,8(J)	=	Cooperative agriculture (sought link)
	↓	
XM,8(J):	=	False link
	↓	
XM,8(J):5	=	Cooperative trade in agriculture (sought link)
	↓	
XM,8(J):51	=	Cooperative marketing in agricultural (sought link)
	↓	
XM,8(J):51.	=	False link
	↓	
XM,8(J):51.7	=	Unsought link
	↓	
XM,8(J):51.73	=	Cooperative marketing in agriculture in U.S.A. (sought link)
	↓	
XM,8(J):51.73'	=	False link
	↓	
XM,8(J):51.73'N	=	False link
	↓	
XM,8(J):51.73'N7	=	False link

Based on the above chain the following class index entries are required for the document:

UNITED STATES, MARKETING
MARKETING, TRADE
TRADE, AGRICULTURAL ECONOMICS
AGRICULTURAL ECONOMICS, INDUSTRY
INDUSTRY, COOPERATION
COOPERATION, ECONOMICS
ECONOMICS

Self Check Exercise-2

Draw chain for the following class numbers and provide class index entries:

- a) L45:421 *Tuberculosis of lungs*
b) B0bD *Engineering mathematics*

Note : i) Write your answer in the space given below.
ii) Check your answer with the model answers given at the end of this unit.

.....
.....

2.5 SUMMING UP

In this unit we have discussed an important aspect of classified catalogue code : Class index entries. Dr. S.R.Ranganathan has devised semi-mechanical way of deriving class index entries from class number and called it as chain procedure. Chain indexing eliminates the difficulties confronted by a cataloguer to coin subject headings. Only it presupposes that the class number is based on sound principles so that correct subject headings, i.e., entries are formed.

Class index entries are word entries and facilitate the users to search the alphabetical part for the subject of his choice. Then directs him to classified part to locate what books are available in the library. Chain indexing became an important contribution to subject indexing.

2.6 ANSWERS TO SELF CHECK EXERCISES

1 (A) O111.3M12.D *David Copperfield*, by Charles Dickens

O	=	Literature
O111	=	English, literature
O111.3	=	Fiction, English
O111.3M12.D	=	David Copperfield, Dickens (Charles)

Class index entries :

DAVID COPPERFIELD, DICKENS (Charles)
DICKENS (Charles), FICTION
FICTION, ENGLISH
ENGLISH, LITERATURE
LITERATURE

(b) O111.2J64.51 *Hamlet* : William Shakespeare

O	=	Literature
O111	=	English literature
O111.2	=	Drama, English
O111.2J64	=	Shakespeare(William) Drama, English
O111.2J64.51	=	Hamlet, Shakespeare(William)

Class index entries :

HAMLET, SHAKESPEARE (William)
SHAKESPEARE (William), DRAMA
DRAMA, ENGLISH
ENGLISH, LITERATURE
LITERATURE

2(a) L45 :421 *Tuberculosis of lungs*

L = Medicine
L4 = Respiratory system, Medicine
L45 = Lungs
L45:4 = Disease, Lungs
L45:421 = Tuberculosis, Lungs

Class index entries :

TUBERCULOSIS, LUNGS
DISEASE, LUNGS
LUNGS, RESPIRATORY SYSTEM
RESPIRATORY SYSTEM, MEDICINE
MEDICINE

(b) B0bD *Engineering mathematics*

B = Mathematics
B0 = False link
B0b = False link
B0bD = Engineering mathematics

Class Index Entries :

ENGINEERING MATHEMATICS
MATHEMATICS

2.7 ASSIGNMENT

Draw chain and provide class index entries for the following class numbers:

- a) T9(Y31).44'N3s Statistics of rural education in India brought upto 1930s
b) O11,2J64,52 *Othello*: Shakespeare
c) X8(J582) :9p4412,N59 Conference of coconut research workers in India (Trivandrum :1959)
d) 2wM92 Biography of Ranganathan
e) W0gU Geopolitics

2.8 RECOMMENDED BOOKS

RANGANATHAN, S.R. *Classified catalogue code*. 5th ed. Bangalore : Sarada Ranganathan Endowment for Library Science, 1988.

SHARMA, C.D. *Practical cataloguing: Classified catalogue*. Delhi : Metropolitan Book co., 1980.

VERMA, A.K. *Classified catalogue code : Entries and procedure*. New Delhi : Criterion Publications, 1988.

2.9 GLOSSARY

Chain Procedure :

A procedure for deriving class index entries from a class number.

Class Index Entry :

Subject entry derived from the class number through chain procedure. Class index entry refers from the name of a class to its class number.

Tracing :

Back of the main entry card showing the added entries that are prepared for a document.

UNIT 3 : PERSONAL AUTHORS

Contents

- 3.0 Aims and Objectives
- 3.1 Introduction
- 3.2 Single Personal Author
- 3.3 Joint Personal Authors
 - 3.3.1 Two Personal Authors
 - 3.3.2 Three or More Personal Authors
- 3.4 Summing Up
- 3.5 Answers to Self Check Exercises
- 3.6 Assignment
- 3.7 Recommended Books
- 3.8 Glossary

3.0 AIMS AND OBJECTIVES

Authors write books or documents either individually or jointly. CCC has made provision to catalogue all such works produced by personal authors. In this unit we explain you how to catalogue works produced by single and joint personal authors.

After studying this unit you will be able to

- explain what is personal authorship.
- catalogue works written by single personal author, two authors and more than two authors.

3.1 INTRODUCTION

Usually users approach the library catalogue through author's name. The alphabetical part in the classified catalogue provide word entries under the name of the author (s).

CCC provides rules how to catalogue works written by single personal author or joint authors. CCC also explains the terminology developed by S.R. Ranganathan in the process of probing into the structure of a Name-of-Person and the problems of rendering it in the Heading of an Entry (Refer chapters HB and HC of CCC).

Name-of-Person is a word or set of words arranged in a definite sequence and used to denote a person. It consists of Given name and Family name. Sometimes Compound Name also occurs. It may be Compound Given Name or Compound Family Name. Generally compound name is made up of two or more proper nouns, either connected by a hyphen or connected by a conjunction or any other kind of auxiliary word; or written separately without any connecting symbol or auxiliary word. Examples have been worked out in the following sections to describe some of these variations.

3.2 SINGLE PERSONAL AUTHOR

Classified catalogue code (CCC) defines a personal author as a "person as author, the responsibility for the thought and expression constituting the work resting solely on his private capacity and not on the capacity of any office being held by him within a corporate body, nor as the capacity of the Body".

You have already studied in AACR 2 the method of rendering the names of personal authors. There is no difference between AACR and CCC in rendering the names of personal authors, except in the style of writing. The surname is written in block letters and other parts of the name are to be enclosed in parentheses. If the initials are to be written they need not be shown by full stop.

A few examples are worked out here.

Example 1

ANALYSING

POPULATION

TRENDS

Differential Fertility in a Pluralistic Society

LINCOLN H. DAY

Croom Helm

London & Canberra

St. Martin's Press

New York

Other information :

Call No. Y:5:3 M3

Acc. No. 5451

Date of Publication. 1983

Main Entry

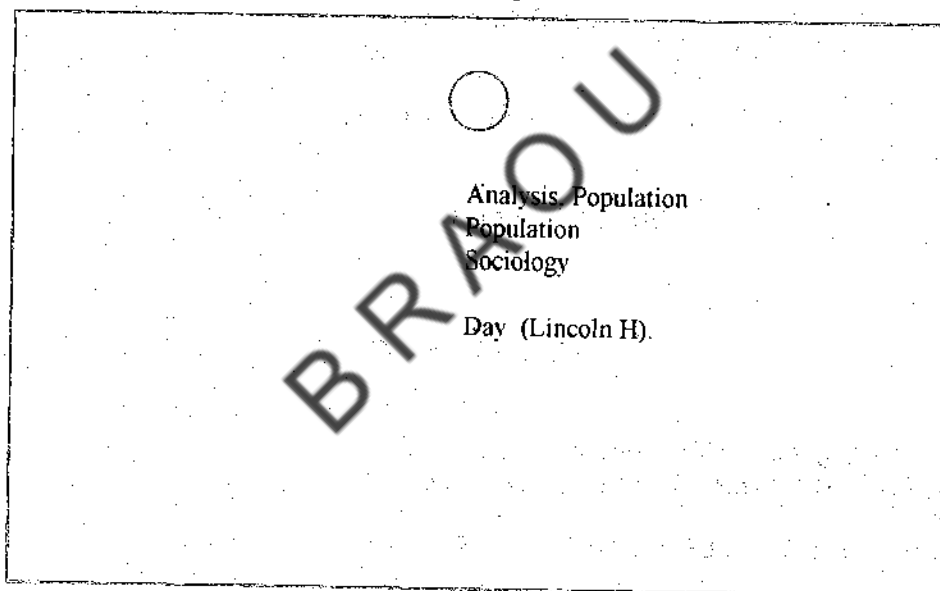
	Y:5:3	M3
	5451	DAY (Lincoln H). Analysing population trends-

The Main Entry consists of the Leading Section, the Heading, Title Section, Note Section, if any, Accession Number and Tracing. In the above example the Call Number is occupied in the Leading Section, the name of the author is the Heading and then Title Section is shown. In this example, there is no note. The accession number is given in the last line of the catalogue card starting from the first vertical. The Call Number also starts from the first vertical. Author and title headings start from the second vertical. The number of added entries that are to be prepared are the Class Index Entry and Book Index entry. The Class Index Entry is based on Chain procedure and hence the chain is to be drawn.

Y = Sociology (sought link)
 Y: = False link
 Y:5 = Population (sought link)
 Y:5: = False link
 Y:5:3 = Analysis of Population (sought link)

Class Index entries are to be made for items on sought link. Book Index entry is prepared on Author's name. The added entries that are to be prepared are shown in the tracing. It will be convenient if tracing is done first, so that you will be knowing what other entries are to be made. Tracing is to be shown on the back of the main entry card.

Tracing



Go through the main entry again so that you will understand the difference between AACR2 and CCC. In CCC there is no descriptive part, not even the date of publication of the book is shown. The call number of the book, includes the date of publication. M3 is 1983 which is the date of publication. CCC presumes that a reader is not keen to know from where and who has published the book, and hence place of publication and name of the publisher is not shown. Only edition statement is to be given if it is other than first edition.

There are three Class Index Entries and one Book Index Entry to be prepared for this example. Only one Class Index Entry is to be prepared for each class number. There may be several books with the same class number, but only one class index entry is to be made.

Class Index Entry

		ANALYSIS, POPULATION.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Y:5:3

Class Index Entry

		POPULATION.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Y:5

Class Index Entry

		SOCIOLOGY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Y

The next entry is Book Index Entry. In this example, it is the author entry. The name of the author is rendered. The surname is to be written in block letters and the rest of the name in parentheses. After the title statement the call number is to be given in the same line if there is sufficient space, otherwise it is to be given on the next line.

Book Index Entry (Author Index)

	DAY	(Lincoln H)
		Analysing population trends. Y533 M3

Example-2

**The Literary background
of the Gothic revival
in Germany**

by

WILLIAM ROBSON-SCOTT

Clarendon Press
Oxford
1965

Other information :

Call No. O113v K5

Acc No. 5859

The book also deals with Gothic Architecture

Main Entry

	O113v	K5
		ROBSON-SCOTT (William). Literary background of Gothic revival in Germany.
	5859	

Chain Index

- O = Literature (sought link)
- O1 = Indo-European literature (unsought link)
- O11 = Teutonic literature (unsought link)
- O113 = German literature (sought link)
- O113v = History, German literature (sought link)

Tracing


History, German Literature
German Literature
Literature
Robson-Scott (William)

Class Index Entry

		HISTORY, GERMAN LITERATURE.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O113v

Class Index Entry

		GERMAN, LITERATURE.
		For documents in this Class and its Subdivision see the Classified Part of the catalogue under the Class Number. O113

Class Index Entry

		LITERATURE.
		For documents in this Class and its Subdivision see the Classified Part of the catalogue under the Class Number O

Book Index Entry (Author)

		ROBSON-SCOTT (William).
		Literary background of Gothic revival in Germany. O113v K5

The name of the author is a compound hyphenated name and as such to be given without breaking. In case of doubt a cross reference index entry can be prepared as follows:

Cross Reference Index Entry

		SCOTT (William Robson.)
		See ROBSON-SCOTT (William).

This particular book also deals on Gothic Architecture and the subject is spread over the book. If some one looking for information on Gothic architecture will miss this book if the information is not provided in the catalogue. For this purpose CCC has provided Cross Reference entries. As we give two or more subject headings in a dictionary catalogue for a book, Cross Reference entries in a subject catalogue serve the same purpose. For this purpose the second subject is to be provided with a class number. The class number for Gothic architecture will be NA5.F.

The entry will be:

Cross Reference Entry

	NA5 F	See also O113v K5 Robson-Scott (William). Literary background of Gothic revival in Germany.

Example-3

Law and Religion

V.R. Krishna Iyer
DEEP & DEEP PUBLICATIONS
New Delhi

Other information :

Call No. Z0aQ M4

Acc. No. 5860

Date of Publication 1984

In this example the Indic name of the author to be rendered as it is and not under IYER. However, if you prefer to give a cross reference index entry, there is no objection. The class number is made up of phase relation and to understand the Cross Reference Entry in such cases, the number was chosen.

Main Entry

	Z0aQ M4	
		KRISHNA IYER (V R). Law and religion.

Chain

Z = Law (sought heading)
 Z0 = False line
 Z0a = False link
 Z0aQ = Religion In relation with Law (sought link)

Tracing

○ Religion in relation with law. Law Krishna Iyer (V R) Iyer (Krishna V R)

An example of South Indian name. A cross reference index entry is provided as the name of the author on the spine of the book has been given as Iyer. For Indic names the entry is to be made under Krishna Iyer. There may be exceptions and to resolve any ambiguity cross reference index entries are provided. In the tracing section the bottom must part on the right hand of the card is allotted for the cross reference index entry.

Class Index Entry

		RELIGION in relation with LAW
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Z0aQ
		○

Class Index Entry

	LAW	
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Z

Book Index Entry (author)

	KRISHNA IYER (V R)	
	Law and religion.	Z0aQ M4

Cross Reference Index Entry

	IYER (Krishna V R)	
	See KRISHNA IYER (V R)	

TRADE UNIONS IN INDIA GROWTH AND RECOGNITION

Dr. P.P. ARYA
Department of Economics
DCC. Punjab University, Chandigarh
DEEP & DEEP PUBLICATIONS
New Delhi

Other Information :

Call No. X:97D.44 M4
Acc. No. 5891
Date of Publication 1985

Main Entry

	X:97D.44 M5	
	5861	ARYA (Parmatan Parkash). Trade unions in India: Growth and recognition.

Chain Index

X	=	Economics (sought link)
X:	=	False link
X:9	=	Labour problems (sought link)
X:97	=	Industrial relation (sought link)
X:97D	=	Trade Unions (sought link)
X:97D.4	=	Trade Unions in Asia (Unsought link)
X:97D.44	=	Trade Unions in India (sought link)

Tracing

India, Trade unions
Trade unions
Industrial relations
Labour problems
Economics

Arya (Parmatam Parkash)

Class Index Entry

	INDIA-TRADE UNIONS	
	For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number	X:97D.44

Class Index Entry

	TRADE UNIONS	
	For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number	X:97D

Class Index Entry

		INDUSTRIAL RELATIONS.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:97
		○

Class Index Entry

		LABOUR PROBLEMS.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:9
		○

Class Index Entry

		ECONOMICS.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X
		○

Book Index Entry (Author)

	ARYA (Parmatam Parkash)	
	Trade unions in India,	X:97D.44 M5

Whenever possible the initials of the authors should be expanded either from the sources inside or outside the book. In case of added entries the subtitle need not be repeated.

Self Check Exercise-1

Below is given title page of a book. Catalogue the book as per CCC.

Note: i) Write your answer in your own notebook.

ii) Check your answer with the model answers given at the end of this unit.

Exercise - 1(a)

Regional Political Parties

in

India

Dr. Vishalay Banerjee

1984

B.R. PUBLISHING CORPORATION
Delhi-110 052

Other Information :

Call No.V44,4 M4

Acc. No.6001

A HOPE FOR POETRY

By

CECIL DAY-LEWIS

B.H. Blackwell

Oxford

Other Information :

Call No.

Acc.No.6002

Date of Publication 1939

Date of birth of the author 1904

(Coin the call number yourself)

3.3 JOINT PERSONAL AUTHOR

The term 'Joint Authors' is defined as "Two or more authors, personal or corporate, sharing responsibility for the thought and expression constituting the work, the portion for which each is separately responsible not being either specified or separable."

If the authors in the Joint Authorship are personal authors, each of the authors may be called joint personal author. If the title page of a book contains names of more than one author, CCC adopts a procedure different from AACR2. CCC categorised Joint Authors as "Two Authors" and "Three or More Authors" and provided separate rules for each case.

3.3.1 Two Personal Authors

When a book is written by two personal authors, CCC prescribes to render both the names in the heading. The names are to be written as they appear in the title page with the conjunction 'and' connecting these two names. In the case of the second author a book index entry is to be provided, giving reverse entry or permuting the names of the author. Let us first work out a few examples of books written by two authors.

Example 4

Thomas M. Curse

Robert M. Haralick

DIFFERENTIAL EQUATION

for

ENGINEERS

McGraw-Hill Kogekusha Ltd.
TOKYO

Other Information :

Call No. B3306D L8

Acc No.6012

Date of Publication 1978

Main Entry

	B3306D L8	
	6012	Curse (Thomas E) and Haralick (Robert M). Differential equation for engineers.

Chain Index

B = Mathematics (sought link)
B3 = Analysis (sought link)
B33 = Differential equation (sought link)
B330bD = Engineering biasing differential equation (sought link)

Tracing

Engineering biasing Differential Equation Differential Equation Analysis, Mathematics Mathematics Curse (Thomas M) and Haralick (Robert M) Harlick (Robert M) and Curse (Thomas M)
--

In this example there are two authors. Both the names are rendered and they are connected by the word 'and'. The class index entries are derived from chain index.

Class Index Entry

		ENGINEERING Biasing DIFFERENTIAL EQUATION
		For documents in this Class and its Subdivision see the Classified Part of the catalogue under the Class Number B3306D

Other Class Index entries are
DIFFERENTIAL EQUATION
ANALYSIS, MATHEMATICS
MATHEMATICS

Book Index Entry (Author entry)

		CURSE (Thomas M) and HARALICK (Robert M).
		Differential equation for engineers. B3306D L8

Book Index Entry (Joint author)

		HARALICK (Robert M) and CURSE (Thomas M).
		Differential equation of engineers. B3306D L8

Example-5

E.J. Ambrose
Dorothy M. Easty

Cell

Biology

Second Edition

The English Language
Book Society and Nelson

Other Information :

Call No. G11 L9

Acc No. 6022

Date of Publication 1979

Main Entry

	G11 L9	
	6022	AMBROSE (E J) and EASTY (Dorothy M). Cell biology. Ed 2.

Chain Index

G = Biology (sought link)
G1 = Life, Biology (sought link)
G11 = Cell, Biology (sought link)

Tracing

	Cell, Biology Life, Biology Biology Ambrose (E J) and Easty (Dorothy M) Easty (Dorothy M) and Ambrose (E J)
--	---

Class Index Entry

	CELL BIOLOGY	
	For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number G11	

Other Class Index entries are

LIFE, BIOLOGY
BIOLOGY

Book Index Entry (Author)

		AMBROSE (E J) and EASTY (Dorothy M).
		Cell biology. G11 L9

Book Index Entry (Joint Author)

		EASTY (Dorothy M) and AMBROSE (E J).
		Cell biology. G11 L9

3.2.2 Three or more personal authors

If the title page contains three or more than three personal authors only the first one is to be used in the heading and the words "and others" are to be added after the name of the first author. In the CCC upto the fifth edition "etc" is given instead of "and Others" "Etc" has been replaced by "and others". Adding the word "etc" for authors is jarring and gives inanimated sense and hence the deviation in the amended rule.

Some examples, thus treating the three or more personal authors are worked out below:

Example-6

Advanced Accountancy

L.S. Mani
M.A. Arulanandam
V. Krishnamoorthy

Macmillan

Other information :

Call No. X:8H M4
Acc No. 6023
Date of publication 1984

Main Entry

	X:8H M4	
	6023	MANI (L S) and others. Advanced accountancy.

For the title shown in this example there are three authors but only the first author's name is rendered and the rest are shown by the words "and others". The chain index entries are:

Chain Index

X = Economics (sought link)
X:8 = Management (sought link)
X:8H = Accountancy (sought link)

Tracing

 Accountancy Management Economics Mani (L S) and others
--

Class Index Entry

		ACCOUNTANCY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:8H
		

Other Class Index Entries are
MANAGEMENT
ECONOMICS

Book Index Entry (Author)

		MANE (L S) and others.
		Advanced accountancy. X.8H M4

Example-7

PRINCIPLES

OF

ORGANIC

CHEMISTRY

Fourth Edition

JAMES ENGLISH, Jr
HAROLD G. CASSIDY
RICHARD L. BAIRD

McGraw-Hill Kogakush Ltd.
Tokyo

Other Information :

Call No. E5 L1

Acc No.6024

Date of publication 1971

In the example there are three authors and as per the Rules only the first author is to be rendered and the rest are to be represented by the words "and others." This applies in all cases where there are more than two authors.

Main Entry

	E5 L1	
	6024	ENGLISH (James Jr) and others. Principles of organic chemistry. ○

Chain Index

- E = Chemistry (sought link)
 E5 = Organic substance, Chemistry (sought link)

Tracing

○	Organic substances, Chemistry Organic Chemistry Chemistry English (James Jr)
---	--

Under Rule No. KE7, in the case of rendering Class Index entries the currency of the terms are to be watched. Such terms which are likely to be referred by the readers, but not provided in the Classification schedules, separate entry may be provided. In the above example organic chemistry is likely to be referred and in such cases separate Class Index entries can be provided.

Class Index Entry

		ORGANIC SUBSTANCE CHEMISTRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number E5

Class Index Entry

		ORGANIC CHEMISTRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number E

Class Index Entry

		CHEMISTRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number E

Book Index Entry (Author)

		ENGLISH (James Jr) and others.	
		Principles of organic chemistry.	E5 L1

Self Check Exercise-2

Catalogue the following titles as per CCC.

- Note: i) Write your answer in your own notebook
ii) Check your answer with the answers given at the end of this unit.

Exercise-2(a)

CYTOGENETICS EVOLUTION and PLANT BREEDING

R.S. SHUKLA
P.S. CHANDEL

1983

S. Chand & Company Ltd.
New Delhi

Other Information :

Call No. (to be provided by you)
Acc No. 6025

**GENERAL
ANIMAL ECOLOGY**

Second Edition

T.N. Ananthakrishnan

T.R. Viśwanathan

Macmillan

Other Information :

Call No. G:5 M3

Acc No. 6026

Date of publication 1983

Exercise-2(c)

**A Text Book of
Co-ordinate
Geometry
of Two and Three
Dimensions**

By

K.C. Mathew, M.A.

S. Veeraraghavan, M.A., M.Sc.

and

T. Raghavan, M.A.

S. CHAND & COMPANY LTD.
NEW DELHI

Other Information :

Call No. B63:23 M4

Acc. No. 6027

Second Edition

Date of Publication 1984

3.4 SUMMING UP

In this Unit we have explained you how to catalogue books written by personal authors. It covered the books written by single author, two authors and more than two authors. The name of the single personal author is rendered and entered in the heading section of the main entry. In the case of books written by two authors both the names are to be rendered and entered with the conjunction 'and' connecting the two names. Added entries are to be provided for both the authors, permuting the names. When books are written by three authors or more, only the first named author is to be rendered and the phrase "and others" is to be added in the author statement.

We have worked out examples under each category of works by personal authorship.

3.5 ANSWERS TO SELF CHECK EXERCISES

Answers to Self Check Exercise-1(a)

Main Entry

	V444 N9 M4	BANERJEE (Vishalay). Regional political parties in India.
	6001	

Chain Index

V = History
V44 = India, History
V44,4 = Political parties, India.

Tracings

Political parties, India
India, History
History
Banerjee (Vishalay)

Class Index Entry

		POLITICAL PARTIES, INDIA
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V44,4

Class Index Entry

		INDIA, HISTORY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V44

Book Index Entry (Author)

		BANERJEE (Vishalay)
		Regional political parties in India. V44,4 N9 M4

An example of a single personal author with Indic name. Bengali names are rendered as Banerjee (Vishalay). In the Chain procedure the term 'political parties' is used as a sought term instead of 'party' as enumerated in Colon Classification (V History; Foci in [P₂]).

Main Entry

	Q111.IN04.H G8
6002	DAY - LEWIS (Cecil). A hope for poetry.

O	=	Literature
O111	=	English, Literature
O111,1	=	Poetry, English
O111,IN04	=	Day-Lewis (Cecil)
O111,IN04,H	=	A hope for poetry, Day-Lewis (Cecil).

A hope for poetry, Day-Lewis (Cecil)
Day-Lewis (Cecil), Poetry
Poetry, English
English, Literature
Literature.

64

Class Index Entry

		HOPE FOR POETRY, DAY-LEWIS (Cecil)
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,IN04,H G9

Class Index Entry

		DAY-LEWIS (Cecil), POETRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,IN04

Class Index Entry

		POETRY, ENGLISH
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,1

Class Index Entry

		ENGLISH. LITERATURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111

Class Index Entry

		LITERATURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O

Cross Reference Index Entry

		LEWIS (Cecil Day-)
		<i>see</i> DAY - LEWIS (Cecil)

Explanation

The Class Number and Book Number are coined according to Colon Classification, taking the year of birth of the author [P_3] and the first alphabet of the title 'H' (leaving the article 'A') as [P_4]. The name of the author is a compound name and as such is rendered without breaking i.e., Day-Lewis. A cross reference index entry is provided for the convenience of those who look under Lewis. Since the author's name is covered under Class Index Entry, it is not duplicated in the Book Index Entry (Author Index Entry).

Answers to Self Check Exercise-2(a)

Main Entry

	G11:6	M3
		SHUKLA (R S) and CHANDEL (P S). Cytogenetics, evolution and plant breeding
	6025	

Chain Index

G = Biology
 G11 = Cell, Biology
 G11:6 = Genetics, Cells

Tracings

	○
	Genetics, Cells Cell, Biology Biology
	Shukla (R S) and Chandel (P S) Chandel (P S) and Shukla (R S)

Class Index Entry

		GENETICS, CELLS
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number G11:6

Other Class Index Entries are

Cell, Biology; Biology

Book Index Entry (Author Entry)

		SHUKLA (R S) and CHANDEL (P S).
		Cytogenetics evolution and plant breeding. G:6 M3

Book Index Entry (Joint author)

		CHANDEL (P S) and SHUKLA (R S).
		Cytogenetics evolution and plant breeding. G:6 M3

Explanation

An example of two personal joint authors. In the Main Entry the names of the two authors are given in the author section with a conjunction 'and', connecting the two names. Two Book Index Entries - one for the first author in the first place and another in which the second author is permuted to the first place, are given.

Answers to Self Check Exercise-2(b)

Main Entry

	K : 5 M3	
	ANANTHAKRISHNAN (T N) and VISWANATHAN (T R). General animal ecology, Ed 2.	
6026		

Chain Index

K = Zoology
K:5 = Ecology, Zoology

Tracings

Ecology, Zoology Zoology
Ananthakrishnan (T N) and Viswanathan (T R) Viswanathan (T R) and Ananthakrishnan (T N)

Class Index Entry

		ECOLOGY. ZOOLOGY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number K:5

Book Index Entry (Author Entry)

		ANANTHAKRISHNAN (T N) and VISWANATHAN (T R).
		General animal ecology, Ed 2. K:5 M3

Book Index Entry (Joint Author)

		VISWANATHAN (T R) and ANANTHAKRISHNAN (T N).
		General animal ecology, Ed 2. K:5 M3

Explanation

An example of a simple book with two joint authors. Two Class Index Entries are prepared - one for the specific subject and another for the broad subject of the book. Two Book Index Entries - one first author first and another in which second author permuted to first are prepared.

Answers to Self Check Exercise-2(c)

Main Entry

		B63 : 23 M4
	6027	MATHEW (K C) and others. Text book of co-ordinate geometry of two and three dimensions. Ed 2.

Chain Index

B	=	Mathematics
B6	=	Geometry
B63	=	Three Dimensions, Geometry
B63:2	=	Algebraic, Geometry
B63:23	=	Elementary Co-ordinate Geometry

Tracings

Elementary Co-ordinate Geometry
Algebraic. Geometry
Three Dimensions, Geometry Geometry
Mathematics

Mathew (K C) and others

Class Index Entry

		ELEMENTARY CO-ORDINATE, GEOMETRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number B63:23

Other Class Index Entries

Algebraic Geometry
Three Dimensions, Geometry
Geometry
Mathematics

Book Index Entry

		MATHEW (KC) and others.
		Text book of co-ordinate geometry of two and three dimensions. Ed 2. B63 : 23 M4

Explanation :

There are three personal joint authors in this example. The first author is used in the heading and the other two authors are represented by the words "and others". The edition number (Ed 2) is represented after the title statement.

3.6 ASSIGNMENT

Assignment-1

INDUSTRIAL GROWTH IN INDIA

Stagnation since the Mid-Sixties

Isher Judge Ahluwalia

DELHI
OXFORD UNIVERSITY PRESS

Bombay Calcutta Madras
1985

Other Information :

Call No. X8(A).44'N9 M5

Acc No. 6002

Assignment-2

CANADA A Political and Social history

Edgar McInnis

Revised and enlarged edition

RINEHART
New York 1959

Other Information :

Call No. V72 J9

Acc No. 50001 The author's full name is Edger Wardwell McInnis

Assignment-3

NON - BOOK MATERIALS IN LIBRARIES A Practical Guide

Third Edition

RICHARD FOTHERGILL

and

IAN BUTCHART

CLIVE BINGLEY

London
1990

.....

Other Information :

Call No. 2:1 N0

Acc No. 50008

.....

Assignment-4

HOW TO COMMUNICATE

EVALUATION FINDINGS

Lynn Lyons Morris

Carol Taylor Fitz-Gibbon

Marie E Freeman

SAGE PUBLICATIONS

Newbury Park/Beverly Hills/London/New Delhi

.....

Other Information :

Call No. 361.61072

copyright year 1987

pages 92

size 21.6 cms

Acc No. 178151

.....

3.7 RECOMMENDED BOOKS

RANGANATHAN, S. R. *Classified catalogue code: with additional rules for dictionary catalogue code*. 5th ed. Bangalore; Sarada Ranganathan Endowment for Library Science, 1988.

SHARMA, C. D. *Practical Cataloguing: Classified catalogue*. Delhi: Metropolitan Books, 1980.

3.8 GLOSSARY

Personal Author :

Person as author, the responsibility for the thought and the expression constituting the work resting solely on his private capacity and not on the capacity of any office being held by him within a corporate body, nor on the capacity of that body.

UNIT 4 : COLLABORATORS AND PSEUDONYMS

Contents

- 4.0 Aims and Objectives
- 4.1 Introduction
- 4.2 Collaborators
- 4.3 Pseudonymous Author
- 4.4 Anonymous Author
- 4.5 Summing Up
- 4.6 Answers to Self Check Exercises
- 4.7 Assignments
- 4.8 Recommended Books
- 4.9 Glossary

4.0 AIMS AND OBJECTIVES

This unit deals with works produced by personal authors in association with collaborators and also works produced under pseudonymous and anonymous authorship.

After studying this unit, you will be in a position to

- define who are collaborators;
- render collaborator statement in the title section;
- provide book index entries for collaborators;
- catalogue pseudonymous and anonymous works.

4.1 INTRODUCTION

We find on the title pages of some books names of some persons other than those of authors. These persons associate with the author(s) in the creation of the work in a secondary capacity. Their role is not amounting to authorship. Such persons generally appear as revisers, editors, translators, writers of introduction or forward, etc. CCC has made clearcut rules in Chapters FD (definition) and MK (book index entries).

Some authors assume a false or fictious name or any other specification different from their real name. Such assumed names are treated as pseudonyms for the purpose of cataloguing. The use of pseudonyms by the authors poses certain problems to the cataloguers as some authors use them consistently while others not. It is difficult to trace the real name as it is not given on the title page or bibliographic sources in many cases. CCC provides explanation (FC6), definition (MD22) and choice of rendering (MD4) of pseudonyms.

Anonymous work was defined by CCC as "a work of unknown authorship either personal or corporate" (FC7).

A few examples under each catagory discussed above have been worked out.

4.2 COLLABORATORS

Some one helping the author(s) or associating with him in some way or other in the production of the book is often seen in several books. Such persons are called collaborators. CCC defines a collaborator as "authors in a secondary capacity not amounting to authorship, for example, director, guide, assistant, commentator, illustrator, engraver, translator, reviser, editor, reporter, writer of introduction or foreword, epitomiser, adapter, libratist, writer of the words in a musical composition, writer of the words in a pictorial book". Some of the books are likely to be known by their collaborators and hence there is a need in such cases to represent them in the catalogue.

In CCC the collaborators are shown in the title section in the main entry. The Rule ME0 states that "the title section is to consist of one, two or three sentences according to the nature of the information contained on the title page and its back giving successfully in a single paragraph:

- (i) The title;
- (ii) Information regarding the diction; and
- (iii) Information regarding collaborator(s).

In the title section of the name of each collaborator is to be given. There should be no permutation of the words in the name. Separate added entries (Book Index entries) are also made for collaborators. If two names occur under any one kind of collaborator, both the names are to be written after the title statement, but, if there are three or more names occur under any kind of collaborator, the first name is to be written followed by the word "and others".

Example - 1

William Wycherley
THE COUNTRY WIFE
Edited by
Steven H. Rubin
CHANDLER PUBLISHING CO.
San Francisco

.....
Other Information :

Call No. O111,3K40,C K1
Acc. No. 6004
Date of Publication 1961
Date of birth of the author 1640
.....

Main Entry

		O111,2K40,C K1
	6004	WYCHERLEY (William). Country wife. Ed.by Steven H. Rubin.

Chain Index

O	=	Literature (sought link)
O1	=	Indo-European Literature (unsought link)
O11	=	Teutonic literature (sought link)
O111	=	English literature (sought link)
O111,2K40	=	Wycherley (sought link)
O111,4K40,C	=	Country Wife (sought link)

Tracing

Country wife, Wycherly (William)
Wycherley (William). Drama
Drama, English
English, Literature
Literature
Rubin (Steven, H), <i>Ed.</i>

Class Index Entry

		COUNTRY WIFE, WYCHERLEY (William).
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,2K40,C

Class Index Entry

		WYCHERLEY (William), DRAMA.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,2K40

Other Class Index entries are to be made under the headings

DRAMA, ENGLISH
ENGLISH, LITERATURE
LITERATURE

In this case Book Index Entries for the author William Wycherley and for the title *Country wife* are covered by the Class Index entries and hence no separate entries are called for.

Book Index Entry (Editor)

		RUBIN (Steven H), <i>Ed.</i>
	6025	Wycherley : Country wife. O111,2K40.C K1

Example - 2

MADAME BOVARY
FLAUBERT GAUSTAVE
BACKGROUND AND SOURCES
ESSAYS IN CRITICISM

Edited
with a substantially new
translation by
PAUL DE MAN

W.W. NORTON
New York

Other Information :

Call No. O122,3M21,M K5

Acc No. 6008

Date of Publication 1965

Date of birth of the author 1821

Main Entry

	O122.3M21.M K5	GAUSTAVE (Flaubert). Madame Bovary, Ed and tr by Paul de Man.
	6008	

Chain Index

O	=	Literature (sought link)
	↓	
O1	=	Indo European Literature (unsought link)
	↓	
O12	=	Latin literature (sought link)
	↓	
O122	=	French literature (sought link)
	↓	
O122,3	=	French drama (sought link)
	↓	
O122,3M21	=	Flaubert Gustave (sought link)
	↓	
O122,3M21,M	=	Madame Bovary (sought link)

Tracing

Madame Bovary, Gustave
(Flaubert)
Gustave (Faubert), Fiction
French, Drama
French, Literature
Literature

De Man (Paul), *Ed and Tr.*

Class Index Entry

		MADAME BOVERY, GAUSTAVE (Flaubert). For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O122,3M21,M

Class Index Entry

		GAUSTAVE (Flaubert), FICTION For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O122,3M21

Other Class Index entries :

DRAMA, FRENCH
 FRENCH, LITERATURE
 LITERATURE

In this case also Book Index entry for author and title are not separately provided as they are covered by the Class Index entry.

Book Index Entry

		DE MAN (Paul). <i>Ed. and Tr.</i>
		Gaustave : Madame Bovary. O122. 3M21,M K5

Example - 3

FATHERS AND SONS

IVAN SERGEEVICH TURGENEV

Translated by
CONSTANCE GARNETT

AIRMONT
New York

Other Information :

Call No. O142,3M18,F K7
Acc No. 6006
Date of Publication 1967
Date of birth of the author 1818

Main Entry

		O142. 3M18.F K7
		TURGENEV (Ivan Sergeevich). Fathers and sons. Tr by Constance Garnett.
	6006	

Chain Index \

O	=	Literature (sought link)
O1	=	Indo-European Literature (unsought link)
O14	=	Slavonic literature (unsought link)
O142	=	Russian literature (sought link)
O142.3	=	Russian fiction (sought link)
O142,3M18	=	Ivan Sergeevich Turgenev (sought link)
O142,3M18,F	=	Fathers and sons (sought link)

Tracing

Fathers and sons, Turgenev, (Ivan Segreevich) Turgenev (Ivan Segreevich), Fiction Fiction, Russian Russian, Literature Literature Garnett (Constance), Tr.
--

Class Index Entry

		FATHERS AND SONS, TURGENE (Ivan Sergeevich)
		For documents in this Class and its Subdivisions see the Classified part of the catalogue under the Class Number O142,3M 18,F

Class Index Entry

		TURGENEV(Ivan Sergeevich), FICTION
		For documents in this Class and its Subdivisions see the Classified part of the catalogue under the Class Number O142,3M18

Other Class Index entries are

FICTION, RUSSIAN
RUSSIAN, LITERATURE
LITERATURE

Book Index entries for *Fathers and sons* and for the author Ivan Segreévich Turgenev are covered by the Class Index entries and hence separate entries are not necessary.

Book Index Entry (Translator)

		GARNETT (Constance), Tr.
		Turgenev : Fathers and sons. O142,3M18,F K7

Self Check Exercise - 1

Catalogue the following titles as per CCC.

Note : i) Write your answer in your own note book.

ii) Check your answer with the model answers given at the end of this unit.

Exercise-1(a)

SUDRAKA
MRECHAKATIKA

The Little Clay Cart
A drama in ten acts

Translated from the Sanskrit
With introduction and notes

by
REVILO PENDLETON OLIVEN

UNIVERSITY OF ILLINOIS PRESS
Urbana

Other Information :

Call No.

Acc. No. 6010

Date of publication 1938

(Call No. to be provided by you)

Exercise-1(b)

KARL MARX

THE REVOLUTION
of 1849

POLITICAL WRITINGS

EDITED AND INTRODUCED
by David Fernbach

Penguin Books.

Other Information :

Call No.

Acc. No. 6011

Date of Publication 1973

(Call No. to be provided by you)

4.3 PSEUDONYMOUS AUTHOR

Classified Catalogue Code defines a Pseudonymous author as "one who assumes a false or fictitious name or any other specification different from the real name." As the basic rule of CCC is to restrict itself to the title page the entry for the author will be under the pseudonymous name if that appears on the title page. However, the real name of the author will be supplied in a square bracket. In case the title page also provides the real name in a subordinated manner, it is to be added in circular bracket. But if the real name is given first in the title page and pseudonym is subordinated, in such case the real name is to be chosen for the heading. The pseudonym to be added after it in circular bracket.

Example - 4 : Pseudonym

George Eliot

SILAS MARNER

Introduction by

John Holloway

Dent: London

.....
Other Information :

Call No. O111,3M19,S

Acc. No. 799

Date of publication : 1962

Date of birth of the author 1819

Facing the title page : George Eliot (Pseudonym of Mary Ann (or Marian) Evans)

.....

Main Entry

	O11,3M19,S K2	
		Eliot (George), <i>Pseud</i> (ie Mary Ann (or Marjan) Evans). Silas Marner.
	7799	

Chain Index

O = Literature (sought link)
 O111 = English Literature (unsought link)
 O111.3 = English fiction (unsought link)
 O111.3M19 = George Eliot, English fiction (sought link)
 O111.3M19,S = Silas Marner, George Eliot (sought link)

Tracing

	 Silas Marner, Eliot (George), <i>Pseud</i> Eliot (George), <i>Pseud</i> , fiction Fiction, English English Literature Literature Eliot (George), <i>Pseud</i> . Evans (Mary or Marian) Ann
--	---

Class Index Entry

		SILAS MARNER, ELIOT (George), <i>Pseud</i> .
		For documents in this Class and its Subdivisions see the Classified part of the catalogue under the Class Number O11.3M19,S

Other Class Index entries are

ELIOT, (George), *Pseud.* FICTION
 FICTION, ENGLISH
 ENGLISH, LITERATURE
 LITERATURE

Book Index Entry (Author)

		ELIOT (GEORGE), <i>Pseud</i> (ie Mary Ann (or Marian) Evans)
		Silas Marner. O111,3M19,S K2

Cross Reference Index Entry

		EVANS (Mary (or Marian) Ann
		<i>See</i> Eliot (George), <i>Pseud.</i>

Example 5 : Pseudonym

INCREDIBLE TALES

Saki

EDITED WITH AN INTRODUCTION

by

RICHARD CORBIN AND E HOOPES

New York: Dell Publishing Co.

Other Information :

Call No. O11,3M70,1 K6

Acc. No. 7023

Date of publication 1966

Date of birth of author 1870.

It is traced from the book, Saki is the pseudonym of Hector Hugh Munro

Main Entry

	O111 SM70,1 K6	
	7023	SAKI, <i>Pseud.</i> (ie Hector Hugh Munro). Incredible tales. Ed by Richard Corbin and Ned E Hoopes.

Chain Index

O = Literature (sought link)
O111 = English Literature (unsought link)
O111,3 = English fiction (sought link)
O111,3M70 = Saki, English fiction (sought link)
O111,3M70,1 = Incredible tales, Saki

Saki, *Pseud.*
Richard (Corbin) and Hoopes
(Ned E), *Ed.*
Hoopes (Ned) and Richard
(Corbin), *Ed.*
Munro (Hector Hugh)

INCREDIBLE TALES, SAKI, *Pseud.*

0111,3M70,1

SAKI, *Pseud.* FICTION
FICTION, ENGLISH.
ENGLISH, LITERATURE
LITERATURE

Book Index Entry (Author)

		SAKI, <i>Pseud.</i> (ie Hector Hugh Munro).
		Incredible tales. O111,3M70,1 K6

Book Index Entry (Editor)

		RICHARD (Corbin) and HOOPES (Ned E), <i>Ed.</i>
		Saki, <i>Pseud.</i> : Incredible tales. O111,3M70,1 K6

Book Index Entry (Joint Editor)

		HOOPES (Ned E) RICHARD (Corbin), <i>Ed.</i>
		Saki, <i>Pseud.</i> : Incredible tales. * O111,3M70,1 K6

Cross Reference Index Entry

	MUNRO (Hector Hugh)
	See Saki, <i>Pseud.</i>

In case of Hector Hugh Munro, there is also reference to Munro, H.H. In case of doubt an additional See reference can be made.

Example - 6 : Two Authors using a pseudonym

The Leaves of Race

By

MICHAEL FIELD

Other Information :

Call No. O111,2M6,L D1

Acc No.

Date of publication 1901

Date of birth of authors 1860s (actual data not known)

Michael Field is a pseudonym of two persons Katherine H Badiey and

Edith Emma Cooper. Information is gathered from outside source. It is a play in verse.

Publisher not known. Published in London.

Main Entry

	0111	2M6.L D1
	Emmh	FIELD (Michael), <i>Pseud</i> [i.e. Katherine H Bradley and Edith Cooper]. Leaves of race.
	Acc.No.	

Chain Index

O = Literature
 O111 = English Literature
 O111,2 = Drama, English
 O111,2M6 = Field (Michael), *Pseud*, Drama,
 O111,2M6,L = Leaves of Race, Field (Michael), *Pseud*.

Tracing

	Leaves of race, Field (Michael), <i>Pseud</i>. Field (Micheal), <i>Pseud</i>, Drama Drama, English English, Literature Literature Field (Micheal), <i>Pseud</i>. Bradley (Katherina H) and Cooper (Edith Emma) Cooper (Edith Emma) and Bradley (Katherine H)
--	--

Class Index Entry

		LEAVES OF RACE, FIELD (Michael), <i>Pseud</i> .
		For documents in this Class and its Subdivisions see the Classified part of the catalogue under the Class Number O111,2M6,L

Other Class Index entries :

Field (Michael), *Pseud*, Drama

Drama, English

English, Literature

Literature

Book Index Entry (Author)

		FIELD (Michael), <i>Pseud</i> [i.e., Katherine H Bradley and Edith Emma Cooper].
		Leaves of race. O111.2M6.L D1

Cross Reference Index Entry

		BRAADLEY (Katherine H) and COOPER (Edith Emma)
		See Field (Michael), <i>Pseud</i> .

Cross Reference Index Entry

		COOPER (Edith Emma), and BRADLEY (Katherine H)
		See Field (Michael), <i>Pseud.</i>

Explanation :

An example of pseudonymous work, two joint personal authors sharing a pseudonym. The real names of the authors are gathered from the outside source and hence rendered in square brackets in a subordinated manner to the pseudonym in the Main Entry (Refer CCC Chapter MD4). The Class Index Entries are prepared from the Class Number through Chain procedure. A Book Index Entry is given for the pseudonym. Two Cross Reference Index Entries are prepared, permuting the two real names. Since the pseudonym appears first in the Heading in the Main Entry, the referred from Heading in the pseudonym-Real-Name Entry is to be the Real Name.

Self Check Exercise - 2

Catalogue the following books. The title page and other information are provided.

Note : i) Write your answer in your own note book.

ii) Check your answer with the model answer given at the end of this unit.

Exercise-2(a)

SKETCHES OF IRISH HISTORY

ANTIQUITIES, RELIGION

Customs and manners

By the Author of
Three Years in Italy
with an introductory preface

By
Charlotte Elizabeth

.....
Other Information :

Call No.

Acc. No.

Date of publication 1844

Real name of 'Three Years in Italy' found from outside source is Selina Martin.
.....

Exercise-2(b)

The Rajah's Second Wife

A STORY

BY

HEADON HILL

1900

LONDON

.....
Other Information :

Call No.

Acc. No.

Date of birth of author 1863

Headon Hill is the pseudonym. Real name found in the book is Frank E. Grainger.
.....

4.4 ANONYMOUS AUTHOR

An anonymous work is of an unknown authorship either personal or corporate. Majority of the sacred books of all the religions are anonymous in nature. There are several classical works whose authors are unknown. Sometimes we also come across even ordinary books without any authorship. The general rule in such cases is the title becomes the Heading of the main entry. When title occurs in the Heading the first two words are deemed to form the entry element and they are to be written in capital letters.

Below is a worked out example based on anonymous work.

Example 7 : Anonymous author

NOBODY AND SOMEBODY

ISSUED FOR SUBSCRIPTION

BY

THE TUDOR FACSIMILE TEXTS

AMS Press
New York

Other Information :

Call No. O111,2K,N D11

Acc. No. 8023

Date of publication 1911

Series: The Tudor Facsimile Texts

It is a play produced in the 17th century.

Main Entry

	O111	2K,N D11
	8023	Nobody and somebody. (Tudor facsimile texts. 23)

Though there is no specific rule stated for anonymous work, the Rule No. MD61 is applicable which states that "if the Heading cannot be chosen in accordance with any of the other Rules.....the title of the document excluding an initial article or an initial honorific word, if any, is to be used as the Heading.... The first two words in the Title are to be written in Block Letters."

Chain Index

- O = Literature
- O111 = English Literature (sought link)
- O111.2 = Drama, English (sought link)
- O111.2K,N = Nobody and somebody, Drama (sought link)

Tracing

○ Nobody and somebody Drama, English English, Literature Literature Tudor Facsimile Texts.

Class Index Entry

	Nobody and somebody	
		0111,2K,N

Other Class index entries are

DRAMA, ENGLISH
ENGLISH, LITERATURE
LITERATURE

Book Index Entry (Series)

		TUDOR FACSIMILE TEXTS.	
	23	Nobody and somebody.	O111,2K,N D11

Self Check Exercise - 3

Catalogue the following book. The title page and other information are given below.

Note : i) Write your answer in your own note book.

ii) Check your answer with the model answers given at the end of this unit.

THE LEXICON

Encyclopedia

OF SCIENCE

Lexicon Publications, Inc

Other Information :

Call No. Ak73,N82 M4

Acc. No. 5198-5202

First published in 1982: present set published in 1984.

It is a set of 5 volumes.

There is an editorial board given on the back of the title page.

4.5 SUMMING UP

We have explained you in this unit about cataloguing of works with collaborators. The names of the collaborators are to be entered after title without rendering the name.

Another topic discussed in this Unit is about pseudonymous authors. Entry heading will be under pseudonym if that appears on the title page and the real name of the author will be supplied in square bracket. If the real name is taken from outside the source, it is to be provided in square brackets. In the case of anonymous authorship, the heading in the main entry is under the title.

We have worked out examples under each category of works by pseudonymous and anonymous authorship and works with collaborators.

4.6 ANSWERS TO SELF CHECK EXERCISES

Answers to Self Check Exercise - 1(a)

Main Entry

	O15,2D,M G8	
	6010	SUDRAKA. Mrechakatika. Tr by Revilo Pendleton Oliver.

Chain Index

O	=	Literature
O15	=	Sanskrit, Literature
O15,2	=	Drama, Sanskrit
O15,2D	=	Sudraka, Drama
O15,2D,M	=	Mrechakatika, Sudraka

Tracings

Mrechakatika, Sudraka
Sudraka, Drama
Drama, Sanskrit
Sanskrit, Literature
Literature
Oliver (Revilo Pendleton), Tr.

Class Index Entry

		MRECHAKATIKA, SUDRAKA
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O15,2D,M

Class Index Entry

		SUDRAKA, DRAMA
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O15,2

Other Class Index entries :

Drama, Sanskrit
Sanskrit, Literature
Literature

Book Index Entry (Translator)

		OLIVER (Revilo Pendleton), Tr	
		Sudruka : Mrechakatika.	O15,2D,M G8

Explanation :

The date of birth of the author is not provided in the Exercise. It is taken from the literary sources and the class number and book number are constructed. A collaborator (Translator) is associated with the author. Collaborator statement is given in the title section. The author's name and title are indexed under Class Index Entries, hence no Book Index Entries (for author and title) are provided. Only a Book Index Entry for Translator is prepared.

Answers to Self Exercise - 1(b)

Main Entry

		W81 N48 L3	
		Mark (Karl).	
		The revolution of 1848, Ed by David Fernbach.	
	6011		

Chain Index

W = Political Science
W81 = Revolution.

Tracings

Revolution (1948)
Political Science
Marx (Karl)

Fernbach (David), *Ed.*

Class Index Entry

		REVOLUTION
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number W81

Class Index Entry

		POLITICAL SCIENCE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number W

Book Index Entry (Author Index)

	MARK (Karl)	
	Revolution of 1848.	W81 N8 L3

Book Index Entry

	FERNEBACH (David), Ed.	
	Marx : The revolution of 1848.	W81 N48 L3

Explanation :

An example of a personal author with a collaborator. The author and collaborator (editor) are given in Book Index Entries. The work is classified under Political Science - Revolution.

Answers to Self Exercise - 2(a)

Main Entry

	V564	A
	manner's.	THREE YEARS IN ITALY, <i>Pseud</i> (i.e., Selina Martin) Sketches of Irish History: Antiquities, religion, customs and
	Acc.	No.

Chain Index

V = History
V5 = Europe, History
V562 = Ireland, History

Tracings

Q.564	Ireland, History
Y: 356.564	Europe, History
	History
	Three years in Italy, <i>Pseud.</i> Martin (Selina)

Class Index Entry

		IRELAND. HISTORY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V564

Other Class Index Entries :

Europe, History
History

Book Class Index Entry (Author)

		THREE YEARS IN ITALY. <i>Pseud</i> (i.e., Selina Martin)
		Sketches of Irish history: Antiquities, religion, customs and manners. V564 A4

Cross Reference Index Entry

		MARTIN (Selina)
		See Three years in Italy.

Cross Reference Entry

		Q.564
		See also V564 A THREE YEARS IN ITALY, <i>Pseud</i> (i.e., Selina Martin) Sketches of Irish History.

Cross Reference Entry

		Y:356 564
		See also V564 A THREE YEARS IN ITALY, <i>Pseud</i> (i.e., Selina Martin). Sketches of Irish history.

Explanation :

'Three years in Italy' is a pseudonym of Selina Martin. A Book Index Entry for the pseudonym (Three years in Italy) and a Cross Reference Index Entry for the real name are prepared. This particular book also deals with religion and customs in Ireland and the subject is spread over the book. If this information is not provided in the catalogue, some one looking for those subjects (customs and religion in Ireland) will miss it. For this purpose CCC has provided Cross Reference entries. These Cross Reference entries may also be called Subject Analyticals. (Refer CCC Chapter FN53). Subject Analyticals are provided with Class Numbers in the Leading Section followed by a Directing Element *See also* and then the same informing given as in its Main Entry.

Answers to Self Exercise - 2(b)

Main Entry

	O111,3M63,R M0	
		HILL (Headon), <i>Pseud</i> (i.e Frank E. Grainger). Rajah's second wife: A story.
	Acc. No.	

Chain Index

O	=	Literature
O111	=	English, Literature
O111,3	=	Fiction, English
O111,3M63	=	Hill (Headon), <i>Pseud</i> , Fiction
O111,3M63,R	=	Rajah's second wife, Hill (Headon), <i>Pseud</i>

Tracings

		Rajah's second wife, Hill (Headon), <i>Pseud</i> Hill (Headon), <i>Pseud</i>, Fiction Fiction, English English, Literature Literature Hill (Headon), <i>Pseud</i> Grainger (Frank E)
--	--	---

Class Index Entry

		RAJAH'S SECOND WIFE, HILL (Headon), <i>Pseud</i>.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number OI11.3M63.R

Class Index Entry

		HILL (Headon), <i>Pseud</i>, FICTION
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number OI11.3M63

Other Class Index Entries :

Fiction, English
English, Literature
Literature

Book Index Entry (Author)

	HILL (Headon), <i>Pseud.</i> (i.e., Frank E Grainger)	
	Rajah's second wife.	O111,3M63,R M0

Cross Reference Index Entry

	GRAINGER (Frank E)	
	See HILL (Headon), <i>Pseud.</i>	

Explanation :

The Class Number of the book is constructed according to CC6. Since the real name of the author is found in the book, it is kept in circular brackets after the the pseudonym and the descriptive element, Pseud. A Book Index Entry is provided for the author (pseudonym). A Cross Reference Index Entry refers to the real name to the pseudonym.

Answers to Self Exercise - 3

Main Entry

	Ak73, N82 M4	
		LEXICON ENCYCLOPEDIA of science. 5V
	5198-5202	

Chain Index

- A = Natural Sciences (sought link)
Ak = Encyclopedia, Natural Sciences (sought link)

Tracings

○

Encyclopedia, Natural sciences.
Natural sciences.

Lexicon encyclopedia of natural sciences.

Class Index Entry

		ENCYCLOPEDIA NATURAL SCIENCES
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Ak

Class Index Entry

		NATURAL SCIENCES
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number A

In case of anonymous works when the entries are not derived by the Class Index entries, a separate title entry is to be provided. It is based on Rule MD61 and becomes a Book Index entry. There is no need to make entries for person of the editorial board as members of the board are likely to change for future editions.

Book Index Entry (Title)

		LEXICON ENCYCLOPEDIA of Science.
		AK73,N82 M4

4.7 ASSIGNMENT

Catalogue the following books. The title page and other information are provided.

Assignment - 1 :

SAMUEL JOHNSON
**SELECTIONS FROM THE LIVES OF THE
ENGLISH POETS**

Edited by
EDMUND FULLER

AVON
New York

Other information :

Call No.

Acc. No. 6012

Date of publication 1965

Date of birth of the author 1709

(Call No. to be provided by you)

Assignment - 2 :

EARLY ECONOMIC THOUGHT

Selections from economic literature
prior to Adam Smith

Edited by
ARTHUR ELI MONROE

Harvard University Press
Cambridge
1924

Other information :

Call No. Xv F4
Acc. No. 50005

Assignment - 3 :

George Eliot

ADAM BEDE

with an introduction by
MAXWELL H. GOLDBERG

Other information :

Call No. O111,3M19,A J6
Acc. No. 74872
Date of publication 1956
Author's real name is Marian Evans

Assignment - 4 :

GEORGE ORWELL

NINETEEN

EIGHTY - FOUR

Penguin Books
in association with Martin Secker & Warburg

Other information :

Call No. O111,3N03,N M
Acc. No. 50013
Author's real name : Eric Arther Blar

4.8 RECOMMENDED BOOKS

RANGANATHAN, S.R. *Classified catalogue code: With additional rules for dictionary catalogue code*. 5th ed. Bangalore: Sarada Ranganathan Endowment for library science, 1988.

SHARMA, C.D. *Practical cataloguing: Classified catalogue code*. Delhi: Metropolitan, 1980.

4.9 GLOSSARY

Anonymous work :

Work of unknown authorship either personal or corporate.

Pseudonym :

An author assuming a false or fictitious name or any other specification different from the real name.

BRAOU

UNIT 5 : SERIES AND MULTI-VOLUMED WORKS

Contents

- 5.0 Aims and Objectives
- 5.1 Introduction
- 5.2 Series
 - 5.2.1 Single Series
 - 5.2.2 Multiplicity of Series
 - 5.2.3 Pseudoserries
- 5.4 Multi-volumed works
- 5.5 Summing Up
- 5.6 Answers to Self Check Exercises
- 5.7 Assignment
- 5.8 Recommended Books
- 5.9 Glossary

5.0 AIMS AND OBJECTIVES

In this unit we aim to introduce you books published under different kinds of series and multi-volumed works and to show how to catalogue such works.

After studying this unit you will be able to

- recognise different kinds of series under which books are published;
- render series information in the note section of the main entry;
- prepare added entries for series;
- distinguish multi-volumed publications from single volume publications;
- catalogue multi-volumed works.

5.1 INTRODUCTION

Certain books are published in a particular sequence with a common title. Such a common title is called a series title. Sometimes a distinctive number is assigned to indicate the position of each book in that sequence. We will explain you how to catalogue such works published under series with the help of a few examples.

Another topic discussed in this unit is multi-volumed works. Usually books are published in single volumes. But in certain cases the thought content cannot be accommodated in one volume for one reason or other and in such cases the works are published in a number of volumes. Such works which exceed one volume are called multi-volumed works. Let us take a few examples of multi-volumed works and catalogue them.

5.2 SERIES

5.2.1 Single Series

CCC has defined a series as "a set of books, not constituting a multi-volumed book". The other attributes of a series are :

- i) Books are issued by a publisher or a sponsoring body or persons, usually in a uniform style, and having some similarity of subject or standard or purpose.

- ii) Each book has normally a distinct and independent title/or other features of its own.
- iii) Each book has normally a different author.
- iv) There is a collective name to denote the set, called the Name of the Series and given in all or at least in one of the books of the set and
- v) Each book is or can be assigned a distinct number, called the Serial Number.

Rendering :

The name of a Series is to be rendered in the

- i) Note Section of a Main Entry and
- ii) Heading of a Book Index Entry

In rendering the name of a series in the Note Section or in the Heading, the initial article and honorific word, if any, are to be omitted and the remaining words are written in the sequence in which they occur in the document. In the Note Section the rendering is as follows :

- i) The name of the series
- ii) A full stop
- iii) The words "Ed by," followed successively by the name (s) of the editor (s) of the series, if the series has editor(s)
- iv) A full stop and
- v) The serial number

If there are two editors, the names of both are to be written with the conjunction "and" connecting them. If there are more than two editors, the name of the first editor alone is to be written and continued by the words "and others."

Examples :

- i) Foundations of modern political science series. Ed by Robert A Dahl. 137.
- ii) Wiley farm series. Ed by A.K. Getman and C.E. Ladd. 2.
- iii) Century psychology series. Ed by Elliot and others. 3.

The Serial Number is to be the Number indicating the position of the book in the series, as is given by the publisher. In case no serial number appears, the books are to be given serial number in the sequence of the accession or in any other convenient sequence. Serial number can also be substituted by the year, if that is the only one available in the book.

Few examples where series figure in a book are worked out below.

Example - 1

Public Expenditure Inflation and Growth

A micro-economic analysis
for India

B.B. BHATTACHARYA

**DELHI
OXFORD UNIVERSITY PRESS**

1984

.....

Other Information

Call No. X76.44 M4

Acc No. 6030

In the preliminary pages a series is given. Studies in
Economic Development and Planning No.37

General Editor : P.C. Joshi

.....

Main Entry

	X76.44	M4
		BHATTACHARYA (B B). Public expenditure, inflation and growth : Macroeconometric analysis for India. (Studies in economic development and planning. Ed by P C Joshi 37).
	630	

Chain Index

X = Economics (sought link)
X7 = Public finance (sought link)
X76 = Expenditure
X76.44 = India, Expenditure

Tracing

	India, Expenditure Expenditure Public Finance Economics
	Bhattacharya (B B) Studies in economics development and planning Joshi (P C), Ed.

Explanation :

In the above example the details of series such as name, editor and number are rendered in the circular brackets in the Note Section. After the name of the series a full stop and the contraction "Ed" for editor and the name of the editor is given. The serial number of the series is added after a full stop. A book index entry for the name of the series and a cross reference index entry for the editor of the series are to be provided.

Class Index Entry

		INDIA, EXPENDITURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X76.44

Other Class Index entries are

EXPENDITURE
PUBLIC FINANCE
ECONOMICS

Book Index Entry (Author)

		BHATTACHARYA (B B).
		Public expenditure, inflation and growth. X76.44 M4

Book Index Entry (Series)

		STUDIES IN ECONOMIC DEVELOPMENT AND PLANNING.
	37	Bhattacharya: Public expenditure inflation and growth. X76.44 44

Cross Reference Index Entry

		JOSHI (P C), <i>Ed.</i>
		<i>See</i> STUDIES IN ECONOMICS DEVELOPMENT AND PLANNING.

Example - 2

Labour Shrotage and Economic Analysis

A study of
Occupational labour markets

Barry Thomas
David Deaton

Basil Blackwell, Oxford

.....

Other Information :

Call No. X:991 L7

Acc No. 6031

Date of Publication 1977

There is also a series; Warwick Studies in Industrial Relations.

General Editors: G.S. Bain and H.A. Clegg. It is 14th in the order of publication.

.....

Main Entry

	X:991 L7	
	6031	THOMAS (Barry) and DEATON (David). Labour shortage and economic analysis: Study of occupational labour markets. (Warwick studies in industrial relations. Ed by G S Bain and H A Clegg. 14).

Chain Index

X = Economics (sought link)
X:9 = Labour problem (sought link)
X:99 = Unsought link
X:991 = Labour market

Tracings

Labour Market Labour Problem Economics Thomas (Barry) and Deaton (David) Deaton (David) and Thomas (Barry) Warwick studies in industrial relations Bain (G S) and Clegg (H A), <i>Ed.</i> Clegg (H A) and Bain (G S), <i>Ed.</i>

Explanation:

In the above example, no number is given after the series statement on the title page. But it is understood that the present book is the fourteenth in the order of publication. The number is given in the Note Section after the name and editor of the series.

Class Index Entry

		LABOUR MARKET
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:991

Other Class Index entries are

LABOUR PROBLEM
ECONOMICS

Book Index Entry (Author)

		THOMAS (Barry) and DEATON (David).
		Labour shortage and economic analysis. X:991 L7

Book Index Entry [Joint Author]

		DEATON (David) and THOMAS (Barry)
		Labour shortage and economic analysis. X:991 L7

Book Index Entry [Series]

		WARWICK STUDIES IN INDUSTRIAL RELATIONS
14		Deaton and Thomas : Labour shortage etc. X:991 L7

Cross Reference Index Entry

		BAIN (G S) and CLEGG (H A). <i>Ed.</i>
		<i>See</i> WARWICK STUDIES IN INDUSTRIAL RELATIONS.

Cross Reference Index Entry
(Joint Editor)

		CLEGG (H A) and BAIN (G S), <i>Ed.</i>
		~~See~~ WARWICK STUDIES IN INDUSTRIAL RELATIONS.

Example - 3

ENTRY INTO MATTER
MODERN LITERATURE

and

REALITY

JUAN GARCIA PONCE

Translated by

DAVID J. PARENT

and

BRUCE NOTOA

Applied Literature Press
Norman, Illinois

.....
Other Information :

Call No. O:g L6

Acc No. 6032

Date of publication 1976

There are two independent series :

- 1) Monograph publishing on demand imprint series (presumed to be no.10)
 - 2) Illinois language and culture series: V.2
-

Explanation :

In the above example, there are two independent series with individual serial number and hence they are to be rendered in the Note Section. No name of series editor is given.

Main Entry

	O:g L6	
	6032	Ponce (Juan Garcia) Entry into matter: Modern literature and reality. Tr by David J Parent and Bruce-Novoa. (Monograph publishing on demand imprint series. 10). (Illinions language and culture series. 2).

Chain Index

- O = Literature (sought link)
- O:g = Criticism, literature

Tracing

	Criticism, Litreature Literature Ponce (Juan Garcia) Monograph Publishing on damand imprint series Illinois language and culture series Entry into matter
--	--

Class Index Entry

		CRITICISM, LITERATURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O:g

Book Index Entry (Author)

		PONCE (Juan Garcia).
		Entry into matter. O:g L6

Book Index Entry (Translators)

		PARENT (David J) and BRUCE-NOVOA, Tr.
		Ponce:Entry into matter. O:g L6

Book Index Entry (Joint Translator)

		BRUCE-NOVOA and PARENT (David J), <i>Tr.</i>
		Ponce: Entry into matter. O:g L6

The title of the book is a fanciful one and readers are likely to remember such titles. In such cases a title entry is to be provided.

Book Index Entry (Title)

		ENTRY INTO matter
		By Ponce. O:g L6

There are two independent series and hence are to be represented by two different entries.

Book Index Entry (Series Entry)

		MONOGRAPH PUBLISHING ON DEMAND IMPRINT SERIES
	10	Ponce: Entry into matter O:g L6

Book Index Entry (Series)

		ILLINOIS LANGUAGE AND CULTURE SERIES
	2	Ponce: Entry into matter O:g L6

5.2.2 Multiplicity of Series

Ranganathan has recognised the following three types under multiplicity of series in his Classified Catalogue Code:

- i) Independent series note
- ii) Interdependent series note
- iii) Alternate names of series

Independent series note:

If each series name is individualising by itself, a separate note for each of the series is to be provided.

	2-51N3	gN60
	267101	RANGANATHAN (Shiyali Ramamrita) Colon Classification. Ed.6. (Ranganathan series in library science.4) (Madras library association, Publication series. 26)

Interdependent series note:

If the name of the series is not individualising by itself a sequence of interdependent series note is to be given.

There also cases when the name of a series is dependent on some other name and they are called interdependent series. CCC has given an example of a case of three interdependent series, and the series notes forms a sequence.

	011.1.2/96	G(Y35) E
	5459	PARLIN (Hanson T). Study in Shirley's comedies of London life. (University of Texas bulletin.371; Humanities series. 17; studies in English.2).

In the above case second and third do not get individualised unless the first is given.

Alternative names of series:

If a series has two or more alternative names, they are to be provided with an intervening word 'or'.

		O15.D40.A K2
		KALIDASA. Abhigyan Shakuntalam. Tr by H.K. Cooper. (Chowkamba Sanskrit series or Varanasi Sanskrit granthamala. 25).
	96718	

5.2.3 Pseudo-series

CCC in addition to the series, also has made provision for entries under pseudo-series. Pseudo-series are not given by the publisher, but it has to be established artificially by the Catalogue Code. CCC has given three kinds of Pseudo-series and their attributes are reproduced below:

Kind-1 Which has the following attributes :

- All the books are of common authorship
- All the books belong to the same edition
- The title of each book has a distinctive part in addition to the name of the edition.
- Each book is or can be assigned a Serial Number belonging to a system of simple or complex ordinal numbers.
- The name of the author taken along with the name of the edition.

Kind-2 With the following attributes :

- All the books are of common authorship
- The titles of various books have a common part capable of being used as their common generic title
- The title of each book has a distinctive part of its own in addition to the generic part.
- The name of the author taken along with the generic title is suitable to be used as if it were the Name of a Series.

Kind-3 With the following attributes :

- All the books are not of a common authorship.
- The titles of various books have a common part capable of being used as a common generic title.
- The title of each book has a distinctive part of its own in addition to the generic part.

- iv. Each book is or can be assigned to Serial Number belonging to a system of simple or complex ordinal number:
- v. The name of the author taken along with the generic title is suitable to be used as if it were the Name of a Series.

In addition under all the three kinds, the set of books should not constitute a multi-volumed set.

The three examples given in CCC under each kind of Pseudo-series are also reproduced below:

Kind-1 : The binder's title of the 21 volume set contained generic specification "Works of Leo Tolstoy, Centenary Edition," with a serial number for each volume. The main entry in such cases is :

	0142.3M28.1 F8	
		TOLSTOY (Leo). Childhood, boyhood and youth. (Tolstoy (Leo). Centenary ed. 3)
	49834.	

Above is the 3rd volume in the set.

Kind - 2 :

	C53 G3	
		GRIMSHEL (E). Optics...Tr...by L A Woodward. [Grimshel (E). Textbook of physics. Ed by R Tomoschck. 4]
	81379	

It is a set of 5 volumes, with the generic title page: E Grimshel Text book of physics. The above volume is the 4th in the set.

Kind - 3 :

Below is given another example from CCC of the Pseudo-series of Kind 3

	V56'K0	E8
	5012	INNES (Arthur D). England under the Tudors. (History of England. Ed by Charles Oman. 4)

This is the 4th volume in the set with the common title "History of England" edited by Charles Oman.

Self Check Exercise-1

Catalogue the following books. The title and other information are provided.

Note : i) Write your answer in your own note book.

ii) Check your answer with the model answer given at the end of this unit.

Exercise-1(a)

MACROECONOMIC

PLANNING

ROGER A. BOWLES

and

DAVID K. WYHNES

London

GEORGE ALLEN & UNWIN

Other information :

Call. No. .

Acc. No. 6040

Date of publication 1979

Series: Studies in Economics. Edited by Charles Carter, no.14

**WHITE COLLAR
WORKERS
IN AMERICA
1890-1940**

**A SOCIO-POLITICAL HISTORY
IN INTERNATIONAL PERSPECTIVE**

Jurgen Kocka

TRANSLATED BY MAURA KEALEY

SAGE PUBLICATIONS - LONDON AND BEVERLY HILLS

.....
Other information :

Call No.

Acc. No. 6341

Date of Publication 1980

Series: Sage Studies in 20th Century History. Volume 10
.....

Exercise-1(c)

RONALD BERMAN

ADVERTISING

and

SOCIAL CHANGE

SAGE PUBLICATIONS. BEVERLY HILLS, LONDON.

.....
Other Information,

Call No.

Acc No. 6042

Date of Publication 1981

Series: The Sage Commtext Series. Volume 8.

Editors: F. Gerald Kline and Susan H. Evans.
.....

5.4 MULTI-VOLUMED WORKS

A multi-volumed book has been defined in CCC as a "book in two or more volumes giving a continuous exposition, and for this or for any other reason in the distribution of thought among the volumes, compelling the treatment of all the volumes as an inseparable set, i.e. as if they together formed a single volume."

Further CCC recognises two types of multi-volumed book :

(1) The type in which the constituent volumes do not have a special title other than the common title of all the volumes and do not have a special title other than the common title of all the volumes and do not have any difference in the other factors that are capable of contributing to the title portion of a Main Entry and,

(2) Others.

A multi-volumed book of the first type is to be catalogued like a simple book and if all the volumes of the book have been published and if available in the library, an additional sentence is to be added to the Title Section of the Main Entry, showing the number of volumes and the term "V", like 3V. In case all the volumes have not been published in such cases an open entry is to be provided like, V3—, which means so far three volumes are published and more volume(s) are to be received. This is to be written in pencil because when the set is completed it is to be changed to show the completion of the set.

In case if the set in the library is incomplete, the missing volumes are to be shown in the catalogue: [V4 not in library]. This will be part of the Title Section.

The second type of multi-volumed book will be shown by an example with appropriate explanations. Both the types of multi-volumed books are worked out below.

Example - 4

HISTORICAL SKETCHES
of the
SOUTH INDIAN HISTORY
FROM THE EARLIEST TIMES TO
THE LAST MUHAMMADAN DYNASTY

Mark Wilks

AND

Murry Hammick

COSMO PUBLICATIONS
New Delhi
1980

.....
Other information

Call No. V441.L9

Acc No.5115-5118

The book is in 4 volumes
.....

1

V441 L9: M0.1-M0.4

WILKS (Mark and Hammick (Murry).

Historical sketches of the South Indian history: From the earliest times to the last Muhammadan dynasty. 4V.

5115-5118

Chain Index

- V = History (sought link)
V44 = India, History (sought link)
V441 = South India, History (sought link)

Tracing

South India, History
India, History
History.

Wilks (Mark) and Hammick (Murry)
Hammick (Murry) and Wilks (Mark)

Explanation :

The above book is published in four volumes, but the individual volumes are not given individual titles. Hence an additional sentence, i.e., 4V. is added after the title in the Malin Entry.

Class Index Entry

		SOUTH INDIA, HISTORY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V441

Other Class Index entries are

INDIA, HISTORY
HISTORY

Book Index Entry

		WILKS (Mark) and HAMMICK (Murry).
		Historical sketches of the South Indian history. 4V. V441'L9 M0.1-M0.4

Book Index Entry (Joint author)

		HAMMICK (Murry) and WILKS (Mark).
		Historical sketches of the South Indian history. 4V.
		V44'L9 M0.1-M0.4

In the Book Index entries the information about the number of volumes should be provided.

Example - 5

ADVANCED STUDY IN THE HISTORY OF MEDIEVAL INDIA

J. L. Mehta
M.A.Ph.D.

Sterling Publishers Pvt.Ltd.
New Delhi

Other information

Call No. N44'L1 L9.1-L9.3

Acc. No.2924-2926

Date of publication 1979

The book is in three volumes and each volume with descriptive title.

V1 1000-1526 AD

V2 The Mughal Empire (1526-1707)

V3 Medieval Indian society and culture

Explanation :

In this example you find the individual volumes in the multi-volumed work have individual titles in addition to main title of the work. The individual titles are to be rendered in the Note Section.

Main Entry

	V44L1	L9.1-L9.3
		MEHTA (J L) Advance study in the history of medieval India. 3V. V1. 1000-1526 A.D. V2. Mughal empire (1526-1707) V3. Medieval Indian society and culture.
2924-2926		

Chain Index :

INDIA, HISTORY
HISTORY

Tracing

India, History History Mehta (J L)

Class Index Entry

		INDIA HISTORY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V44

Class Index Entry

		HISTORY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V

Book Index Entry (Joint Author)

		MEHTA (JL)
		Advance study in the history of medieval India. 3V. V44'L L9.1-L9.3

**HISTORY OF
The Freedom Movement
IN INDIA**

BY
Tara Chand

FOREWORD BY
Humayun Kabir

Publication Division

Other Information:

Call No. V44:51N47 K7.1-K7.3

Acc No. 3501-3502

The date of publication of the volumes are

V1 1961, V2. 1967 and V3. 1972

In the library volume two has not been received

Main Entry

		V44.51N47 K1.1,K1.3
		TARA CHAND History of freedom movement in India. 3V. [V2 not in library].
		3501-3502

This is a case of a missing volume

Chain Index

V = History (sought link)
V44 = India, History (sought link)
V44:5 = Relation of the state with citizen, India (sought link)
V44:51 = Struggle for Independence, India (sought link)

Tracing

○ Struggle for Independence, India Relation of the State with Citizen, India. India, History History Tara Chand
--

Explanation :

In the above example, there are three volumes in the multi-volumed set. No separate titles are given for the individual volumes. Since the library does not possess the second volume of the set it is indicated in the square brackets in the Title Section.

Class Index Entry

		STRUGGLE FOR INDEPENDENCE, INDIA.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V44:51
		○

Other Class Index entries are

RELATION OF THE STATE WITH CITIZEN, INDIA
INDIA, HISTORY
HISTORY

Book Index Entry

	TARA CHAND.	
		History of freedom movement in India. 3V. V44:51W47 K1.1,K1.3

Example - 7

FUNDAMENTALS OF THE HISTORY OF OPERATOR ALGEBRAS

Volume 1

RICHARD V. KADISON

JOHN R. RINGROSE

1983

Academic Press

Other Information

Call No; B2 M3.1

Acc. No. 7416

Other volumes are not yet published.

Series : Pure and Applied Mathematics - a series of monographs and text books No. 23

Editors; Samuel Eilenberg and Hyman Bass.

Explanation :

In the above example of multi-volumed set, only the first volume is published and the other volumes are yet to be published. Therefore, in the Title Section the number of volumes so far published is to be indicated as "V1". The number in this statement is to be written in pencil. The series name and the names of the editors are to be rendered in the Note Section.

Main Entry

	B2 M3.1	
	7416	KADISON (Richard V) and RINGROSE (John R) Fundamentals of the theory of operator algebras. V1- (Pure and applied mathematics, a series of monographs and text books. Ed by Samuel Eilenberg and Hyman Bass) V1. Elementary theory

This is a case of continuation volumes

Chain Index

B = Mathematics (sought link)
B2 = Algebra (sought link)

Tracings

Algebra
Mathematics
Kadison (Richard V) and Ringrose (John R)
Ringrose (John R) and Kadison (Richard V)
Pure and applied mathematics, a series of monographs and textbooks

Tracings (continuation card)

		Cont.2
	B2 M3.1	
		Eilenberg (Samuel) and Bass (Hyman), <i>Ed.</i> Bass (Hyman) and Eilenberg (Samuel), <i>Ed.</i>

Class Index Entry

		ALGEBRA
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number B2

Other Class Index Entry is
MATHEMATICS

Book Index Entry (Author)

		KADISON (Richard V) and RINGROSE (John R).
		Fundamentals of the theory of operator algebras. VI- B2 M3.1

Book Index Entry (Joint author)

		RINGROSE (John R) and KADISON (Richard V).
		Fundamentals of the theory of opetator algebras. V1- B2 M3.1

Book Index Entry (Series)

		PURE AND APPLIED MATHEMATICS, A SERIES OF MONO GRAPHS AND TEXT BOOKS.
	23	Kadison and Ringrose : Fundamentals of the theory of operator algebras. V1- B2 M3.1

Cross Reference Index Entry (Series Editors)

		EILENBERG (Samuel) and BASS (Hyman). <i>Ed.</i>
		<i>See</i> PURE AND APPLIED MATHEMATICS, A SERIES OF MONOGRAPHS AND TEXTBOOKS.

Cross Reference Index Entry (Series Editors)

		BASS (Hyman) and EILENBERG (Samuel), <i>Ed.</i>
		See PURE AND APPLIED MATHEMATICS, A SERIES OF MONOGRAPHS AND TEXTBOOKS.

Self Check Exercise-2

Catalogue the following books. The title page and other information are provided.

Note: i) Write your answers in your own notebook.

ii) Check your answer with the model answer given at the end of the unit.

Exercise-2(a)

TOM M. APOSTOL

CALCULUS

SECOND EDITION

WILEY EASTERN LIMITED

NEW DELHI

Other Information

Call No. (to be supplied)

Acc No. 3975-3976

Date of publication 1980

The book is in two volumes

Volume One: One-variable calculus, with an introduction to linear algebra

Volume Two: Multi-variable Calculus and linear algebra, with applications to Differential Equations and Probability

THE
TRIBES AND CASTES
OF
BOMBAY

BY
R.E. Enthoven

COSMO PUBLICATIONS
NEW DELHI
1975

Other information:

Call No. (to be supplied)
Acc No. 5426-5427

The book is in three volumes, volume two is not received in the library.
Series: The Native Races of India. No. 12.

Exercise - 2(b)

THINKING AND LEARNING SKILLS

Edited by
JUDITH W. SEGAL
SUSAN F. CHIPMAN
ROBERT GLASER

Volume 1 : Relating Instruction to Research

LAWRENCE ERLBAUM
London

Other Information

Call No.
Acc No.
Date of Publication 1985
Series: Instructional Psychology Series
Other volumes are under print.

5.4 SUMMING UP

In this unit we have dealt with the works published under Series and as multi-volumed sets. The series is a set of books published under a common title, not constituting a multi-volumed set. The name, number and editor(s) of series are rendered in the Note Section of the Main Entry. The series name is provided as heading in book index entries, while the editor of a series is given a cross reference index entry. A few examples illustrating series and various kinds of series are given.

Another area we have dealt in this unit is the cataloguing of multi-volumed works. A work produced in two or more volumes giving a continuous exposition to the content is said broadly as a multi-volumed work. The individual volumes may have independent titles in addition to the common title in some cases while others do not have. The information about the volumes is rendered in the Title Section of the Main Entry.

5.5 ANSWERS TO SELF CHECK EXERCISES

Answers to Self Check Exercise-1(a)

Main Entry

	X:75	L9
	6040	BOWLES (Roger A) and WYHNES (David K) Macroeconomic planning. (Studies in economics. Ed by Charles Carter. 14)

Chain Index

X = Economics
X:7 = Value, Economics
X:75 = Planned Economy

Tracings

Planned Economy
Value, Economics
Economics
Bowles (Roger A) and Wyhnes (David K)
Wyhnes (David K) and Bowles (Roger A)
Studies in economics
Carter (Charles), <i>Ed.</i>

Class Index Entry

		PLANNED ECONOMY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:75

Other Class Index Entries :

Value, Economics
Economics

Book Index Entry (Author)

		BOWLES (Roger A) and WYHNES (David K)
		Macroeconomic planning. X:75 L9

Book Index Entry (Joint Author)

		WYHNES (David K) and BOWLES (Roger A)
		Macroeconomic planning. X:75 L9

Book Index Entry (Series)

		STUDIES IN ECONOMICS
	14	Bowles and Wynnes : Macroeconomic Planning. X:75 L9

Cross Reference Index Entry

		CARTER (Charles). <i>Ed.</i>
		See STUDIES IN ECONOMICS

Explanation :

CCC has not used the term 'Macroeconomics', hence the 'Federal Finance' is considered the most related term and classified under it. There are two personal authors and a series. The Book Index Entries for the authors are given as in the earlier example. In the notes sections of main entry the name of the series is rendered, followed by the words "Ed by", the series editor and the series number respectively. A Book Index Entry for series and Cross Reference Index Entry for series editor are provided.

Answer to Self Check Exercises - 1(b)

Main Entry

	X:99N.73 N40-M90 M0	
	KOCKA (Jurgen).	
	White collar workers in America 1890-1940: Socio-political history in international perspective. Tr by Maura Kealay. (Sage Studies in 20th century history. 10).	
6041		

Chain Index

X	=	Economics
X:9	=	Personnel management
X:99N	=	White collar workers
X:99N.73	=	United States of America, White collar workers

Tracings

	United States of America, White collar workers
	White collar workers, Personnel management
	Personnel management
	Economics
	Kocka (Jurgen)
	Kealay (Maura), Tr.
	Sage studies in 20th century history, 10

Class Index Entry

		UNITED STATES OF AMERICA, WHITE COLLAR WORKERS
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:99N.73

Other Class Index Entries are :

White collar workers, Personnel Management
 Personnel Management
 Economics

Book Index Entry (Author)

		KOCKA (Jurgen).
		White collar workers in America 1890-1940: Socio-political history in international perspective. Tr by Maura Kealay. X:99N.75'N40-M90 M0

Book Index Entry (Translator)

		KEALEY (Maura), Tr.
		Kocka : White collar workers in America 1890-1940..... X:99N.73 N40-M90 M0

Book Index Entry (Series)

		SAGE STUDIES IN 20th CENTURY HISTORY.
		10 Kocka : White collar workers in America 1890-1940 : Socio-Political history in international perspective, Tr by Maura Kealey. X:99N.73 N40-M90 M0

Explanation :

An example of a personal author with a collaborator and series. The name of the Collaborator (Translator) is rendered in the title section after title with words "Tr by", an abbreviation for 'Translated by'. Book Index Entries for the personal author and collaborator are provided. Series name is given in the Notes section of the Main Entry. A Book Index Entry (Series) is also provided.

Answers to Self Check Exercise - 1(c)

Main Entry

	X:5130aY M1	
	Evans, 8)	BERMAN (Ronald). Advertising and social change. (Sage commtext series. Ed by F Gerald Kline and Susan H
6042		

Chain Index

X	=	Economics
X:51	=	Marketing
X:513	=	Advertising
X:5130aY:1	=	Advertising in relation to Sociology
Y	=	Sociology

Tracings

	Advertising in relation to Sociology
	Sociology
	Marketing
	Economics
	Berman (Ronald)
	Sage commtext series
	Kline (F Gerald) and Evans (Susan H), <i>Ed.</i>
	Evans (Susan H) and Kline (F Gerald), <i>Ed.</i>

Class Index Entry

		ADVERTISING in relation to SOCIOLOGY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:5130aY

Book Index Entry (Author)

		BERMAN (Ronald).
		Advertising and social change. X:5130aY:1 M1

Book Index Entry (Series)

		SAGE COMMTEXT SERIES
		Berman: Advertising and social change. X:5130aY M1

Cross Reference Index Entry

		KLINE (F Gerald) and EVANS (Susan H), <i>Ed.</i>
		See SAGE COMMTEXT SERIES.

Cross Reference Index Entry

		EVANS (Susan H) and KLINE (F Gerald), <i>Ed.</i>
		See SAGE COMMTEXT SERIES.

Explanation:

The class number is made up of phase relation, between two compound classes-Advertising (Economics) in relation to Social change (Sociology). Book Index Entries are provided for author and series. The two series editors provided with Cross Reference Index Entries.

Answers to Self Check Exercises - 2(a)

Main Entry

	B32	M0.1-M0.2
		Apostol (Tom A). Calculus, Ed2. 2V. V1. One-variable calculus with an introduction to linear algebra. V2. Multi-variable calculus and linear algebra with application to differential equations and probability.
	8975-3976	

Chain Index

B = Mathematics
 B3 = Analysis, Mathematics
 B32 = Calculus

Tracings

Calculus
Analysis, Mathematics
Mathematics
Apostol (Tom A)

Class Index Entry

		CALCULUS
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number B32

Other Class Index Entries are :

Analysis, Mathematics Mathematics

Book Index Entry (Author)

		APOSTOL (Tom A)
		Calculus. Ed 2.2V. B32 M0.1-M0.2

Explanation :

An example of a multi-volumed book with the two volumes having separate distinct titles (Type 2). In the title section, after the title, edition number (Ed 2) and number of volumes (2V) are shown. The title of each volume are shown in the Notes Section of the Main entry. A Book Index Entry (Author Entry) is provided.

Answers to Self Check Exercises - 2(b)

Main Entry

	Y72.4431	L5
		ENTHOVEN (RE). Tribes and castes of Bombay. 3V. [V2 not in library] (Native races of India. 12).
	5426-5427	

Chain Index

Y = Sociology
Y72 = Primitive races, Sociology
Y72.4431 = Bombay, primitive races

Tracings

	Bombay, Primitive races Primitive races, Sociology Sociology
	Enthoven (RE) Native races of Bombay
	Tribes

Class Index Entry

		BOMBAY, TRIBES
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Y72.4431

Other Class Index Entries :

Primitive races, Sociology
Sociology

Book Index Entry (Author Entry)

		ENTHOVEN (R E)
		Tribes and castes of Bombay. 3V. [V2 not in library] Y72.4431 L5

Book Index Entry (Series)

		NATIVE RACES OF BOMBAY
	12	Enthoven : Tribes and castes of Bombay. 3V. [V2 is not in library] Y72.4431 L5

Cross Reference Index Entry

	TRIBES	
		See Primitive races

Explanation :

The class number is constructed according to CC. The term 'Tribes' is not given in CC and hence it is classified under 'Primitive race'. A Cross Reference Index Entry is provided for the convenience of those who refer under Tribes. It is a multivolume work. The number of volumes (3V) is shown after the title statement. Volume two is not available in the library. This information is also provided in the title section. The series name and number are given in the Notes section of the Main Entry. Book Index Entries are provided for author and series.

Answers to Self Check Exercises - 2(c)

Main Entry

	S:44	M5
		SEGAL (Judith) and others, <i>Ed.</i> Thinking and learning skills. V1- V1 : Relating instruction to research. (Instructional psychology series).
	Acc No.	

Chain Index

S = Psychology
S:44 = Thinking, Psychology

Tracings

○ Thinking, Psychology Psychology Segal (Judith) and others, <i>Ed.</i> Instructional psychology series.

Class Index Entry

		THINKING, PSYCHOLOGY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number S:44
		○

Other Class Index Entry

Psychology

Book Index Entry (Editor)

SEGAL (Judith) and others, <i>Ed.</i>	
Thinking and learning skills. VI-	S:44 M5

BRAOU

Explanation :

The Class Number and Book Number are constructed. Since there are no personal or corporate authors, the collaborators (editors) are taken in the heading section (Refer CCC chapter MD5I). CCC does not recommend more than two authors/collaborators and hence the first editor is taken and the rest are omitted, and indicated by the terms 'and others'. It is a multi-volume work. Only one volume is printed. Others are under print. This is shown in the title section. Book Index Entries are provided for the collaborator and series.

5.6 ASSIGNMENTS

Assignment-1

Elsevier Oceanography Series, 16

FUNDAMENTALS OF OCEAN DYNAMICS

by

V.M. KAMENKOVICH

P.P. Shirshov Institute of Oceanology, U.S.S.R. Academy of Sciences,
Moscow, U.S.S.R.

translated by

R. RADOK

Horace Lamb Institute of Oceanography, Adelaide, Australia

ELSEVIER SCIENTIFIC PUBLISHING COMPANY
Amsterdam - Oxford - New York 1977

Other information:

Call No. H42225 N77

Acc. No. 272695

Full name of the author is given on the back of
the title page as : Vladimir Moiseevich Kamenkovich

Assignment-2

Principles and Selected Topics CHEMICAL KINETICS

I. AMDUR

Professor of Physical Chemistry
Massachusetts Institute of Technology

GORDON G. HAMMES

Professor of Chemistry
Cornell University

McGraw-Hill Book Company

New York St. Louis San Francisco Toronto London Sydney

.....
Other information:

Call No. E:213 N66

Acc No. 175865

Series: McGraw-Hill Series in Advanced Chemistry

Editorial Board: David N Hume Edward L. King

Dudley R Herschbach Gilbert Stork

John A Pople
.....

Assignment-3

Organic Chemistry

Volume 1: The Fundamental Principles

Sixth Edition

LL. FINAR DSc PhD (Lond) CChem MRIC

Principal Lecturer in Organic Chemistry, The Polytechnic of North London,
Holloway

English Language Book Society/Longman
.....

Other information:

Call No. E5 N73.1-N73.2

Acc No. 237638, 334884

Volume 2: Stereochemistry and the chemistry of Natural products Fifth edition (1975)
.....

Assignment-4

**Dewey Decimal Classification
and Relative Index**

Devised by Melvil Dewey

EDITION 20

Edited by

John P. Comaromi, Editor

Julianne Beall, Assistant Editor

Winton E. Mathews, Jr., Assistant Editor

Gregory R. Now, Assistant Editor

VOLUME 1

Introduction Tables

FOREST PRESS

a Division of

OCLC Online Computer Library Center, Inc.

ALBANY, NEW YORK

1989

.....
Other information :

Call No. 2:51M 2N89.1-2N89.4

Acc No. 352438-41

Volume 2: Schedules 000-599

Volume 3: Schedules 600-999

Volume 4: Relative Index. Manual
.....

5.7 RECOMMENDED BOOKS

RANGANATHAN, S.R. *Classified Catalogue Code*. 5th ed. Bangalore: Sarada Ranganathan Endowment for Library Science, 1989.

SHARMA, C.D. *Practical cataloguing: classified catalogue*. Delhi: Metropolitan Books, 1980.

VARMA, A.K. *Classified Catalogue code: entries & procedure*. New Delhi: Criterion publications, 1988.

5.8 GLOSSARY

Series:

A set of books published successively by a publisher or by an institution in a uniform style, but not constituting a multi-volumed book.

Multi-volumed work:

Books in two or more volumes usually giving a continuous exposition of thought content among the volumes and compelling the treatment of all the volumes as an inseparable set.

BRAOU

UNIT 6 : COMPOSITE BOOK

Contents

- 6.0 Aims and Objectives
- 6.1 Introduction
- 6.2 Collaborator Heading
- 6.3 Ordinary Composite Book
- 6.4 Festschrift
- 6.5 Artificial Composite Book
- 6.6 Summing Up
- 6.7 Answers to Self Check Exercises
- 6.8 Assignment
- 6.9 Recommended Books
- 6.10 Glossary

6.0 AIMS AND OBJECTIVES

You have seen in the previous units, works produced by Personal Authors and Editor(s) or other collaborators associating with them. There are also books with several contributions, where the authors cannot be identified and editors play significant role in the publication of the document. CCC treats such works separately. This unit deals with cataloguing of such works.

- After studying this unit, you will be able to
- identify works produced under editorial direction;
- distinguish the composite books as ordinary composite books and artificial composite books;
- catalogue various types of the composite book.

6.1 INTRODUCTION

Several types of documents are published under the editorial directions. Some of them are (1) Periodicals (2) Conference proceedings (3) Reports, and other serial publications like 'Advances' 'Progress' and 'Reviews', (4) Books with several contributions where the authors can be identified and (5) Edited by one or more persons where the thought content cannot be ascertained. The first three categories in CCC are catalogued under the title of the documents and where necessary added entries are provided to the editors. This aspect will be dealt in later units. Item four in CCC is treated as ordinary composite book and item number five is treated as simple book, the heading being given to the editor. In this unit we will deal with items 4 and 5. It may be stated here in AACR2 the category four is catalogued under the title of the book and not under the editor. Editor gets only an added entry.

CCC has provided rules for cataloguing of Single-Volumed Simple Books in Part M and Chapter MD deals with Main Entry Heading. CCC prescribes for Collaborator Heading in case title page does not indicate Personal or Corporate Authorship. There are several kinds of collaborators, editor is one among them.

In the case of Simple Books, where the heading is given to editor, no analytical entries are provided.

6.2 COLLABORATOR HEADING

CCC rule MD51 says "if the title-page does not give the name of a Personal Author or the names of Joint Personal Authors or indicate Corporate Authorship or give a Pseudonym or Pseudonyms in the Author Statement but contains the name of a collaborator, that name is to be used as the Heading and a Descriptive Element is to be added thereafter indicating the role of the person"

The kinds of collaborators are Editor, Translator, Compiler, Commentator, etc.

Example - 1

The Treasure Chest

A heritage album containing 1064 familiar and inspirational quotations, poems, sentiments and prayers from great minds of 2500 years.

Edited by

CHARLES LONGWORTHY WALLIS

HARPER

New York

Other Information :

Call No. Ox

Acc No. 6045

Date of publication 1966

Explanation :

In the above example the book is produced under editorial direction. There are several contributions but authors are not on the title page, only the editor's name is given. Hence main entry heading is under the editor. The lengthy title is to be abridged.

Main Entry

	Ox K6	
	WALLIS(Charles Langworthy), <i>Ed.</i>	
	Treasures chest: Heritage album containing 1064 familiar and inspirational quotations, poems, sentiments and prayers, etc.	
6045		

Chain Index

- O = Literature (sought link)
- Ox = Collection Literature (sought link)

Tracing

	 Collections, Literature Literature Wallis (Charles Langworthy), <i>Ed.</i> Treasure chest
--	---

Class Index Entry

		COLLECTION, LITERATURE For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Ox
		

Other Class index Entry is on LITERATURE

Book Index Entry (Editor)

		WALLIS (Charles Langworthy), <i>Ed.</i>
		Treasure Chest. Ox K6

Book Index Entry (Title)

		TREASURE CHEST
		By Wallis, <i>Ed.</i> Ox K6

This book requires a title entry as the title is likely to be remembered by the readers.

Example - 2

The poet's Craft
Verses selected by
 HELEN FERM DARINGER
 and
 ANNE THAXTER EATON

Illustrated
 by
 HELEN CARTER
 Books for Libraries Press
 Freeport N.Y.

Other information :

Call No. O111x L2

Acc No. 6046

Date of Publication 1972

Series : Granger Index Reprint series,

Main Entry

	O111x-L2	
	Comp	DARINGER (Helen Fern) and EATON (Anne Thaxter), Poets'craft. Ill by Helen Carter. (Granger index reprint series. 9)
	6046	

In the book the serial number is not provided and as per rules a number is to be provided.

In the title page the statement is 'Verses selected' and it is more appropriate to designate the collaborators as compilers than editors.

Chain Index

- O = Literature
- O111 = English, literature
- O111x = Collection, English, literature

Tracing

	Collection. English Literature English, Literature Literature
	Daringer (Helen Fern) and Eaton (Anne Thaxter), <i>Ed.</i> Eaton (Anne Thaxter) and Daringer (Helen Fern), <i>Ed.</i> Carter (Helen), <i>Ill.</i> Poets' craft Granger index reprint series.

Class Index Entry

		COLLECTION, ENGLISH LITERATURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111x

Other Class Index Entries :

English Literature; Literature.

Book Index Entry (Compiler)

		DARINGER (Helen Fern) and EATON (Anne Thaxton). <i>Comp.</i>
		Poets craft. O111x L2

Book Index Entry (Compiler)

		EATON (Anne Thaxter) and DARINGER (Helen Fern). <i>Comp.</i>
		Poets' craft. O111x L2

Book Index Entry (Compiler)

		CARTER (Helen), <i>Ill.</i>	
		Daringer and Eaton, <i>Comp</i> : Poets' Craft	0111x L2

Book Index Entry (Title)

		POETS' CRAFT	
		By Daringer and Eaton, <i>Comp.</i>	0111x L2

Book Index Entry (Series)

		GRANGER INDEX REPRINT SERIES.	
	9	Daringer and Eaton, <i>Comp</i> : Poets' craft.	0111x L2

Self Check Exercise - 1 :

Catalogue the following books. The title page and other information are provided.

Note : i) Write your answer in your own note book.

ii) Check your answer with the model answer given at the end of this unit.

Exercise-1(a)

THE EXAMINED LIFE

Four centuries of the

Essay

Edited by

John J. Gross

Richard C. Carpenter

World

Cleveland

Other Information :

Call No. O111,6x K7

Acc No. 7006

Date of publication 1967

Exercise-1(b)

THE COMPLETE TALES OF

HENRY JAMES

Edited with an

introduction by

LEON ENDEL

LIPPINCOTT

Philadelphia

Other Information :

Call No.

Acc No. 7005

Date of publication 1964

Date of Birth of Henry James 1843

Date of Birth of Leon Edel 1907

6.3 ORDINARY COMPOSITE BOOK

CCC defines an ordinary composite book as "composite book provided with a single, generic title to denote all the contributions collectively. Anthology of several authors, christomathy,

hymn-book, prayer-book, song-book, symposium, festschrift and similar compilations come under this category. To render an ordinary composite book CCC prescribes to deal the book as a simple book ignoring the names to the contributors. However class index entries are to be provided in the case of ordinary composite books.

CCC also recommended to provide author and subject analytical entries. Total number of entries, where there are several contributions, are likely to be numerous as they call for subject analytical, author analytical and class index entries.

Example - 4 Ordinary Composite Book

**Studies in Indian
PLANNING
and
ECONOMIC POLICY**

Edited by
Dr. R.K. Sinha

Deep & Deep Publications
NEW DELHI

Other information :

Call No. X:5.44 M4

Acc No. 6485

Date of Publication 1984

There are 15 contributions and only three are given here :

- (1) S.N. Sen : *Monetary theory and policy* - Pages 125 to 141
- (2) M.H. Gopal : *Towards a Realistic Tax Policy for India* - Pages 168 to 217
- (3) D.T. Lakdawala : *Aspects of Trade Policy in India* - Pages 247 to 270

Main Entry

	X:75.44 M4	
	6485	SINHA (R K). <i>Ed.</i> Studies in Indian planning and economic policy.

Chain Index :

X	=	Economics (sought link)
X:7	=	Value, economics (sought link)
X:75	=	Planned economics (sought link)
X:75.44	=	India, planned economics (sought link)

The Class Index Entries required for the composite book are :

INDIA, PLANNED ECONOMY
 PLANNED ECONOMY, VALUE
 VALUE, ECONOMICS
 ECONOMICS

Book Index Entry (Editor)

	SINHA (R K), Ed.	
	Studies in Indian planning and economic policy.	X:75.44 M4

CCC prescribes in case of ordinary composite books to provide Class Index entries arising out of the Cross Reference entries and Book Index entries for each of the contributors. In the above worked out example there are 15 contributions and to save time and space only three are shown below :

[1] S.N. Sen: *Monetary theory and policy*.

Class No. X 61	
Class Index Entries: X	= Economics
X6	= Credit, economics
X61	= Money, economics

[2] M.H. Gopal: *Towards a realistic tax policy for India*

Class No. X72.44	
Class Index Entries: X	= Economics
X7	= Public finance
X72	= Taxation
X72.44	= India, Taxation

[3] D.T. Lakdawala: *Aspects of trade policy in India*

Class No. X:5.44
 Class Index Entries: X = Economics
 X:5 = Trade
 X:5.44 = India, Trade

Below are shown the entries according to each contributor.

Tracings

X61	India, planned economy
X72.44	Planned economy
X:5.44	Money, economics
	India, taxation
	India, trade
	Credit, economics
	Public finance
	Taxation
	Trade
	Sinha (R K), <i>Ed.</i>
	Sen (S N)
	Gopal (H M)
	Lakdawala (D T)

Contribution (1)

Cross Reference Entry

	X61	
		SENT(S N) Monetary theory and policy <i>See</i> X:75.44 M4 Sinha, <i>Ed.</i> Studies in Indian planning. p125-141

Class Index Entry

		MONEY, ECONOMICS
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X61

Book Index Entry (Contributor)

		SEN (S N).
		Monetary theory and policy. Forming p.125-141 of Sinha, <i>Ed.</i> Studies in Indian planning. X:75.44 M4

Contribution (2)

Cross Reference Entry

		X72.44
		GOPAL Towards a realistic tax policy for India. See X:75.44 M4 Sinha, <i>Ed.</i> Studies in Indian planning. p. 68-177

Class Index Entry

	INDIA, TAXATION	
	For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X72.44	

Book Index Entry (Contributor)

	GOPAL (H M)	
	Towards a realistic tax policy for India. Forming p.168-217 of Sinha, <i>Ed.</i> Studies in Indian planning. X:75.44 M4	

Contribution (3)

Cross Reference Entry

	X:5.44	
	Lakdwala Aspects of trade policy in India <i>See</i> X:75.44 M4 Sinha, <i>Ed.</i> Studies in Indian planning. p.247-270	

Class Index Entry

	INDIA, TRADE	
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:5.44

Book Index Entry (Contributor)

	LAKSHAWALA (D T)	
		Aspects of trade policy in India. <i>Forming p.247-270 of</i> <i>Sinha, Ed.</i> Studies in Indian planning. X:75.44 M4

Self Check Exercise - 2 :

Catalogue the following book. The title page and other information are provided.

Note :i) Write your answer in your own notebook.

ii) Check your answer with the model answer given at the end of this unit.

The future of International

Organization

Edited by

Rudiger Jutte

and

Annemarie Grosse-Jutte

Frances Pinter

London

.....

Other Information :

Call No.

Acc No. 0886

Date of Publication 1981

There are 13 contributions of which only two are given below :

(1) Klaus Burri : *Autonomy and Dependence in relation between Non-aligned countries and the superpowers* P.126 to 145.

(2) *Namibia and Apartheid* by Franz Ansprenger, Pages 181-200.

.....

6.4 FESTSCHRIFT

There is another type of composite book usually it is called a 'festschrift'. Dictionary meaning of festschrift is 'a festival publication, commonly a collection of learned papers or the like, presented by their authors and published in honour of some person.' They are also called commemoration or memorial volumes. In case of memorial volumes it is not necessary to prepare the Book Index Entries (Rule NA6). However the following Book Index entries are to be provided for festschrifts :

- (1) Festschrift Index entry and
- (2) Dedicatee Index entry

An example based on a memorial volume is worked below :

Example - 5 : Commemoration volume

HISTORY AND SOCIETY

**Essays in Honour of
Professor Niharranjan Ray**

Editor

DEBIPRASAD CHATTOPADHYAYA

K.P. Bagchi & Company
Calcutta

.....

Other Information :

Call No. V0ay L8

Acc No. 3510

Date of publication 1978

There are 34 contributions.

.....

Main Entry

	V0aY	L8
	3510	CHATTOPADHYAYA (Debiprasad), <i>Ed.</i> History and society : Essays in honour of Niharranjan Ray.

Chain Index

- V = History (sought link)
V0aY = Society in relation to History (sought link)

Tracing

Society in relation to History
History

Chattopadhyaya (Debiprasad), *Ed.*
Festschrift
Niharrangan Ray, *Ded.*

Class Index Entry

		SOCIETY in relation to HISTORY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V0aY

Book Index Entry (Editor)

		CHATTOPADHYAYA (Debiprasad) <i>Ed.</i>
		History and society V0aY L8

Book Index Entry (Festschrift)

		FESTSCHRIFT
		Niharajan Ray. V0aY L8

Book Index Entry (Dedicatee)

	NIHARRANJAN RAY, <i>Ded.</i>	
	FESTSCHRIFT.	V0aY L8

Memorial, commemoration or festschrifts are to be given exclusive two entries. The entries are called Festschrift Index Entry and Dedicatee Index entry. Both the entries fall under the category of Book Index entries. In the leading section of the Festschrift entry the term FESTSCHRIFT is to be written. In the second section the name of the person to whom the book is dedicated to be written. In case of Dedicatee entry, the name of the person who is honoured to be entered and in the second section the term FESTSCHRIFT to be written.

Example - 6

LANGUAGE AND STYLE

IN MILTON

A Symposium in honour of the
Tercentenary of *PARADISE LOST*

Edited by
Ronald David Emma
and
John T. Shawcross

F. Ungar
New York

Other information :

Call No.

Acc No. 7002

Date of Publication 1977

Date of Birth of John Milton 1608

There are eleven contributions.

Main Entry

	O111,1K08,P:g	K7
	7002	EMMA (Ronald David) and SHAWCROSS (John T), <i>Ed.</i> Language and style in Milton : Symposium in honour of the tercentenary of Paradise Lost.

Chain Index

O	=	Literature
O111	=	English, Literature
O111,1	=	Poetry, English
O111,1K08	=	Milton (John), Poetry
O111,1K08, P	=	Paradise Lost, Milton (John)
O111,1K08, P:g	=	Cirticism, Paradise Lost

Tracing

	Criticism, Paradise Lost Paradise Lost, Milton (John) Milton (John), Poetry Poetry, English English, Literature Literature Emma (Ronald David) and Showcross (John T), <i>Ed.</i> Showcross (John T) and Emma (Ronald David), <i>Ed.</i> Festschrift Milton (John), <i>Ded</i>

Class Index Entry

		CRITICISM, PARADISE LOST
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,IK08,P:g

Class Index Entry

		PARADISE LOST, MILTON (John)
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,IK08,P

Other Class index Entries :

Milton (John), Poetry
Poetry, English
English, Literature
Literature.

Book Index Entry (Collaborator)

		EMMA (Ronald David) and SHAWCROSS (John T), <i>Ed.</i>
		Milton : Language and style. O111,1K08,P:g K7

Book Index Entry (Compiler)

		SHAWCROSS (John T) and EMMA (Ronald David), <i>Ed.</i>
		Milton : Language and style O111,1K08,P:g K7

Book Index Entry (Festschrift Index Entry)

		FESTSCHRIFT
		Milton (John) O111,1K08,P:g K7

Book Index Entry (Dedicatee Index Entry)

	MILTON (John), <i>Ded.</i>	
	FESTSCHRIFT.	0111,1K08,P:g K7

Explanation :

This is an example of an ordinary composite book. It comes under type - Festschrift. It was dealt as a simple book ignoring the constituent parts (since they are not shown in the Example). In the Main Entry, the Heading is rendered under the Collaborators (editors) and a descriptive element, Ed is added. In addition two Book Index Entries are provided-one Festschrift Index Entry and another Dedicatee Index Entry (Refer CCC Chapter NA 7). In the Festschrift Index Entry, the Leading Section consists of the term "FESTSCHRIFT" and the second section consists of the name of the person felicitated. In the Dedicatee Index Entry, the leading section is occupied by the name of the Dedicatee followed by the descriptive element "Ded". Second section consists of the term "FESTSCHRIFT".

Self Check Exercise - 3

Catalogue the following book. The title page and other information are provided.

Note : i) Write your answer in your own note book.

ii) Check your answer with the answer given at the end of this unit.

NEW TRENDS

IN INTERNATIONAL

LIBRARIANSHIP

S.R. Ranganathan Festschrift to mark
the Platinum Jubilee of the Madras
University Library

Edited by

P.A. MOHANRAJAN

Librarian, Madras University Library

ALLIED PUBLISHERS PRIVATE LIMITED

New Delhi, Bombay, Calcutta, Madras.

Hyderabad, Bangalore, Ahmedabad

.....
Other information :

Call No. 2.1 N4

Acc. No. 316580
.....

6.5 ARTIFICIAL COMPOSITE BOOK

There are instances where a publisher issues two or more different books within one and the same cover but without a common title page. It is also possible that a library may bound together different books into single volume. In such cases they are termed as artificial composite books. CCC has provided separate rules for such books. The Main Entry is to be constructed for the first constituent work and the descriptive term composite book is to be added after the call number at the end of the leading section. The rendering of the second constituent work and the rules concerning it will be explained by an example. If the class numbers are different for the constituent works separate class index entries are to be provided.

The following books were found together in the library, though individually they are simple books but created a problem to the catalogued by binding them together.

Example-7

THE RIVALS
RICHARD BRINSLEY SHERIDAN
Edited by
ELIZABETH DUTHIE
Ernest Benn Limited
London

.....
Other Information :

Call No.: O111,2L51,R L9

Acc No. 8562

Date of publication 1979

Date of birth of the author 1751

Series: New merimaids, edited by Brian Morris,
Brain Gibbons and Roma Gill.
.....

2nd Book

The Man of Mode
SIR GEORGE ETHEREGE

Edited by
JOHN BARNARD

Ernest Benn Limited
LONDON

Other Information :

Call No. O111,2K36,M L9

Acc. No. 8563

Date of Publication 1979

Date of birth of the author 1636

Series and series editors same as in the first book

Main Entry

	O111,2L51,R L9	
	8562	SHERIDAN (Richard Brinsley) Rivals. Ed by Elizabeth Duthie. 2 Etherege (George): Man of Mode. Ed by John Bernard O111,2K36,M L9 (New Mermaids. Ed by Brain Morris and others. 8,38).

Chain Index

- O = Literature (sought link)
- O111 = English, Literature (sought link)
- O111.2 = English Drama (sought link)
- O111,2L51 = Sheridan, Drama (sought link)
- O111,2L51,R = Rivals, Sheridan (sought link)
- For the 2nd book
- O111,2K36 = Etherege, Drama (sought link)
- O111,2K36,M = Man of Mode, Etherege, (sought link)

Tracing

O111,2K36,M L9	Rivals, Sheridan (Richard Brinsley) Man of Mode, Etherege (George) Sheridan (Richard Brinsley), Drama Etherege (George), Drama Drama, English English, Literature Literature
----------------	---

		(Contd.2)
		Sherdan (Richard Brinsley) Etherge (George) Duthie (Elizabeth), <i>Ed.</i> Bernard (John), <i>Ed.</i> New Mermaids Morris (Brain) and others, <i>Ed.</i>

Class Index Entry

		MAN OF MODE, ETHEREGE (George). For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,2K36,M
--	--	--

Other Class index Entries :

Sheridan (Richard Brinsley), Drama
Etherge (George), Drama
Drama, English
English, Literature
Literature:

Book Index Entry (Author)

		SHERIDAN (Richard)
		Rivals. O111,2L51,R

Book Index Entry (Author)

		ETHEREGE (George).
		Man of Mode. Bound as part 2 with O111,2L51,R L9

Book Index Entry (Editor)

		DUTHIE (Elizabeth). <i>Ed.</i>
		Sheridan : Rivals O111,2L51,R L9

Book Index Entry (Editor)

		BARNARD (John), <i>Ed.</i>
		Etherege : Man of Mode. <i>Bound as Part 2 with</i> O111,2L51,R L9

Book Index Entry (Series)

		NEW MERMAIDS
	8 38	Sheridan: Rivals Etherege: Man of Mode.
		O111,2L51,R L9 O111,2K36,M L9

Cross Reference Index Entry

		MORRIS (Brain), and others. <i>Ed.</i>
		See NEW MERMAIDS

Special Cross Reference Entry

	O111,2K,36 L9	
	ETHEREGE (George).	
	Man of Mode.	
	<i>Bound as Part 2 with</i>	
	O111,2L51,R L9	
	Sheridan : Rivals.	

Self Check Exercise - 4

Catalogue the following composite book. The title pages and other information are provided.

- Note : i) Write your answer in your own note book.
 ii) Check your answer with the model answers given at the end of this unit.

Sketch for a theory of the Emotions

by Jean Paul Sartre

Translated by Philip Mairet

with a preface by Mary Warnock.

Methen & Co., Ltd.

11 New Fetter Lane London. EC4 P4 EE

Copyright 1962

Reprinted in 1971

Other Information :

Call No. S:52 N62;N71.

Acc. No. 227004

2nd Book :

ANXIETY

Its components, development and treatment

STANLEY LESSE M.D.M.E. D.Sc.D.

Editor in Chief, American Journal of
 Psychotherapy

Gylene & Stratton
 New York & London

Other Information :

Call No. 152.4 C63

S:56 L0

Copyright 1970

Both books are bound together.

6.6 SUMMING UP

In this unit we dealt with composite books. Definitions of and rules for cataloguing of ordinary composite books including Festschrift volumes and Artificial composite books are detailed. We also explained you how to provide Special Cross Reference Entries for contributions in case of ordinary composite books. We further discussed how to provide Book Index Entries for contributors, festschrift and dedicatees. We have to construct class numbers for different contributions of a composite book to prepare Special Cross Reference Entries. We also have to give Class Index Entries for all the class numbers given in the left half of the Tracing Section.

6.7 ANSWERS TO SELF CHECK EXERCISES

Answers to Self Check Exercise-1(a)

Main Entry

	O111.6x K7	
		BROSS (John J) and CARPENTER (Richard C), <i>Ed.</i> Examined life: Four centuries of the essay.
	7006	

Chain Index

- O = Literature
- O111 = English, Literature
- O111.6 = Prose, English
- O111.6x = Collection, Prose, English.

Tracing

	Collection, Prose, English Prose, English English, literature Literature Bross (John J) and Carpenter (Richard C), <i>Ed.</i> Carpenter (Richard C) and Bross (John J) <i>Ed.</i> Examined life
--	--

Class Index Entry

		COLLECTION, PROSE, ENGLISH
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number OI11,6x

Other Class index Entries :

Prose, English
 English, Literature
 Literature.

Book Index Entry (Collaborator)

		BROSS (John J) and CARPENTER (Richard C), <i>Ed.</i>
		Examined life : four centuries of the essay. O111,6x K7

Book Index Entry (Collaborator)

		CARPENTER (Richard C) and BROSS (John J), <i>Ed.</i>
		Examined life: four centuries of the essay. O111,6x K7

Book Index Entry (Title)

		EXAMINED LIFE
		By Bross and Carpenter, <i>Ed.</i> O111,6x K7

Explanation :

It is an ordinary composite book published under the editorial direction. CCC chapter MD51 prescribes that if the title-page of the book does not give the name of a personal author or corporate author, the name of the collaborator is to be used as the heading and a descriptive element is to be added thereafter indicating the role of the person. Here the collaborators are editors. Two Book Index Entries for the Collaborators (editors) are provided one for the first editor in the first place and another in which the second editor is permuted to the first place. A Book Index Entry (Title) is provided since the title is likely to be remembered by the readers.

Answers to Self Check Exercise - 1(b) :

Main Entry

	O111,3M43x K4	
	JAMES (Henry).	
	Complete tales of Henry James. Ed by Leon Edel.	
	7005	

Chain Index

O	=	Literature
O111	=	English, Literature
O111,3	=	Fiction, English
O111,3M43	=	Henry James, Fiction
O111,3M43x	=	Collection, James (Henry), Fiction

Tracing

	Collection, James (Henry) Fiction
	James (Henry), Fiction
	Fiction, English
	Short stories, English
	English, Literature
	Literature
	Edel (Leon), Ed.

Class Index Entry

		COLLECTION, JAMES (Henry), FICTION-
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,3M3x

Class Index Entry

		JAMES (Henry), FICTION
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number O111,3M43

Other Class index Entries :

Short Stories, English
English, Literature
Literature.

Book Index Entry (Editor)

		EDEL (Leon), <i>Ed.</i>
		James : Complete tales of Henry James. O111,3M43x K4

Explanation :

This is also an example of simple composite work. The work is catalogued like a simple book. The title indicates the Author's name. It is rendered as the Author statement. Editor statement is included in the Title section. Since the Author's name is covered in the Class Index Entries, it is not duplicated under the Book Index Entries. A Book Index Entry for the editor is given.

Answers to Self Check Exercise - 2

Main Entry

		VIA M1
		JUTTE (Rudiger) and GROSSE-JUTTE Annemarie), <i>Ed.</i> Future of International organisation.
	645	

Chain Index

Composite book : *The future of International organisation*
 Class Number = VIA
 V = History
 V1 = World History
 V1A = Near-Sovereign formation, History
 1st Contribution : *Autonomy and dependence in relation between
 Non-aligned countries and the Superpowers*
 Class Number = VIN5:19(zK)
 VIN5 = Superpowers
 VIN5:19(zK) = Superpowers and Non-aligned countries
 2nd Contribution : *Namibia and apartheid*
 Class Number = V642
 V6 = Africa, History
 V642 = Namibia, History

Tracing

VIN5:19(zK)	
V642	○ Near- Sovereign Formation World, History History Super power and Non-aligned countries Namibia, History Jutte (Rudiger) and Grosse-Jutte (Annemarie), <i>Ed.</i> Grosse-Jutte (Annemarie) and Jutte (Rudiger), <i>Ed.</i> Berri (Klaus) Ansprenger (Franz) South West Africa

Class Index Entry (Composite Book)

	NEAR-SOVEREIGN FORMATION	
	For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number	VIA
		○

Other Class index Entries :

World, History

History

Superpowers and Non-aligned countries

Namibia, History

Book Index Entry (Editors of composite book)

		JUTTE (Rudiger) and GROSSE-JUTTE (Annemairs), <i>Ed.</i>
		Future of International organisation VIA MI

Book Index Entry (Editors of composite book)

		GROSSE-JUTTE (Annemarie) and JUTTE (Rudiger), <i>Ed.</i>
		Future of International organisation. VIA MI

Contributor Index Entry

		BERRI (Klaus)
		Autonomy and dependence in relation between non-aligned states and the superpowers. <i>Forming</i> p. 129-145 of Jutte (Rudiger) and Grosse-Jutte (Annemarie), <i>Ed.</i> Future of international organisation. VI A M1

Contributor Index Entry

		ANSPRENGER (FRANZ)
		Namibia and apartheid. <i>Forming</i> p. 181-200 of Jutte (Rudiger) and Grosse-Jutte (Annemarie), <i>Ed.</i> Future of international organisation. VI A M1

Cross Reference Index Entry

		SOUTH-WEST AFRICA
		See NAMIBIA

Cross Reference Entry

	VIN5-19(zK)	
	BERRI (Klaus).	
	Autonomy and dependence in relation between non-aligned countries and the superpowers.	
	See	
	VIA M1	
	Jutte (Rudiger) and Grosse-Jutte (Annemarie), <i>Ed.</i>	
	Future of international organisation.	

Cross Reference Entry

	V642	
	ANSPRENGER (Franz)	
	Namibia and apartheid.	
	See	
	VIA M1	
	Jutte (Rudiger) and Grosse-Jutte (Annemarie), <i>Ed.</i>	
	Future of international organisation.	

Explanation :

An example of a composite work with 13 contributions. The names of the editors of the composite book are rendered in the Heading Section. Class Index Entries are prepared by applying the chain procedure to Class Number of the composite book and also to the Class Numbers of the two contributors given in the exercise. Book Index Entries are provided for the two editors of the composite book. Contributor Index Entries are prepared for the two authors of the Contributions. (Refer CCC chapter NA6). A Cross Reference Index Entry is given for the old name of the Namibia (i.e. South West Africa). The Class Numbers of the Contributions are cross referred by the Special Cross Reference Entries (See Chapter NA2 of CCC).

Answers to Self Check Exercise-3

Main Entry

	2.1 N4	
	MOHANRAJAN (P A), <i>Ed.</i> New trends in international librarianship: S.R. Ranganathan festschrift to mark the platinum jubilee of the Madras University Library.	
	316580	

Tracing

		World, Library science Library science
		Mohanrajan (P A), <i>Ed.</i> Festschrift Ranganathan (S R), <i>Ded.</i>

Class Index Entry

		WORLD. LIBRARY SCIENCE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number 2.1

Other Class index Entry :

Library Science

Book Index Entry (Editor)

		MOHANRAJAN (P A), <i>Ed.</i>	
		New trends in international librarianship.	2.1 N4

Festschrift Index Entry

		FESTSCHRIFT	
		Ranganathan (S R)	2.1 N4

Dedicatee Index Entry

		RANGANATHAN (S R), <i>Ded.</i>	
		FESTSCHRIFT.	2.1 N4

Answers to Self Check Exercise-4

Main Entry

	S:52 N62;N71	
	SARTRE (Jean Paul). Sketch for a theory of the emotions. Tr by Philip Mairet. 2 LESSE (Stanley) : Anxiety : Its components, development and treatment. S:56 L0	
227004		

Tracing

S:56		 Emotion Anxiety Psychology Sartre (Jean Paul) Mairet (Philip), Tr. Lesse (Stanley)
------	--	--

Class Index Entry

	EMOTION	
	For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number S:52	

Other Class index Entries :

Anxiety, Psychology

Psychology

Book Index Entry (Author) (First Book)

		SARTRE (Jean Paul)
		Sketch for a theory of the emotions. S:52 N62;N71

Book Index Entry (Translator) (First Book)

		MAIRET (Philip), Tr.
		Sartre : Sketch for a theory of emotions. S:52 N62;N71

Special Cross Reference Entry

	S:56	L0
		LESSE (Stanley) Anxiety : Its components, development and treatment. <i>Bound as Part 2 with</i> S:52 N62;N71 Satre : Sketch for a theory of emotions.

Book Index Entry (Author) (2nd book)

		LESSE (Stanley)
		Anxiety. <i>Bound as Part 2 with</i> Satre : Sketch for a theory of emotions. S:52 N62;N71

6.8 ASSIGNMENTS

Assignment - 1

STUDIES

ON

GANDHI

Edited by

V.T. PATIL

STERLING PUBLISHERS PVT. LTD.

New Delhi.

.....
Other information :

Call No. zG M3

Acc No. 48115
.....

Assignment - 2

MARCH OF LIBRARY SCIENCE

Kaula Festschrift

Papers presented in honour of Prof. P.N. Kaula

General Editor

V. VENKATAPPAIAH

Executive Editors

C.V. SUBBA RAO

AMITABHA CHATTERJEE

VIKAS PUBLISHING HOUSE PVT. LTD.

New Delhi Bombay Bangalore Calcutta Kanpur
.....

Other information :

Call No. 2 L9

Acc No. 40572
.....

Assignment - 3

**TWENTIETH CENTURY
THINKERS
IN ADULT EDUCATION**

Edited by

PETER JARVIS

CROOM HELM

London New York Sydney
.....

Other Information :

Call No. T3 M7

Acc. No. 14366

Series : *Croom Helm series in international adult education*

Series editor : Peter Jarvis

Published in 1987

Important contributions include -

The development of Adult Education knowledge by Peter Jarvis, P. 3-16

John Dewey and Lifelong education, by Angela Cross-Durrant, P. 79-97
.....

6.9 RECOMMENDED BOOKS

RANGANATHAN, S.R. *Classified catalogue code : with additional rules for directionary catalogue code*. 5th ed. Bangalore: Sarada Ranganathan: Endowment for library science, 1988.

NOORUL Hasan, Kamleshwar Nath and J.L. Sardana. *Cataloguing practice: classified catalogue code and Anglo American cataloguing rules*. New Delhi: Gitanjali Publishing House, 1984.

VARMA, A.K. *Classified catalogue code: entries & procedure*. New Delhi: Criterion Publication, 1988.

6.10 GLOSSARY

Artificial composite book:

Composite book without a generic title to denote all the contributions collectively.

Composite book :

Book with two or more contributions, each with its own title, not forming a continuous exposition and often by different authors.

Ordinary composite book:

Composite book provided with a single, generic title to denote all the contributions collectively.

BRAOD

UNIT 7 : CORPORATE BODY

Contents

- 7.0 Aims and Objectives
- 7.1 Introduction
- 7.2 Government
 - 7.2.1 Whole Government
 - 7.2.2 Government with organs
- 7.3 Institution
- 7.4 Conference
- 7.5 Summing Up
- 7.6 Answers to Self Check Exercises
- 7.7 Assignment
- 7.8 Recommended Books
- 7.9 Glossary

7.0 AIMS AND OBJECTIVES

Several persons come together for a common purpose and forms a body, such as government, institution or a conference. These bodies are called 'Corporate bodies.' There are several documents published by these corporate bodies. CCC has made provision for rendering of names of corporate bodies in Chapters JC, JD and JE. In this unit we explain you how to catalogue documents produced by various corporate bodies.

After studying this unit, you will be in a position to

- explain the meaning of a corporate body,
- identify different types of corporate bodies,
- discuss the rules for rendering of headings for government, and its organs, institutions and conferences.
- workout examples under each type of corporate body.

7.1 INTRODUCTION

Large number of documents are produced by bodies or groups of people having an official name. Corporate bodies or their subordinate organs are treated responsible for writing and production of the documents. In such documents the name of the persons are subordinated in preference to their corporate name.

CCC has defined the corporate body in the following way :

Sense 1

A number of persons taken collectively - usually as united, or organised, or coming together informally, in a common cause or for common action such as governmental business, or commercial or industrial or service or political or any other business, or for deliberation, or for collective express of opinion or statement.

Sense 2

A number of corporate bodies, in sense 1, taken collectively - usually as united, or organised, or coming together informally in a common cause or for common action such as governmental business, or commercial or industrial or service or political or any other business, or for deliberation, or for collective express of opinion or statement.

The above definitions can be made clear by giving few examples: Government of India, Government of Andhra Pradesh, Municipal Corporation of Hyderabad, Indian Library Association, UNESCO, Osmania University, Conference of English Teachers, etc.

Corporate bodies can be independent or may be dependent on some parent body. CCC has differentiated such bodies as constitution organs, administrative organs, permanent organs and temporary organs. The organs are further differentiated as organs of first remove, second remove and so on. The meaning is that they are subordinate bodies and if they are to be represented, their parent bodies are to be mentioned first. Organs do not possess autonomous status. For example, Ministry of Human Resource Development, Government of India. Here Ministry of Human Resource Development by itself cannot be represented without the name of the country to which it belongs. Likewise, Department of Library and Information Science, itself cannot be represented without giving its parent body.

CCC has divided the corporate bodies under three heads viz., i) Government, ii) Institutions, and iii) Conference.

7.2 GOVERNMENT

CCC has given definitions for Government in chapter FC22.

According to **Sense 1** 'Corporate body with full or limited sovereign power over a territory. It has generally functions of execution, legislation, justice and administration. Other functions such as defence, taxation, regulation of commerce, public transport, communication, etc. will vary with the degree of limitation in the sovereign power.'

Sense 2 : Local Authority in charge of the regulation, promotion, and/or provision of specified local public services in an area, under power delegated by the government within the territory of which its own area lies, and with a defined extent of autonomy.

Sense 3 : Organ of Government in Sense 1 or 2 defined above.

The corporate body, Government, act as a whole as Author or it may have organs.

7.2.1 Whole Government

Whole Government if it is to be represented by itself it will be entered under the appropriate geographical name, e.g., Government of India is entered under INDIA. Likewise Government of Andhra Pradesh is entered under ANDHRA PRADESH.

Below are a few workedout examples under whole government.

Example-1 : Whole Government

Constitution of India

(as modified upto the 1st October, 1969)

Manager of Publication
Delhi

Other Information :

Call No. V44:2 'N69 L0

Act No.058

Date Publication 1970

Main Entry

	V44:2N69 L0	
	INDIA	
	969	Constitution of India (as modified up to the 1st October,
	058	

The thought content of the documents rest with Government of India and in such cases only the geographical name of the country is written.

Chain Index

- V = History (sought link)
- V44 = India, History (sought link)
- V44:2 = Constitution, India (sought link)

Tracing

○

Constitution, India

India, History

History

India

Class Index Entry

		CONSTITUTION, INDIA
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number V44:2

Other Class index Entries :

INDIA, HISTORY
HISTORY

Book Index Entry (Author)

		INDIA
		Constitution of India. V44:2'N69 L0

7.2.2 Government with organs

The organs are sub-ordinate bodies to their parent bodies. Hence if they are to be represented the parent bodies are also to be named first. The subordinate bodies of Government are grouped under constitutional and administrative bodies, e.g., Lok Sabha is a constitutional organ of Government of India; Ministry of External Affairs is an administrative organ. Chapter JC deals in detail the corporate body Government and its organs.

Constitutional organs :

CCC recognises three categories among constitutional organs:

- i) Executive, e.g., Cabinet in India
- ii) Legislative, e.g., Lok Sabha of India
- iii) Judiciary, e.g., Supreme Court of India

Heads of Government, such as President of India or President of United States, are also example of constitutional organs. While rendering these organs in the headings, the geographical name should precede the name of the organ.

INDIA, CABINET	(Rule JC3)
INDIA, LOK SABHA	(Rule JC32)
INDIA, SUPREME COURT	(Rule JC33)
INDIA, PRESIDENT (S D Sharma)	(Rule JC4)

Administrative organs:

These organs are divided into two categories :

- i) Administrative permanent organs, e.g., Ministry of External Affairs, Government of India.
- ii) Administrative temporary organs, e.g., Education Commission, 1964, D.S. Kothari, Chairman.

While rendering the names of administrative organs, in their whole name, their sphere of work is considered to be potential element and hence an entry is made under this element representing the sphere of work. In 'Ministry of External Affairs, 'External Affairs' is the sphere of work. (Rule JC6)

E.g. INDIA, EXTERNAL AFFAIRS (Ministry of ____)

The administrative temporary organs are seen in the form of commissions or committees. CCC rule JC7 prescribes that these organs should be mentioned immediately after the name of the whole Government and the year of establishment be indicated as an individualising element. Since these are popularly known by the name of the chairman, the name should be added further individualising element.

INDIA, EDUCATION (Commission) (1964) (Chairman: D S Kothari)

Example-2 : Government body with one organ

SIXTH FIVE YEAR PLAN

1980-85

Mid-term Appraisal

Government of India
Planning Commission
August 1983

Other information :

Call No. X:75:44,N85—N80 M3
Acc No.45088

Main Entry

		X:75.44 N85-N80 M3
		INDIA, PLANNING (Commission). Sixth Five Year Plan 1980-85: Midterm appraisal.
	45088	

There is one subordinate body to the Government and it is called **Organ of the first remove.**

Chain Index

- X = Economics (Sought link)
- X:7 = Value, Economics (Sought link)
- X:75 = Planned economy (Sought link)
- X:75.44 = India, Planned economy (Sought link)

Tracing

		○ Sixth Five Year Plan, India India, Planned economy Value, economics Economics India, Planning (Commission)

Class Index Entry

		SIXTH FIVE YEAR PLAN, INDIA
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:75.44'N85--N80

Other class index entries :

INDIA, PLANNED ECONOMY
 PLANNED ECONOMY
 VALUE, ECONOMICS
 ECONOMICS

Book Index Entry (Author)

		INDIA, PLANNING (COMMISSION)
		Sixth Five Year Plan 1980-85. X:75.44'N85--N80 M3

Exmaple-3 : Government with two organs

**Survey on
INFANT AND CHILD
Mortality, 1979**

Office of the Registrar General India
Ministry of Home Affairs
New Delhi

Other Information :

Call No.L9F:394.44'N79 M1

Act No.49279

Date of Publication 1981

Main Entry

		L9F:394.44'N79 M1
		INDIA, HOME AFFAIRS (Ministry of-). REGISTRAR GENERAL OF INDIA (Office of-): Survey on child and infant mortality, 1979.
	46279	

In CCC only the potential names are writing as entry element and descriptive part will be in circular bracket done in the example.

Chain Index

L	=	Medicine (sought link)
L9F	=	Female, Medicine (sought link)
L9F:3	=	Obstetrics (sought link)
L9F:394	=	Birth control (sought link)
L9F:394.44	=	India, Birth control (sought link)

Tracing

India, Birth Control Birth Control Female, Medicine Obstetrics Medicine India, Home Affairs (Ministry of-), Registrar General of India (Office of-)
--

Class Index Entry

		INDIA, BIRTH CONTROL
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number L9F:394.44

Other Class index Entries :

BIRTH CONTROL
 OBSTETRICS
 FEMALE MEDICINE
 MEDICINE

Book Index Entry (Author)

		INDIA HOME AFFAIRS (Ministry of-)
		REGISTRAR GENERAL OF INDIA (Office of-) Survey on child and infant mortality, 1979. L9F:394.44'N79 M1

Example 4 : Government - Temporary organ with name of the Chairman.

Education

and

National Development

Report of the Education Commission, 1964-66

NCERT
NEW DELHI

Other information :

Call No. T.44'N66t K6.1-K6.4

Acc No. 060-063

It is in four volumes

V1 - General Problems in Education

V2 - School education

V3 - Higher education

V4 - Education Planning, administration and finance

Date Publication 1966

Chairman of the Commission : D.S.Kothari

The report is also known as Kothari Commission Report

Main Entry

	T.44'N66t K6.1-K6.4	
	D.S. Kothari	INDIA, EDUCATION (Commission) (1964-66) (Chairman: D.S. Kothari) Report : Education and national development. 4V. V1. General Problems in education V2. School education V3. Higher education V4. Educational planning, administration and finance.
	060-063	

Chain Index

T = Education (sought link)
T.44 = India, Education (sought link)
T.44'N66t = Report, Kothari Commission (sought link)
Report, India, Education (Commission) (sought link)

Tracing

	Report, Kothari Commission Report, India, Education (Commission) (1964-66) India, Education Education. Kothari Commission India, Education (Commission) (1964-66) (Chairman: D.S. Kothari)
--	---

Class Index Entry

		REPORT, KOTHARI COMMISSION
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number T.44'N66t

Class Index Entry

		REPORT, INDIA EDUCATION (Commission) (1964-69)
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number T.44'N66t

In this case for the last link two class index entries have been derived. This is because that a reader is likely to consult under either of the headings,

Other Class index Entries :

INDIA, EDUCATION
EDUCATION.

Book Index Entry
(Under the alternate name of the Commission)

		KOTHARI COMMISSION.
		Report. T.44'N66t K6.1-K6.4

Book Index Entry (Author)

		INDIA, EDUCATION (COMMISSION) (1964-66) (Chairman : D.S. Kothari).
		Report. T.44'N66t K6.1-K6.4

Self Check Exercise -1

Catalogue the following books. The title page and other informations one provided.

Note : i) write your answer in yur own note book.

ii) Check your answer with the model answer's given at th end of this unit.

Exercise-1(a)

Ministry of Labour and Employment

Evaluation and

Implementation Division

Recognition of Unions

Under the Code

of Discipline

New Delhi

MANAGER OF PUBLICATION

1962

.....
Other information :

Call No

Acc No. 11003
.....

Exercise-1(b)

ECONOMIC DEVELOPMENT OF

MYSORE

1965-1969

Bureau of Economics and Statistics

Government of Mysore

BANGALORE

1970
.....

Other information :

Call No.

Acc No. 11304
.....

Exercise-1(c)

**UNITED STATES
DEVELOPMENT ASSISTANCE PROGRAMS
IN
PAKISTAN**

**Staff Reports to the Sub-Committee
on Foreign Assistance**

to

**The Committee on foreign Relations,
United States Senate**

**U.S. Government Printing Office
Washington.**

.....

Other information

Call No :

Acc No. : 50612

Date of Publication 1977

.....

7.3 INSTITUTION

An institution has been defined as an independent of autonomous corporate body other than a government. It may be created by a government, or constituted under a statute, or formed voluntarily - either formally or informally. It has or it is intended to have continued existence and functions beyond that of merely convening a conference. Corporate bodies called by the names of Associations, Societies, Academies or by any other names also fall under the category of Institutions. Institutions, like Government, may have organs. CCC has elaborately dealt with the parent body and its organs of institutions, different type of institutions and few conflicts that arise in rendering the names of institutions. Few examples given in CCC are reproduced below. (Chapter GD of CCC)

Following bodies to be treated as independent authors, even if they have parent bodies.

Group -1 (Rule G81)

Bank	Political Party
Chamber of Commerce	Post Office
College	School
Convent	Stock Exchange
Endowment	Telegraph Office
Foundation	Telephone Exchange
Monastery	Temple
University	

Group -2 (Rule GD82)

Following bodies are to be treated as independent authors provided they have distinctive names :

Botanical Garden	Laboratory
Chapel	Library
Exhibition	Museum
Experimental Stations	Observatory
Festival	Shop
Hospital	Zoological Garden

There are also some other kinds of institutions apart from what is given above.

Rules of rendering:

The name to be used in rendering the name of an institution is to be the one in the shortest form formed in the

1. Title Page; or
2. Half-title Page; or
3. Any other part of the document

Initial articles or honorific words which are part of the name of the institutions are to be omitted while rendering the name of an institution.

If two or more institutions have the same name, they are to be individualised by giving the place and or the year of its foundation.

GOVERNMENT COLLEGE FOR WOMEN (Guntur)
 ZILLA GRANTHALAYA SAMSTHA (Visakhapatnam)
 FRIENDS RECREATION CLUB (Ujjain) (1960)
 FRIENDS RECREATION CLUB (Ujjain) (1974)

Let us take some examples and workout according to the above rules.

Example-5 : Institutions

INDIA'S TRADE WITH SOME

ASIAN COUNTRIES

**Federation of Indian
 Chambers of
 Commerce and Industry**

NEW DELHI
 1962

Other Information :

Call No. X:5.440:4 K9
 Acc. No. 7018

Main Entry

	X:5.440:4 K9	
	(Federation of-)	INDIAN CHAMBERS OF COMMERCE AND INDUSTRY
	7018	India's trade with some Asian countries.

Chain Index

X = Economics (sought link)
 X:5 = Trade (sought link)
 X:5.44 = India, Trade (sought link)
 X:5.440j4 = Trade in relation to India and Asia (sought link)

Tracing

	Trade in relation to India and Asia India, Trade Trade Economics Indian Chambers of Commerce and Industry (Federation of-)
---	---

Class Index Entry

		TRADE IN RELATION TO INDIA AND ASIA For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X:5.440j4
		

Other class index entries :

INDIA, TRADE
TRADE
ECONOMICS

Book Index Entry (Author)

		INDIAN CHAMBERS OF COMMERCE AND INDUSTRIES (Federation of-). India's Trade with some Asian countries. X:5.440j4'N7 K9
--	--	---

Example-6 : Institution with an organ

Socio-economic Development
of a dacoit affected area in Chambal
Valley, Jour Block, Morena District, M.P.

Research and Development
Unit
Association of Voluntary
Agencies for Rural Development

Lakshmi Book Store
NEW DELHI

Other Information :

Call No. Y:45221:67.4455.g1C L6

Acc.No. 7020

Date of publication: 1976

Series : AVARD Micro-level planning studies; 7

Main Entry

		Y:45221:67.4455.g1C L6
		VOLUNTARY AGENCIES FOR RURAL DEVELOPMENT (Associatio of-); RESEARCH AND DEVELOPMENT UNIT. Socio-economic development of a dacoit affected area in Chambal valley etc. (AVARD micro-level planning studies.7)
	7020	

Chain Index

Y	=	Sociology (sought link)
Y:4	=	Social pathology (sought link)
Y:45	=	Crime, Sociology (sought link)
Y:45221	=	Dacoity (sought link)
Y:45:6	=	Treatment, Crime (sought link)
Y:45:67	=	Relief work, Crime (sought link)
Y:45:67.4455.g1C	=	Chambal Valley, Relief work (sought link)

Tracing

Chambal Valley, Relief work Relief work, Crime Crime, Sociology Social Pathology Sociology Voluntary Agencies for Rural Development (Association of-) Research and Development Unit AVARD Micro-level Planning Studies

Class Index Entry

		CHAMBAL VALLEY, RELIEF WORK
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Y:45221:67.4455.g1C

Other Class Index Entries :

RELIEF WORK, CRIME
TREATMENT, DACOITY
DACOITY, CRIME
CRIME, SOCIALPATHOLOGY
SOCIAL PATHOLOGY
SOCIOLOGY

Book Index Entry (Author)

		VOLUNTARY AGENCIES FOR RURAL DEVELOPMENT
		(Association of-) RESEARCH AND DEVELOPMENT UNIT. Socio-economic development of a decoit affected area in Chambal Valley. Y:45221:67.4455.g1C L6

Book Index Entry (Series)

		AVARD MICRO-LEVEL PLANNING STUDIES
	7	Voluntary Agencies for Rural Development: Socio-economic Development of a decoit affected area. Y:45221:67.4455.g1C L6

Example-7 : Institution-Government body but treated as independent

Reserve Bank of India

India's balance of payment

1948-49 to 1961-62

Economic Department
Reserve Bank of India
Bombay

Other Information :

Call No: X:576.44'N62←N48 K3

Acc No. 7022

Date of publication 1963

Main Entry

		X:576.44'N62--N48 K3
	7022	Reserve Bank of India, Economic department India's balance of payment, 1948-49 to 1961-62.

Chain Index

X = Economics (sought link)
 X:5 = Trade (sought link)
 X:57 = Foreign Exchange (sought link)
 X:576 = Balance of payment (sought link)
 X:576.44 = India, Balance of payment (sought link)

Tracing

India, Balance of payment Balance of payment Foreign exchange Trade Economics Reserve Bank of India, Economic Department

Class Index Entry

		INDIA, BALANCE OF PAYMENT
		for documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number X:576.44

Other Class Index entries :

BALANCE OF PAYMENT

FOREIGN EXCHANGE

TRADE

ECONOMICS

Book Index Entry (Author)

		RESERVE BANK OF INDIA, ECONOMIC DEPARTMENT
		India's balance of payment X:576.44 N62-N48 K3

Example-8 : Institution with an editor

Administrative Staff College of India

Readings in investment planning

Edited by
NIKIL BHARAT

Hyderabad
1970

Other Information :

Call No. X65 L0

Acc. No. 7330

Main Entry

	X65 L0	
	7030	ADMINISTRATIVE STAFF COLLEGE OF INDIA. Reading in Investment Planning. Ed by Nikil Barat.

BRACOU

○

Chain Index

- X = Economics (sought link)
X6 = Credit, Economics (sought link)
X65 = Investment (sought link)

Administrative Staff College of India
Bharat (Nikil)

INVESTMENT

For documents in this Class and its Subdivisions see the
Classified Part of the catalogue under the Class Number X65

X65

CREDIT, ECONOMICS
ECONOMICS

Book Index Entry (Author)

		ADMINISTRATIVE STAFF COLLEGE OF INDIA
		Readings in Investment Planning. X65 L0

Book Index Entry (Editor)

		BARAT (Nikil), <i>Ed.</i>
		Administrative Staff College of India : Reading in investment planning. X65 L0

Self Check Exercise-2

Catalogue the following books. The title page and other information are provided.

Note: i) Write your answer in your own notebook.

ii) Check your answer with the model answer given at the end of this unit.

Exercise-2(a)

United Nations

Industrial Development Organisation

Iron and Steel Industry

UNITED NATIONS

NEW YORK

.....
Other Information :

Call No. X8(F182) K9

Acc No. 7023

Date of Publication 1969

Series: UNIDO Monographs on Industrial Development:5
.....

Exercise-2(b)

**National Council of
Applied Economic Research
DEMAND FOR COTTON
TEXTILES MACHINERY**

NCAER
New Delhi
1967

.....
Other Information :

Call No. X8(D6,8(M73)):731 L3

Acc No. 7026
.....

7.4 CONFERENCE

CCC has defined conference as an adhoc assembly for deliberation of formulation and expression of opinion or sentiments. Seminars, symposia, committees also fall under the category of conferences. Conferences may be held at periodical intervals or they may be irregulars.

The proceedings of conferences which are held at regular intervals are treated like periodical publications. Non-periodical conferences, seminars or symposia are entered under the name of the conference in the shortest form found on the title page or any other part of the document. In case there is no clear cut name, it has to be coined depending on the title of the document.

INTERNATIONAL PEACE CONFERENCE (The Hague) (1899)
CONFERENCE OF ORIENTALISTS (Simla) (1911)

In rendering the conference usually, two individualising elements are to be used : the place of the conference and the year when the conference is held (Rule JE2)

Examples based on conference are worked out below.

Example-9 : Conference

**Proceedings and papers of the
Conference on Allergy and Applied**

Immunology

New heights
Delhi

Other Information :

Call No. L:4537p4481,N67 L8

Acc No. 7031

Conference held at New Delhi in 1967

Date of publication 1968

Main Entry

		L:4537p4481,N67 L8
		CONFERENCE ON ALLERGY AND APPLIED IMMUNOL OGY (New Delhi) (1967). Proceedings and papers.
	7031	

Chain Index

- L = Medicine (sought link)
L:4 = Disease, Medicine (sought link)
L:4537 = Allergy, Medicine (sought link)
L:4537p = Proceedings, Allergy, Medicine (sought link)

Tracing

○ Conference proceedings. Allergy, Medicine Allergy, Medicine Disease, Medicine Medicine Conference on Allergy and applied immunology (New Delhi) (1967)

Class Index Entry

		CONFERENCE PROCEEDINGS, ALLERGY, MEDICINE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number L:4537p
		○

Other Class Index entries :

ALLERGY, MEDICINE
DISEASE, MEDICINE
MEDICINE

Book Index Entry

		CONFERENCE ON ALLERGY AND APPLIED IMMUNOLOGY (New Delhi) (1967). Proceedings and papers. L:4537p4481.N73 L8
--	--	---

Example-10 : Conference with editor

**The Future of Agriculture
International Conference of
Agricultural Economists**

Heid at Sao Paulo
1973

Edited by
Odd Gulbrandsen

Oxford University Press
Oxford

Other Information :

Call No.Jp7918,N73 L3

Acc No. 7038

Date of publication 1973

Main Entry

	Jp7918.N73 L3	
	7038	INTERNATIONAL CONFERENCE AGRICULTURAL ECONOMISTS (Sao Paulo) (1973). Future of agriculture Ed by Odd Gulbrandsen.

Chain Index

- J = Agriculture (sought link)
Jp = Conference, Agriculture (sought link)

Tracing

Conference proceedings. Agriculture Agriculture
International Conference of Agricultural Economists (Sao Paulo) (1973)
Gulbrandsen (Odd). <i>Ed.</i>

Class Index Entry

		CONFERENCE PROCEEDINGS. AGRICULTURE
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number Jp

Other Class Index entry :
AGRICULTURE

Book Index Entry (Author)

		INTERNATIONAL CONFERENCE OF AGRICULTURAL ECONOMISTS (Sao Paulo) (1973).
		Future of agriculture. Ed by Odd Gulbrandsen. Jp7918.N73 L8

Book Index Entry (Editor)

		GULBRANDSEN (Odd). <i>Ed.</i>
		International Conference of Agricultural Economists : Future of Agriculture. Jp7918.N73 L3

Example-11 : Seminar Proceedings

**Summary of proceedings and
Abstracts
of**

**Himalayan Geology Seminar
December 27 to 30, 1965**

Compiled by
G. Chandra

Department of Geology
University of Lucknow

Other Information :

Call No: H4g7Hp4452,N65 K6

Acc No. 7040

Date of publication 1966

Place of the seminar : Lucknow

Main Entry

		H.4g7Hp4452,N65 K6
		HIMALAYAN GEOLOGY SEMINAR (Lucknow) (1965), Summary of Proceedings and abstracts, Comp by G. Chandra.
	7040	

Chain Index

H = Geology (sought leading)
H.4g7H = Himalaya, Geology (sought link)
H.4g7Hp = Conferences Proceedings,
Himalaya, Geology (sought link)

Tracing

	 Conference proceedings. Himalaya. Geology Himalaya, Geology Geology Himalayan Geology Seminar (Lucknow) (1965) Chandra (G). <i>Comp.</i>
--	---

Class Index Entry

		CONFERENCE PROCEEDINGS. HIMALAYA. GEOLOGY. For documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number H.4g7Hp
		

Other Class Index entries :
 HIMALAYA, GEOLOGY
 GEOLOGY

Book Index Entry (Author)

		HIMALAYAN GEOLOGY SEMINAR (Lucknow) (1965).
		Summary of proceedings. H.4g7Hp4452,N65 K6

Book Index Entry (Compiler)

		CHANDRA (G). <i>Comp.</i>
		Himalayan Geology Seminar (Lucknow) (1965) : Summary of proceedings. H.4g7Hp4452,N65 K6

Self Check Exercise-3

Catalogue the following books. The title page and other information are provided.

Note: i) Write your answer your notebook.

ii) Check your answer with the model answer given at the end of this unit.

Exercise-3(a)

**Proceedings and Papers
Presented at the
CONFERENCE OF COCONUT RESEARCH
WORKERS IN INDIA**

Indian Central Coconut Committee
Ernakulam

Other Information :

Call No.X8 (J582):9p4412,N59 K2

Acc No.50016

Place & Year of Conference : Trivandrum, 1959

Exercise-3(b)

**Hypertension and
Coronary Artery Disease**

**Proceedings of a symposium
held in Chelmsford
on
28th, 29th October, 1961**

Edited by
J.H. Fryer

Lippincott
Philadelphia.

Other Information :

Call No. L37:4p56,N61 K2

Acc No. 7060

Date of Publication 1962

7.5 SUMMING UP

In this unit we defined corporate body and explained how to catalogue documents when the corporate body or its organs (of first or second remove or later removes) become authors of a document. We also dealt with commission or committee reports and described how to provide additional information about chairman and year of formation of a commission. Examples have been worked out illustrating the rules relating to Government, Institution and Conference.

Corporate bodies are responsible for the works of administrative, legislative, directive, deliberative, or routine nature, which include official reports, statements, catalogue of libraries and museums, etc.

We also discussed about the cataloguing of documents on conferences, where the name of the conference becomes the entry heading with place and year as individualising elements.

7.6 ANSWERS TO SELF CHECK EXERCISES

Answers to Self Check Exercise-1(a)

Main Entry

	X:97D.44 K2	
		INDIA, LABOUR AND EMPLOYMENT (Ministry of-), EVALUATION AND IMPLEMENTATION (Division). Recognition of unions under the code of discipline.
	11003	

Chain Index

X = Economics
X:97D = Trade Unions
X:97D.44 = India, Trade Unions

Tracings

	India, Trade Unions Trade Unions Economics
	India, Labour and Employment (Ministry of-), Evaluation and Implementation (Division)

Class Index Entry

		INDIA. TRADE UNIONS
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number X:97D.44

Other Class Index Entries :

Trade Unions
Economics

Book Index Entry

		INDIA. LABOUR AND EMPLOYMENT (Ministry of-). EVALU ATION AND IMPLEMENTATION (Division)
		Recognition of unions under the code of discipline. X:97D.44 K2

Explanation :

This is an example of Government with two organs. A Multiple Corporate Heading is used, in which the first Heading is the name of the Government followed by the organs of the Government used as second Heading. The potential part of the organ (Administrative Department) is under the Entry Element and the descriptive part in circular brackets.

Answers to Self Check Exercise-1(b)

Main Entry

	X.4413	N69--N65 L7
	of-)	KARNATAKA, ECONOMICS AND STATISTICS (Bureau Economic development of Mysore 1965-1969.
	11004	

Chain Index

X = Economics
 X.44 = India, Economics
 X.4413 = Karnataka, Economics

Tracings

Karnataka, Economics.
India, Economics
Economics.
Karnataka, Economics and Statistics (Bureau of-)
Mysore.

Class Index Entry

		CONFERENCE PROCEEDINGS, HIMALAYA, GEOLOGY.
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number H.4g7Hp

Other Class Index Entries :

India, Economics
Economics

Book Index Entry

		HIMALAYAN GEOLOGY SEMINAR (Lucknow) (1965)
		Summary of proceedings. H.4g7Hp4452,N65 K6

Cross Reference Index Entry

	MYSORE.	
	See also Karnataka	

Explanation :

An example of Government with an organ. The first Heading in the Multiple Corporate Heading is the name of the Government i.e., Karnataka. The name of the Mysore State was changed to Karnataka. CCC prescribes if a Geographical Entry has had different names at different times, the current name at the time of cataloguing to be used. (Rule JB53).

Answers to Self Check Exercise-1(c)

Main Entry

	V73:1944Q7(X:6) L7	
	UNITED STATES, SENATE. FOREIGN RELATIONS (Committee of-), FOREIGN ASSISTANCE (Subcommittee on-). Report : United States development assistance programs in Pakistan.	
	Acc No.	

Chain Index

V	=	History
V73	=	United States, History
V73:19	=	Foreign Policy, United States

V73:1944Q7 = Pakistan, Foreign Policy
 V73:1944Q7,(X:6) = Economic Assistance, Pakistan
 V73:1944Q7,(X:6)t = Report, Economic Assistance (Commission)

Tracings

	Report, Economic assistance Commission Economic assistance, Pakistan Pakistan, Foreign Policy Foreign Policy, United States United States, History History United States, Senate, Foreign relations (Committee on-), Foreign assistance (Subcommittee on-)
--	---

Class Index Entry

		REPORT, ECONOMIC ASSISTANCE (Commission)
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number V73:1944Q7,(X:6)t

Other Class index Entries :

Economic Assistance,
 Pakistan, Foreign Policy
 Foreign Policy, United States
 United States, History
 History.

Book Index Entry

		UNITED STATES. FOREIGN RELATIONS (Committee on-), FOREIGN ASSISTANCE (Subcommittee on-) Staff report : United States development assistance programs in Pakistan. V73:1944Q7.(X:6) L7

Explanation :

While constructing the Class Number for this document the Rules V319 and V3191 given in the Annexure of CC are considered. After the Main Class V History, [P] is got by (GD) i.e., the United States where the foreign policy is originated. Then to the Host Class V73:19 (Foreign Policy of US), [P], the community to which the Foreign Policy is turned (i.e., 44Q7 Pakistan) is added. Economic assistance (X:6) is indicated by Subject Device. There is no need to prepare two Class Index Entries for the last link of the Class Number, since it is a Committee report and no Chairman is provided. In the Main Entry, the term 'Report' and the title forms as subheading. The two subordinate bodies are given in the order of their hierarchy to the Government.

Answers to Self Check Exercise-1(a)

Main Entry

		X8(F)82) K9
		UNITED NATIONS. INDUSTRIAL DEVELOPMENT ORGANISATION. Iron and steel industry. (UNIDO monographs on industrial development. 5)
	7023	

Chain Index

X = Economics
 X8(F) = Industry, Economics
 X8(F182) = Iron industry, Economics

Tracings

X8 (F1823)	○	Iron industry, economics Industries, economics Economics United Nations Industrial Development Organisation UNIDO monographs on industrial develop ment. 5 UNIDO
------------	---	---

Class Index Entry

		IRON INDUSTRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under Class Number X8 (F182)

Other Class Index Entries :

Industries, Economics
 Economics

Book Index Entry (Corporate Author)

		UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION.
		Iron and steel industry. X8(F182) K9

Book Index Entry (Series)

		UNIDO MONOGRAPHS ON INDUSTRIAL DEVELOPMENT ORGANISATION.
		5 United Nations Industrial Development Organisation : Iron and steel Industry. X8(F182) K9

Cross Reference Index Entry

		UNIDO
		See United Nations Industrial Development Organisation.

Cross Reference Entry

	X8(F1823)	
		<i>See also</i> X8(F183) K9 United Nations Industrial Development Organisation. Iron and steel industry.

Explanation :

An example of Institution with a Series. Here the Institution (i.e., UNIDO) is taken as the author of the work as it has distinct name and is independent of its parent body (UN). Book Index Entries are prepared for the Author and Series. Class Index Entries are prepared through Chain procedure to the Class Number denoting Iron industry. - F Technology under Part 1 Rules (CC6) provides Isolate Number for Steel as 1823. The same Isolate Number is taken to construct Class Number for Steel industry and is being referred to the Class Number of the document in Cross Reference Entry.

Answers to Self Check Exercise-2(b)

Main Entry

	X8(D6,8(M73)):731 L3	
		NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH (India). Demand for cotton textiles machinery.
	7026	

Chain Index

X	=	Economics
X8(A)	=	Industry, Economics
X8(D6.8(M73))	=	Textile machinery, Economics
X8(D6.8(M73)):731	=	Demand, Textile machinery.

Tracing

○ Demand, Textile machinery Textile machinery, Economics Industry, Economics Economics National Council of Applied Economic Research (India) NCAER
--

Class Index Entry

		DEMAND, TEXTILE MACHINERY For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X8(D6.8(M73)):731 ○
--	--	---

Other Class index Entries :

Textile Machinery, Industry
Industry, Economics
Economics

Book Index Entry

		NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH
	(India).	Demand for cotton textile machinery. X8(D6.8(M73)):731 L3

Cross Reference Index Entry

		NCAER
	See	National Council of Applied Economic Research

Explanation :

An example of Institution as Author. The name of the institution does not individualise it, and hence the individualising element is used to resolve the homonym. Since the institution has a national status the name of the country is used to individualise it (Refer CCC chapter JD2). A Cross Reference Index Entry is prepared to satisfy the users who refer under the abbreviated form of the institution.

Main Entry

		T2:2P4436.N64 K5
		Seminar on curriculum improvement in secondary education (Baroda) (1964). Report. Ed by A.S. Patil and B.P. Lulla.
	7061	

Chain Index

- T = Education (sought link)
T2 = Secondary Education (sought link)
T2:2 = Curriculum, Secondary Education
T2:2p = Conference proceedings, Curriculum

Tracings

Conference proceedings, Curriculum Curriculum, Secondary education Secondary education Education
Seminar on curriculum improvement in secondary education Patil (A S) and Lulla (B P). <i>Ed.</i> Lulla (B P) and Pati (A S). <i>Ed.</i>

Class Index Entry

		CONFERENCE PROCEEDINGS. CURRICULUM
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number T2:2p

Other Class Index Entries :

Curriculum, Secondary Education
Secondary Education, Education

Book Index Entry

		SEMINAR ON CURRICULUM IMPROVEMENT IN SECOND ARY EDUCATION (Baroda) (1964).
		Report. T2:2p4436.N64 K5

Book Index Entry (Editor)

		PATIL (A S) AND LULLA (B P). <i>Ed.</i>
		Seminar on curriculum improvement in secondary education (Baroda) (1964) : Report. T2:2p4436.N64 K5

Book Index Entry (Editor)

		LULLA (B P) and PATIL (A S). <i>Ed.</i>
		Seminar on curriculum improvement in secondary education (Baroda) (1964) : Report. T2:2p4436.N64 K5

Explanation :

An example of conference as Corporate Author. The Corporate Author is rendered as 'Seminar on curriculum improvement in secondary education' and it is followed by the individualising elements, place of conference and the year when it is held in circular brackets. The editors are provided Book Index Entries.

Answers to Self Check Exercise-3(a)

Main Entry

	X8(J582):9p4412.N59 K2	
	7062	CONFERENCE OF COCONUT RESEARCH WORKERS IN INDIA (Trivandrum) (1959). Proceedings and papers.

Chain Index

- X = Economics
- X8(A) = Industry, Economics
- X8(J582) = Coconut Industry
- X8(J582):9 = Personnel management, coconut industry
- X8(J582):9p = Conference Proceedings, Personnel management.

Tracings

Conference proceedings, Personnel management
Personnel management, Coconut industry
Coconut industry
Industry, Economics
Economics
Conference of coconut research workers in India

Class Index Entry

		CONFERENCE PROCEEDINGS, PERSONNEL MANAGE
		MENT
		For documents in this Class and its Subdivision see the Classified Part of the catalogue under the Class Number X8(J582):9p

Class Index Entry

		PERSONNEL MANAGEMENT, COCONUT INDUSTRY
		For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number X8(J582):9

Other Class Index Entries :

Coconut, Industry
Industry, Economics
Economics.

Book Index Entry

		CONFERENCE OF COCONUT RESEARCH WORKERS IN INDIA.
		Proceedings and papers. X8(J582):9p4412.N59 K2

Explanation :

An example of conference as Corporate Author. The Heading is under the name of the conference. It is followed by place of the conference and the year when the conference is held in circular brackets. Indian Central Coconut Committee is the publisher.

Answers to Self Check Exercise-3(b)

Main Entry

		L37:4p56 N61 K2
		SYMPOSIUM ON HYPERTENSION AND CORONARY ARTERY DISEASE (Chelmsford) (1961). Proceedings. Ed by J H Fryer.
	7060	

Chain Index

- L = Medicine (sought link)
- L3 = Circulatory system, Medicine (sought link)
- L37 = Artery, Medicine (sought link)
- L37:4 = Disease Artery (sought link)
- L37:4p = Conference Proceedings,
= Disease, Artery (sought link)

Tracing

Conference proceedings, Artery, Disease Disease, Artery Artery, Medicine Circulatory system, Medicine Medicine Symposium on hypertension and coronary artery disease (Chelmsford) (1961). Fryer (J H), <i>Ed.</i>

Class Index Entry

		CONFERENCE PROCEEDINGS, ARTERY, DISEASE For documents in this Class and its Subdivisions see the Classified Part of the catalogue under the Class Number L37:4p
--	--	--

Other Class index Entries :

DISEASE, ARTERY
ARTERY, CIRCULATORY SYSTEM
CIRCULATORY SYSTEM, MEDICINE
MEDICINE

Book Index Entry (Author)

		SYMPOSIUM ON HYPERTENSION AND CORONARY ARTERY DISEASE (Chelmsford) (1961). Proceedings. L37:4p56.N61 K2

Book Index Entry (Editor)

		FRYER (J H). <i>Ed.</i> Symposium on hypertension and coronary artery disease (Chelmsford) (1961) : Proceedings. L37:4p56.N61 K2

7.7 ASSIGNMENT

Assignment-1

UNITED STATES

**Development Assistance
Programs in Pakistan**

**Staff Reports to the Sub-committee
on Foreign Assistance**

to

**The Committee on Foreign Relations,
United States Senate**

**U.S. Government Printing Office
Washington**

.....
Other Information

Call No.

Acc No.

Date of Publication 1977.
.....

Assignment-2

**THE SEVENTH FIVE YEAR PLAN
1985-90**

Volume I
Perspectives, Objectives, Strategy

Volume II
Sectoral Programmes in development

GOVERNMENT OF INDIA
PLANNING COMMISSION
NEW DELHI
October 1985
.....

Other Information

Call No. X:75.44'N91 N86

Acc. No. 12561; 12562

Pages vii, 77 and 421
.....

Assignment-3

**MINISTRY OF IRRIGATION AND POWER
Report of Power Economy**

Committee

March 1971

New Delhi
.....

Other Information

Call No. D2.44 'N71t4

Accession No. 29501

The committee was appointed by the Government of India in May 1979 and the report was submitted to the Government by the Chairman K.L. Viji in 1971.
.....

Assignment-4

UNIVERSITY DEVELOPMENT

IN INDIA

Basic Facts and Figures

University Grants Commission
New Delhi

.....
Other Information :

Call No. T4.44 N5

Acc No. G-1649
.....

Assignment-5

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS

International Conference on Cataloguing

Principles,

9-16th October 1961

REPORT

London, 1963

Published by IFLA
.....

Other Information :

Call No. 2:55P1,N61 K3

Acc No.258319

Pages xxi, 295

size 25 cms

On the back of the title page:

Edited by A H Chaplin and D Anderson
.....

7.8 RECOMMENDED BOOKS

RANGANATHAN, S.R. *Classified catalogue code: with additional rules for Dictionary Catalogue code*. 5th ed. Bangalore: Sarada Ranganathan Endowment for library science, 1988.

NOORUL Hasan, Kamleshwar Nath and J.L. Saradana, *Cataloguing Practice: Classified Catalogue Code and Anglo-American Cataloguing Rules*. New Delhi : Gitanjali Publishing House, 1984.

7.9 GLOSARY

Corporate body :

A group of individuals who are associated together as an organised unit, for a common purpose. Eg. a government, an institution, a society, a committee, etc.

Corporate Entry :

An entry which is made under the name of a corporate body.

Corporate name :

The official name by which a corporate body has been known.

UNIT 8 : SERIALS

Contents

- 8.0 Aims and Objectives
- 8.1 Introduction
- 8.2 Periodical Publications
 - 8.2.1 Definition
 - 8.2.2 Entry
- 8.3 Worked out Examples
- 8.4 Summing Up
- 8.5 Answers to Self Check Exercises
- 8.6 Assignments
- 8.7 Recommended Books
- 8.8 Glossary

8.0 AIMS AND OBJECTIVES

Serials collection is the backbone of academic and research libraries. Systematic organisation of serial publications is essential to retrieve information and serve the users. In this unit we deal with cataloguing of serial publications.

After studying this unit, you will be able to

- describe the nature of periodical publications,
- explain the need for different types of entries for periodical publications;
- work out examples of simple periodical publications.

8.1 INTRODUCTION

So far you have studied how to catalogue monographs written by personal authors and corporate bodies. Serial or periodical is a general term used to denote a variety of publications, such as newspapers, journals, annals and so on. Many libraries subscribe to learned journals to disseminate information about recent developments in the subject field of interest. Besides subscription, proper recording of information about its holdings in the library is also essential to answer users' queries about its availability.

Periodical publications vary from monographs for treatment in cataloguing as they are not complete in one volume. A periodical is expected to be published indefinitely, so history of the periodical publication is to be shown in the catalogue entry. The library may not acquire all the volumes, but the volumes held by the library are to be shown in the catalogue cards.

8.2 PERIODICALS PUBLICATIONS

A Serial as defined by the International Serials Data System is "a publication issued in successive parts and intended to be continued indefinitely... Serials include periodicals, newspapers, annals, journals, memoirs, proceedings, transactions etc. of societies and monographic series.

For the cataloguer periodicals are one of the sources of perplexity. Their Vagaries may transcend all imagination and anticipation. It looks as if nothing relating to a Periodicals Publication can escape the sport caprice". Few complexities are irregularity in publication, irregularity in volume number, change of title, change of sponsor, amalgamation of two or more periodicals, change in frequency, etc.

However, we will be dealing only with simple periodicals without any of the vagaries mentioned above.

In the ordinary cataloguing procedure a periodical will have the following entries :

- 1) **The Leading Section :** This will consist of the Class Number only. In case of monographs the Leading Section consists of the Call Number. The reason for difference is, in the case of periodical publication, the entry stands not for one volume but all the volumes that are added from time to time.
- 2) **The Heading :** In case of simple periodical publication it will consist of the title proper and the name of the sponsor if any. The sponsor name to be given separately even if it forms part of the title, but the name of the sponsor, is to be put within circular brackets, if it is not part of the title of the periodical.
- 3) **The periodicity** of periodicals should be shown in a separate section after the title. The information on periodicity should be written in square brackets.
- 4) If there is no series, the next section will be the **Holding Section**. The holding of the journal is to shown as follows :
 - a) The term "This library has "
 - b) The term "V"
 - c) The numbers of volumes available in the library and the years of publications of those volumes. If the volume is currently subscribed the entry should be kept open. The year and the number of the last volume to be written in pencil. That will signify that the periodical is still received in the library.
- 5) **Tracting :** On the back of the main entry card, information about the volume number, year, the book number and the accession number of each volume is to be written in tabular form using inclusive notation wherever possible. While on the right half the class index entries to be prepared are to be mentioned. The class index entries are of five types : Ordinary class index entries, specific class index entries, additional class index entries, generic class index entries and optional class index entry. (All these entries are illustrated in the worked out examples).

Example-1 : Simple periodical

Indian Journal of

Pure and

Applied Physics

Published by

Publication and Information Directorate, CSIR
New Delhi

in association with

The Indian Science Academy, New Delhi

.....
Other Information :

Call No. Cm44,N62

Periodicity : Monthly -One volume per year

The library has all the volumes published so far and continuing its subscription
.....

Main Entry

	Cm44	N62
		INDIAN JOURNAL of pure and applied physics. [1V per year. V1 - : 1962-] This library has V1-31: 1962-1993.

The volume number 31 and the year 1993 of the volume are shown in italics to indicate that in the catalogue card they are written in pencil. They signify that the volume is current and still being received in the library.

Class Index Entry for a periodical is based on the last link of the Class Number of the periodical publication concerned. The Heading of the Class Index Entry contributed by the last link of the Class Number of a periodical publication is to be the same as that of its Main Entry. Additional Class Index entries are based on

- (1) Every alternative name, including contracted name or initonym, by which the periodical is popularly referred to among its users,
- (2) In case of a sponsored periodical, the Heading got by interchanging the name of the sponsor and the title of the periodical, and
- (3) Every variation got by substituting every alternative name of the sponsor in the Heading prescribed in category 2.

In addition to the above mentioned Class Index entries there is also a generic Class Index entry. Other Class Index entries derived from the Class Number are optional.

Periodical Publications do not get Book Index entries and Cross Reference Index entries.

The directing element in class index entries in case of periodical publication is omitted.
(Rule PB35.)

In the worked out example above the following additional entries are to be made.

Tracing

1 - 31 1962-1993 N62-N93 3843-3874	Indian Journal of pure and applied physics India, Periodical, Physics Periodicals, Physics Periodical
--	--

Class Index Entry (specific)

		INDIAN JOURNAL OF PURE AND APPLIED PHYSICS
		Cm44.N62

Class index Entry (Generic)

PERIODICAL

Indian journal of pure and applied physics

Cm44.N62

Class Index Entry (Optional)

	INDIA	PERIODICAL, PHYSICS
		Cm44

Class Index Entry

		PERIODICAL, PHYSICS
		Cm

CCC has not prescribed an entry for the host subject, in this case physics.

Example-2 : Simple periodical with the name of the sponsoring body

Indian Geophysical Union

Journal

Volume 31

No.1

1994

Indian Geophysical Union
Hyderabad

Other Information :

Call No. H:(C)m44,N63

Acc No. Vols 8-17 (9322-9331) : 19-21 (9439-9441)

Periodicity-quarterly and one volume per year

The library has vol 8 to 17 (1971 to 1980); Vol. 19 onwards.

Main Entry

	H:(C)m44,N63-	
		Journal, Indian Geophysical Union. 1V per year VI- ; 1963- 1 This library has V8-17 ; 1971-1980. V19-30 : 1982-1993.

30 and 1993 are to be written in pencil.

Tracing

8-17 1971-80 N71-N80 9322-9331 19-30 1982-93 N82-N93 9439-9450	Journal, Indian Geographical Union Indian Geophysical Union. Journal Periodical Periodical India, Periodical, Geophysics Periodical, Geophysics
---	--

Class Index Entry (specific)

		JOURNAL, INDIA GEOPHYSICAL UNION
		H:(C)m44.N63

Class Index Entry (specific)

		INDIAN GEOPHYSICAL UNION, JOURNAL
		H:(C)m44.N63

Class Index Entry (Generic)

		PERIODICAL
		Journal, Indian Geophysical Union
		H:(C)m44.N63

Class index Entry (Generic)

		PERIODICAL
		Indian Geophysical Union, Journal H:(C)m44.N63

Class Index Entry (Optional)

		INDIA, PERIODICAL, GEOPHYSICS
		H:(C)m44

Class Index Entry

		PERIODICAL, GEOPHYSICS
		H:(C)m

Example-3 : Simple periodical-sponsor given in the title page.

**American
Sociological Review**

June 1993

Vol.58, Number 3

Official Journal of the American
Sociological Association

Other Information :

Call No. Ym73,N36

Acc No. 4068-4071 : 12589-12596; 38412-38425

Published bimonthly : One volume per year

Library holding vols. 15 to 18 ; vols 23-30 vols. 36 onwards.

Main Entry

	Ym73,N36	
	AMERICAN SOCIOLOGICAL Review (American Sociolog ical Association). [IV per year. V1- ;1936-] This library has V15-18;1950-53. V23-30; 1958-65,V36-57; 1971-1992.	

57 and 1992 are to be written in pencil.

Tracing

15-18 1950-53 N50-N55 4068-4071	American Sociological review (American Sociological Association)
23-30 1958-65 N58-N65 12589-12596	American Sociological Association, American Sociological Review Periodical Periodical
36-57 1971-1984 N71-N92 38412-38433	USA, Periodical, Sociology, Periodical, Sociology

Class Index Entry (specific)

		AMERICAN SOCIOLOGICAL REVIEW (American Sociological Association) Ym73.N36

Class Index Entry (specific)

		AMERICAN SOCIOLOGICAL ASSOCIATION American Sociological Review Ym73.N36

Class index Entry (Generic)

		PERIODICAL
		American Sociological Review. (American Sociological Association) Ym73,N36

Class index Entry (Generic)

	PERIODICAL	
	Review	American Sociological Association, American Sociological Ym73,N36

Class Index Entry (Optional)

		USA, PERIODICAL, SOCIOLOGY	Ym73

Class Index Entry (Optional)

	PERIODICAL, SOCIOLOGY	Ym

Self Check Exercise-1(a)

Catalogue the following periodicals. The title page and other information are provided.

Note : i) Write your answer in your own notebook.

ii) Check your answer with the model answers given at the end of this unit.

Exercise-1(a)

The Indian Economic Review

Vol.XXVIII

July-December 1993

Number 2

Other Information :

Class No. Xm44.N65

Acc No.4072-4081; 12351-123

Published-Semiannually; one volume per year

Library holding vols 1 to 10 and 12 to 24 and renewed again in 1993

Exercise-1(b)

American

Zoologist

Volume 34

Number 1

1994

A Quarterly Publication of the
American Society of Zoologist

.....

Other Information :

Class No.

Acc No.

Publication : 1 Volume per year

Library holding : volumes 1 to 12

The Library has stopped subscription but the journal is still in print.

.....

8.4 SUMMING UP

In this unit we have given the definition of serial by ISDS as "a publication issued in successive parts and intended to be continued indefinitely...". Periodicals pose certain problems to the cataloguers as they are issued in more than one volume, periodically issued, may change their publication policy and libraries may or may not acquire all volumes. The entry heading for a periodical is given on the title. The name of the sponsor, if present, is put within circular bracket. In the holdings section, the volumes possessed by the library and the corresponding years are entered. The tracings section describes the cross reference entries and class index entries. In the class index entries the directing element is to be omitted.

8.5 ANSWER TO SELF CHECK EXERCISE

Answers to Self Check Exercise-1(a)

Main Entry

	Xm44.N65	
	V28-	INDIAN ECONOMIC REVIEW [1V per year. V1- ; 1965-]. This library has V1-10; 1965- 1974. V12-19. 1976-1988. ;1993-

Tracing

1-10	1965-1974	N65-N74	Indian Economic Review
4072-4081			Periodical
12-19	1976-1984	N76-N88	India, Periodical, Economics
12-351-12363			Periodical, Economics.

Class Index Entry (Specific)

		INDIAN ECONOMIC REVIEW	
			Xm44,N65

Class Index Entry (Generic)

		PERIODICAL	
		Indian Economic Review.	Xm44,N65

Class Index Entry (Optional)

		INDIA, PERIODICAL, ECONOMICS
		Xm44
		○

Class Index Entry

		PERIODICAL, ECONOMICS
		Xm
		○

Explanation :

An example of a simple periodical publication. The Leading Section is occupied by Class Number. The Heading is the title proper of the periodical. No sponsor is involved. Since the periodical continues its publication, it is shown with blanks in the Periodicity Section. The Holdings Section shows the number of volumes available in the library and the years of publications of those volumes. The entry is kept open by indicating volume No. 28 and year 1993. (here in italics).

Answers to Self Check Exercise-1(b)

Main Entry

	Km73.N61	American Zoologist (American Society of Zoologists) [1V per year. V1 - ; 1961-] This library has V1-12; 1961-1972.

Tracing

		American Zoologist (American Society of Zoologists) American Society of Zoologists, American Zoologist Periodical Periodical USA, Periodical, Zoology Periodical, Zoology
--	--	---

Class Index Entry (Specific)

	AMERICAN ZOOLOGIST (American Society of Zoologists)	Km73.N61

Class Index Entry (Optional)

		USA, PERIODICAL, ZOOLOGY
		Km73

Class Index Entry (Optional)

		PERIODICAL, ZOOLOGY
		Km

Expalination :

An example of a Simple Periodical Publication with sponsor. The sponsor name is not part of the title of the Periodical. It is given separately. Hence the name of the sponsor is put within circular brackets. The Holdings section shows the number of volumes available in the library and thier years of publication. The library has stopped subscription of the journal after Volume 12 (1972). Hence the entry is a closed entry.

8.6 ASSIGNMENTS

Assignment-1

BULLETIN OF MATERIAL SCIENCE

Published by
INDIAN ACADEMY OF SCIENCES

In Collaboration with
MATERIALS RESEARCH SOCIETY OF INDIA
And
INDIAN NATIONAL SCIENCE ACADEMY

Other Information

Call No. Dm44,N78
ISSN 0250-4707
Periodicity : Quarterly
Journal Started in 1978
The library has all volumes right from the beginning;
Assign yourself accession numbers and book numbers
where necessary

Assignment-2

HERALD OF LIBRARY SCIENCE

Volume 31 Number 2
April 1993

Sponsored by
SARADA RANGANATHAN ENDOWMENT OF LIBRARY SCIENCE

Other Information :

Call No. 2mD44,N62
Periodicity : Quarterly
The library has all the volumes except 18 to 21
Use inclusive notation for accession no.& book No.

**JOURNAL
OF
THE GEOLOGICAL SOCIETY
OF INDIA**

Vol. 38

July 1993

No.1

GEOLOGICAL SOCIETY OF INDIA
BANGALORE

Other Information :

Call No. Hm44,N5

The library is holding Volume Nos. 1-24 and 34 onwards

Acc. Nos. 5461-5454

8.7 RECOMMENDED BOOKS

RANGANATHAN, S.R. *Classified Catalogue Code : with additional rules for dictionary catalogue code*, 5th ed. Banagalore: Sarada Ranganatha Endowment for library science, 1988.

SHARMA, C.D. *Practical Cataloguing: Classified Catalogue*, Rev 2nd ed. Delhi: Metropolitan Book Co., 1980.

VARMA, A.K. *Classified Catalogue code: entries & procedure*. New Delhi: Criterion Publications, 1988.

8.8 GLOSSARY

Periodical :

A serial publication usually published at regular or stated intervals over an indefinite period, each issue of which contains separate articles.

Serial :

A publication issued in successive parts and intended to be continued indefinitely. Serials, include periodicals, newspapers, annuals, etc. (Used interchangeably with the term 'periodical')

BRAOU

BRAOU

BRAOU