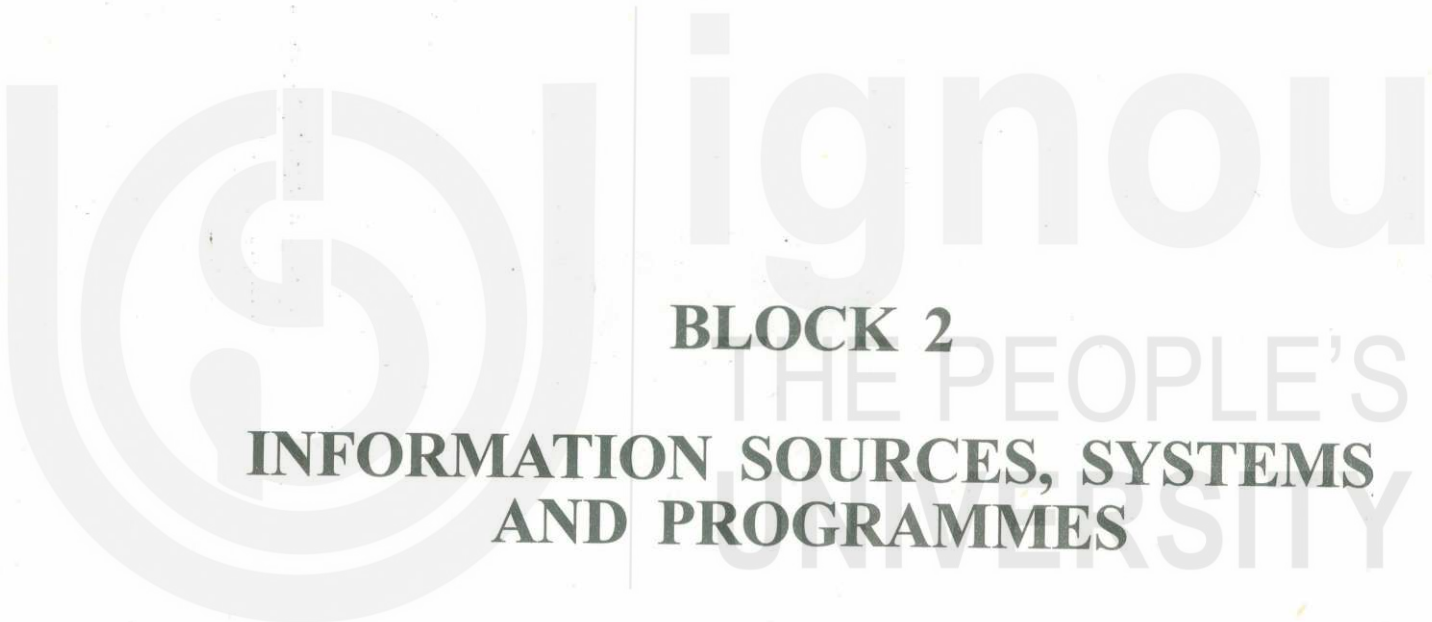


The background of the page features a large, light gray watermark of the IGNOU logo, which consists of a stylized 'G' inside a circle, followed by the text 'ignou' in a lowercase sans-serif font, and 'THE PEOPLE'S UNIVERSITY' in a smaller, all-caps sans-serif font below it.

BLOCK 2

INFORMATION SOURCES, SYSTEMS AND PROGRAMMES

UNIT 5 INFORMATION SOURCES: CATEGORISATION

Structure

- 5.0 Objectives
- 5.1 Introduction
- 5.2 Information Sources and Information Resources: Difference
- 5.3 Information Sources: Categories
 - 5.3.1 Information Sources by Type
 - 5.3.2 Information Sources by Content
 - 5.3.3 Information Sources by Media
- 5.4 Summary
- 5.5 Answers to Self Check Exercises
- 5.6 Keywords
- 5.7 References and Further Reading

5.0 OBJECTIVES

After reading this Unit, you will be able to :

- make out the difference between information sources and resources;
- know that information sources can be categorised by type, content and media;
- get an idea about the contents of various categories of information sources;
- tap the correct information source while answering a query; and
- develop confidence and expertise in handling information sources.

5.1 INTRODUCTION

We all know that information gets generated and a substantial bulk of it gets recorded. The recorded information is processed, organised, retrieved when necessary, and disseminated. Steps are also taken to preserve information.

Newspapers, broadcasts by radio and television, communication by e-mail, fax and so on bear testimony to the fact that information is getting generated in the world every moment.

Recorded information has a characteristic of accumulation. Thus information has been accumulating for thousands of years. The preachings of Buddha which were recorded on stones during the reign of Asoka (3rd century BC) are still useful and provide valuable information of the period. The quantity of information that has accumulated so far is simply mind-boggling. For example, *Chemical Abstracts* started in 1907 has accumulated information contained in crores of documents in the form of abstracts. This is the case with all subjects though the number of documents in each vary widely.

It may seem strange that unrecorded information in many cases has also survived. For thousands of years the Vedas have survived through *shruti* (hearing) and *smriti* (memory). Many families have passed on the knowledge they gathered through

experience, experimentation and so on to their progenies. The process continued generations after generations helping unrecorded knowledge to survive.

Apart from documents, there are other sources like institutions and organisations, and knowledgeable human beings wherefrom we get information.

5.2 INFORMATION SOURCES AND INFORMATION RESOURCES: DIFFERENCE

Information Sources: The sources wherefrom we get information are information sources. These sources comprise documents, institutions and organisations, and human beings. For example, for finding out the meaning of a word, we consult a dictionary; for admission in a particular course of study, students contact an institution; and for fixing the date of a marriage, people consult a priest. The term 'information sources' pertain to library and information science. Mostly librarians and information scientists deal with information sources.

Information Resources: This particular term pertains to information and communication technologies especially to information management. Sometimes information management is referred to as 'information resources management'. Schneymann (1985) included five types of information resources for the purpose of information management. The resources are: systems support including computers and telecommunications; processing data, images, etc.; conversion and transformation including reprographics; distribution and communication including network management and telecommunications; and finally retention, storage and retrieval which covers libraries, record centres, filing systems and internal and external databases (Feather and Sturges, 1997).

Difference: The difference between the two concepts is obvious in as much as information sources are related to library and information science, and information resources to information and communication technologies. Only a small subset of, information resources forms information sources.

Self Check Exercise

- 1) What do you understand by sources of information? Name the two broad categories of information sources and give an example of each category.

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

- ii) Check your answer with the answers given at the end of the Unit.

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5.3 INFORMATION SOURCES: CATEGORIES

Information sources can be categorised according to types, contents and media. Here we shall categorise them according to types first, followed by contents and media. Categorisation by types gives us two types of sources, namely, documentary and non-documentary. Internet has evolved as a powerful source of information. We shall consider it as a special category.

5.3.1 Information Sources by Type

a) Documentary Sources of Information

All sources in the form of documents are documentary sources. The connotation of the term 'document' has undergone a sea change in recent years and now includes among others books, periodicals, manuscripts, videotapes, computer files and databases. A selective list of documentary sources is given below:

Books

Treatises

Monographs

Textbooks

Reference books

Dictionaries

Encyclopaedias

Handbooks

Manuals

Data books

Catalogues

Bibliographies

Directories

Yearbooks

Almanacs

Biographical dictionaries

Atlases

Gazetteers

Guidebooks

Historical information sources

Manuscripts

Periodicals

Patents

Standards

Theses

Conference documents

Souvenirs

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THE PEOPLE'S
UNIVERSITY

Festschriften

Technical reports

Administrative reports

Trip reports

Articles (popular, technical, research, preprints, reprints)

Diaries

Letters

Office files

CD-ROM recordings

Video recordings

Databases

Computer files

Laboratory notebooks

Maps

Globes, etc.

Now we shall discuss the documentary sources enumerated here. In your BLIS Course, you have studied many of them. The discussion here will refresh your memory and may be you will learn something new that you did not learn before. While describing the sources we shall try to define them first, then give one or two examples, and finally tell you about the information they provide.

Treatises

A treatise is 'a long and serious piece of writing on a particular subject' [Hornby, 2000]. For example, *A Treatise on Heat* by M. N. Saha and B. N. Srivastava (4th ed. 1958) is a veritable source of information on heat for advanced learners. Similarly, *Prolegomena to Library Classification* by S. R. Ranganathan (Madras: Madras Library Association, 1937) is also a treatise on classification theory and an infallible source of information on the subject. A treatise is considered as a secondary source of information.

Monographs

A monograph presents a detailed study on a single subject, class of subjects, or a person, and is usually accompanied with a bibliography. Some publishers bring out monograph series as well. A monograph portrays an overall picture of the topic and can be used by even a layman. Examples: S. C. Roy *Monograph on the Gur Industry of India* (New Delhi: ICAR, 1951); D. N. Tewary *Monograph on Eucalyptus* (Dehra Dun: Surya Pub, 1992).

Textbooks

A textbook is a book that is 'used by students as a standard work for a particular branch of study' [Random House]. Throughout our educational career we have studied textbooks to gain knowledge about various subjects. In student life the textbook acts as a major source of information for students. Teachers in schools, colleges, universities

also use textbooks to update their knowledge, prepare class notes, clarify doubts, and so on. Some textbooks like Gray's *Anatomy* serve as a standard reference source on the subject.

Reference Books

You have studied about various reference books in your BLIS course. Some of you have also used certain reference books to find answers to queries. Here we shall describe them only very briefly.

Dictionaries

A dictionary as you know provides 'a list of words of a language in alphabetical order and explains what they mean or gives a word for them in a foreign language' [Hornby]. This particular definition is suited for a general dictionary. General dictionaries may be monolingual, bilingual or multilingual. In a **monolingual dictionary** you get the meaning, definition, explanation, etc. of a word in the same language in which the dictionary is written. For example, in *Longman Dictionary in Contemporary English* (3rd ed, 1995) you get the definition of information in English only. In a **bilingual dictionary** like *Everyman's Dictionary* [English – Bengali] (1999 ed.) you get the meaning of English words in Bengali. When you consult *The Collins German Dictionary: German-English/English-German* you get the meanings of German words and vice-versa. Sometimes you find a dictionary providing equivalent terms in three or more languages. These types of dictionaries are called **multilingual dictionaries**. For example, *Elsevier's Dictionary of Library Science, Information and Documentation* (2nd ed, 1976) is in six languages i.e. English/American, French, Spanish, Italian, Dutch and German. Bilingual and multilingual dictionaries are often used by translators. Hence, they are at times called **translator's dictionaries**.

The coverage of dictionaries varies. Unabridged or comprehensive dictionaries attempt to cover almost all words, phrases, idioms, etc. of a language. For example, the unabridged edition of *Webster's Third New International Dictionary of the English Language* (2nd ed, 1971) has about 450,000 entries. On the other hand, *The Concise Oxford Dictionary* (8th ed, 1990), a desk dictionary, has about 120,000 entries and 190,000 definitions. Pocket dictionaries are still smaller.

Dictionaries devoted to specific subjects are called **subject dictionaries**. They are mainly used by subject specialists, students, etc. *Harrod's Librarian's Glossary* (7th ed, 1996) is a dictionary of this type. It has about 9,000 entries and is used by librarians, documentalists, information scientists, Library and Information Science (LIS) students and so on. In subject dictionaries also there are bilingual and multilingual dictionaries. *Russian-English Chemical and Polytechnical Dictionary* (3rd ed, 1975) by L. I. Callaham is a bilingual subject dictionary. *Technological Dictionary* (1976–78) by M. Feutry in English-German-French is a multilingual subject dictionary.

There are other types of dictionaries which include among others glossaries; dictionaries of phrases, slangs, usage, synonyms, antonyms and homonyms; and so on.

Thesauri

In the truest sense of the term a thesaurus is not a dictionary in as much as it does not give you the meaning, explanation, definition, etc. of a word. On the other hand it tells you which particular word is best suited in a particular context. Hence, a thesaurus has been defined as 'a book that list words in groups of synonyms and related concepts' [Pearsall]. The first thesaurus in English was compiled by Peter Mark Roget and is popularly known as *Roget's Thesaurus*. We can call this as a **general thesaurus**.

Another type of thesaurus is known as **Information Retrieval Thesaurus** (IR thesaurus). An IR thesaurus lists words in alphabetical order and the relation of a word with other related words is indicated with such terms as broader term [BT], related term [RT], narrower term [NT], use for [UF], etc. Thesaurofacet and Classaurus are other varieties of IR thesaurus. These thesauri are usually used for vocabulary control at the time of indexing, retrieval of information from a database, and so on.

Encyclopaedias

All of you have gained some knowledge about encyclopaedias in your BLIS course. You have also observed that encyclopaedias contain informative articles of varying length ranging from a few lines to hundred pages or more. General encyclopaedias are categorised by volume, subject and user.

There are many single volume encyclopaedias in the world such as *The New Webster's International Encyclopedia*. The 1996 edition of the encyclopaedia contains 17,000 entries, 7,000-odd cross references, more than 3,800 coloured illustrations, and a map section. It is meant for students and general readers.

Multi-volume encyclopaedias are also many. *The New Encyclopaedia Britannica* (15th ed, 1985) is one of the best examples of multi-volume encyclopaedias. It is in 32 volumes and includes more than 4,200 lengthy articles in Macropaedia and 100,000 brief entries in Micropaedia. This is also a **general encyclopaedia** and includes articles on all areas of knowledge.

Subject encyclopaedias are also many. A subject encyclopaedia is devoted to a particular subject like physics or more than one subject like science and technology. Some of these encyclopaedias are in one volume and some are in two or more volumes. *Mcgraw-Hill Encyclopedia of Science and Technology* (8th ed, 1997) is a multi-volume encyclopaedia. It is in 20 volumes and includes about 8,000 articles. *The Encyclopedia of Physics* (3rd ed, 1985) is a single-volume encyclopaedia containing about 300 well-written articles by around 250 experts.

Encyclopaedias have also been brought out for children as well. Articles in these encyclopaedias are written in simple language, jargons are explained in simple terms, black and white and coloured illustrations are added whenever necessary to make the article easily comprehensible to the children. *Children's Britannica* (4th ed, 1988) is a good example of **children's encyclopaedia**. In 20 volumes it contains 4200-odd articles enriched with about 5,000 photographs and 1,500 diagrams.

Handbooks

A good definition of a handbook is hard to come by. In *Harrod's Librarians' Glossary* (1995) a handbook has been defined as a treatise on a special subject; often nowadays a simple but all-embracing treatment, containing concise information, and being small enough to be held in the hand; but strictly a book written primarily for practitioners and serving for constant ... or references, also called a 'Manual'.

We have already seen that a treatise is a serious piece of writing and is meant for advanced learners; on the other hand a handbook is meant for practitioners and includes formulas, definitions, values of various constants, and so on which are often required by practitioners. Hence, a handbook can never be equated with a treatise. The definition has equated a handbook with a manual. We shall treat them separately and show that they are different.

It is to be noted that there is no general handbook. A handbook is always devoted to a particular subject or subjects. For getting the feel of a handbook you should go through

its content and find what it is. Take, for example, *Machinery's Handbook* (23rd ed, 1988). It contains more than 2,500 pages and includes chapters on mathematics; mechanics; strength of materials; properties, treatment, and testing of materials; dimensioning, gauging and measuring; tools and tool making; machining operations; manufacturing processes; fasteners; threads and threading; gears, splines and cams; bearings and other machine elements; and measuring units. The book provides a good deal of information for practising mechanical engineers, designers, manufacturing engineers, draftsmen, toolmakers and machinists which they require in their day-to-day work.

Manuals

A manual is 'a book that gives instructions about how to use a machine' [Longman]. The definition is quite clear and does not create any confusion with handbooks. However, the definition is narrow in as much as manuals give instructions not only for the use of a machine but many other things. For example, *Manual of Online Search Strategies* (1988) gives useful instructions about the searching of databases. *Manual of Map Reading and Land Navigation* (2nd ed, 1989) provides guidance as to how a map should be read and information used during land navigation.

Data Books and Tables

Statistical and meteorological publications contain mostly data in tabular form. Yearbooks, handbooks, etc. also contain plenty of information in the form of tabulated data. *International Critical Tables Numerical Data, Physics, Chemistry and Technology* includes only numerical data. We all know that once in ten years the Government of India undertakes census operations throughout the country. The last census operation was undertaken in 2001. Thousands and thousands of enumerators were involved in data collection. Once the data is centrally processed, census publications are brought out in hundreds of volumes containing thousands of tables. India Meteorological Department brings out every year a large number of publications providing meteorological data. Railway timetables like *Trains at a Glance* also provide information in tabular form.

Catalogues

A library catalogue as you know is a systematic list of books, periodicals, etc. possessed by a library or a set of libraries. Many libraries of the world bring out their catalogues in printed form. Some of the catalogues are really voluminous; for example, *The British Library General Catalogue of Printed Books to 1975* is in 360 volumes. The Catalog of Books represented by Library of Congress printed cards issued up to 31 July 1942 is in 167 volumes. The catalogue holds bibliographic information about millions and millions of books emanated from all over the world.

Bibliographies

A bibliography is a list of documents arranged in some logical order. An entry in a bibliography provides information about the authors, title, edition, collaborators, imprint, collation, etc. of a book. Similarly, required information is included for all types of documents included in the bibliography.

Several categories of bibliography are encountered in the world such as universal bibliography, national bibliography, trade bibliography, selective bibliography, subject bibliography, bio-bibliography, author bibliography, and bibliography of bibliographies. The dream of **universal bibliographies** is yet to be realised. However, published catalogues of great libraries as mentioned under catalogues come close to the concept of a universal bibliography. A **national bibliography** tries to record comprehensively

the books produced from a country. Some bibliographies also record the first issue of a nascent periodical and some other documents. *British National Bibliography* (1950) is a very good example of this type of bibliography. **Trade bibliographies** are brought out by book trade organisations, and they record mainly books produced from a country or countries. For example, *Cumulative Book Index* (1898-) is a world list of books in English language. *Books in Print* (1948-) records English books from United States and other countries that are available in print. A **selective bibliography** includes books selected on the basis of some criteria. For example, Asa Don Dickinson's *World's Best Books: Homer to Hemingway* (1953) included only those books that met the selection criteria. **Subject bibliographies** are plenty in number and are available almost for all established subjects. *International Catalogue of Scientific Literature* 1902-19 attempted to record comprehensively the scientific literature of the period produced from all over the world. *Indian Scientific and Technical Publications: A Bibliography* (1960) records S&T books produced from India prior to 1960. A **biobibliography** lists the works of an author along with his biography. *Biobibliography of Countee P. Cullen 1903-1946* by M. Perry as the name suggests is a biobibliography. The bibliography of works by an author is called an **author bibliography**. There are publications that list bibliographies in a systematic order. *A World Bibliography of Bibliographies and of Bibliographical Catalogues, Calendars, Abstracts, Digests, Indexes, and the like* by Theodore Besterman (4th ed, 1965-67 in 5V) is possibly the best example of **bibliography of bibliographies**. It may be noted that abstracting services, indexing services, guides to reference sources are also bibliographies.

Directories

A directory lists names of persons, institutions or organisations of a particular area. The area may be a locality (e.g. Residents' directory); a town (e.g. Telephone directory); a country (e.g. *Directory of British Associations* ed by G. P. Henderson and S. P. A. Henderson. 10th ed. 1990); or the world (e.g. *World of Learning*, 52nd ed. 2002). A directory may include very brief information such as the name, address and the telephone number as we normally see in a telephone directory. At times, a directory contains lot more information. For example, *Directory of Scientific Research Institutions in India*. 2nd ed. 1989. It provides among others the following information about an institution: name; name of the head; history; address; names of the divisions and divisional heads; field stations; objectives/functions; areas of research; achievements; special facilities (consultancy, extension, training, etc.); library and information services; other activities; and publications.

Some directories are published annually, and others at regular or irregular intervals. Of course, there are directories that published only once.

Yearbooks

A yearbook, as the name suggests appears annually, and updates information every year. Yearbooks are of various types and they can be categorised as; general and subject-oriented; national, regional and international. *The Statesman's Yearbook*, *The Europa World Yearbook*, *Britannica Book of the Year*; etc. fall under the category of **general yearbooks**. However, each one has its own distinctive characteristics. For example, Part I of *The Statesman's Yearbook* deals with international organisations, and Part II with the countries of the world in alphabetical order. Information given under each country comprises among others history; territory and population; social statistics; climate; constitution and government; administration; defence; international relations; economy; energy and natural resources; industry; international trade; communications; social institutions; culture; and diplomatic representations. On the other hand *Britannica Book of the Year* 2003 includes among others Dates of 2003

(Calendar, Disasters); People of 2003 (Nobel Prizes, Biographies, Obituaries); World Affairs; and Events of 2003.

Information Sources:
Categorisation

As we have general yearbooks, so also we have subject **yearbooks**. The yearbooks portray the development in the particular subject during the preceding year. Some of the notable subject yearbooks are: *The Bowker Annual Library and Book Trade Almanac* (47th ed. 1999); *Unesco Statistical Yearbook* (1964 -); and *FAO Production Yearbook* (1947-).

Regional yearbooks usually cover a particular region. The general yearbooks we have already talked about are in fact international yearbooks. Several yearbooks are brought out covering a particular region. A few examples of such yearbook are: *Central and South-Eastern Europe 2005*; *The Far East and Australasia 2004*; and *The Middle and the North Africa 2005*. Usually these yearbooks portray the economic and political survey of the region. The country survey includes among others geography; history; economy; statistical survey and directory that embraces the constitution, government, legislature, political organisations, diplomatic representation, judicial system, religion, press, publishers, radio and television, finance, trade and industry, transport, tourism, atomic energy, defence, and education.

Many countries of the world bring out **national yearbooks** such as *Britain: An Official Handbook*; and *India: A Reference Annual*. Many of these yearbooks are brought out by the government and hence the information given in them is considered authentic. *India: A Reference Annual* provides information on land and people; national symbols; the polity; agriculture; art and culture; basic economic data; commerce; communications; defence; education; energy; environment; finance; food and civil supplies; foreign relations; health and family welfare; housing; industry; justice and law; labour; mass communication; planning; rural development; scientific and technological development; transport; water resource; states and union territories; welfare; youth affairs and sports; diary of national events; and general information. Other national yearbooks also provide information more or less in the same way.

Almanacs

By definition, an almanac is 'an annual calendar containing important dates and statistical information such as astronomical data' [Pearsall]. The various almanacs published in our country provide data in chronological order of all the days of the year. Under each date the information given includes among others the date according to Indian calendars such as Sambat, Christian calendar, Muslim calendar, etc.; name of the day (e. g. Sunday); time of sunrise, and sunset; day of the lunar fortnight (e. g. *ekadashi*, *purnima*); zodiac sign; auspicious time; inauspicious time; specific time for various religious works like marriage, mundane, etc.; religious event of the day (e. g. Good Friday, Lakshmi Puja); astronomical event (e. g. lunar eclipse, solar eclipse) if it falls on the day; etc.

International almanacs like *Whitaker's Almanac* (1868-); and *Information Please Almanac* (1947-) are more like yearbooks than almanacs. For example *Whitaker's Almanac* 2002 provides up-to-date information about government and social structure of the United Kingdom and the rest of the world. In addition, it brings together a wide range of facts, figures and directory information. Only a small portion of the book is devoted to astronomical data like the time of sunrise, sunset, moonrise, moonset, lunar and solar eclipse, etc.

Biographical Dictionaries

Biographical dictionaries are of three types: Who is Who; Who was Who; and a combination of both. These are all general in nature. There are also biographical dictionaries devoted to various subjects.

Who is who provides biographical information about various persons who are living. For example, *International Who's Who* (1935-) covers only living internationally known celebrities and includes information as to date of birth, nationality, education, profession, career, present position, honours, awards, present address, etc. **Who was who** as the name suggests includes only those personalities who are dead. A good example of this type of biographical dictionary is *Who was Who* (1929-). It includes biographical sketches of only those personalities who are dead. *Webster's Biographical Dictionary* falls under the third category. It includes biographical sketches of both living and dead persons.

A number of **subject biographical dictionaries** are also available. *American Men and Women of Science* (22nd ed, 2004) is a good example of a subject biographical dictionary. It includes biographical sketches of about 120,000 living scientists belonging to physical, biological and related sciences residing in North America.

Biographical dictionaries can also be categorised according to the area they cover. Thus, they can be categorised as international, regional and national. *International Who's Who*; *Who was Who*; and *Webster's Biographical Dictionary* are all international in scope. *American Men and Women of Science* is regional as it covers scientists both from USA and Canada. *Dictionary of National Biography*/ ed. by S. N. Sen (4V. 1972-74); *India Who's Who* (1969-) are national biographical dictionaries.

Sometimes biographical dictionaries are produced considering gender as a criterion. For example *The World Who's Who of Women* (13th ed, 1995) includes only females.

Individual biography forms another category of biographies. Autobiographies also fall under this category. *Srinivas Ramanujan: A Mathematical Genius* by Srinivasa Rao (1988) is a pure example of an individual biography. On the other hand, *A Librarian Looks Back: An Autobiography* by S. R. Ranganathan as the name suggests is an autobiography.

Maps

A map is a sheet of paper or similar material on which the earth's surface, or part of it is shown indicating countries, oceans, seas, mountains, rivers, deserts, roads and so on. As we have maps of the earth, similarly there are maps of the sky, which show among others the position of the stars, constellations, zodiac, and so on at various times of the year.

Globes

A globe is a sphere the surface of which shows countries, oceans, seas, mountains, rivers, deserts, etc. just like a map. It is mounted on a stand and can be rotated around its axis. Nowadays, the globe of the moon is also available. The moon globe brought out by National Aeronautics and Space Administration of the United States is a standard one.

Atlases

An atlas is a book that usually contains maps and an index of places and other geographical entities indicating their locations in particular maps. Generally, by the term atlas, we mean only geographical atlases. However, there are non-geographical atlases as well.

Geographical atlases vary widely in scope. Some are international (e.g. *The Times Atlas of the World*. 8th ed. 1990); national (e.g. *National Atlas of India*. 1984);

regional (e.g. *Atlas of the Middle East* / ed by M. Brawer. 1988); and local (e.g. *Master Atlas of Greater London*. 5th ed, 1988).

**Information Sources:
Categorisation**

Non-geographical atlases also cover a large number of areas such as economics, astronomy; medicine; and history. Examples: *Oxford Economic Atlas of the World*. 4th ed, 1972; *The Cambridge Atlas of Astronomy*. 2nd ed. 1988; *Atlas of Anatomy*. 1997; *Atlas of Allergies*. 2nd ed. 1995; *Atlas of Surgical Operations*/ R. M. Zollinger; *The Times Atlas of World History*. 1989.

Gazetteers

A gazetteer is a dictionary of place names and other geographical entities with descriptive, statistical, economical, geographical and historical information. Sometimes a gazetteer is called a geographical dictionary, e.g. *Webster's New Geographical Dictionary*. Rev. ed, 1984. Other geographical dictionaries, of course, provide meanings and definitions of geographical terms.

Gazetteers can be categorised as international, national, state, and district. Examples of various gazetteers are as follows:

International – *Columbia Lippincott Gazetteer of the World*. Second printing with 1962 supplement. 1962.

National – *The Gazetteer of India – Indian Union*. 4V. 1965 – 1974.

State – *Delhi Gazetteer*. 1976.

District – *Rajasthan District Gazetteers – Chittaurgarh*. 1977.

Guidebooks

Guidebooks are usually meant for tourists and provide them various information as required by them. For a place of tourist's interest these books provide such information as when to go, how to go, where to stay, what to see, what to eat; where to shop; and so on. In addition, information regarding visa, money exchange, weather, etc. is also given. Usually guidebooks cover a region, or a country. *Fodor's Guides* are the famous ones. Some of their guidebooks are: *Fodor's Spain 2004*; *Fodor's Germany 2005*; etc.

Historical Information Sources

Human activities, achievements and failures over the ages are all recorded in history. How a motorcar has come to its present state, when the idea of time dawned on human beings, what was the transport system of ancient Egypt, and thousands of other such questions can be replied turning the pages of the books on history. Hence, books on history also are important sources of information. There are books on history in general as there are books on the history of various subjects. Some examples of various categories of books on history are mentioned below:

International

The New Cambridge Modern History. 14V. 1957-79.

The Cambridge Medieval History. 8V. 1911-36.

Oxford History of the Classical World. 1986.

Regional

Civilization of the Ancient Mediterranean, Greece and Rome. 3V. 1988.

National

The New Cambridge History of India. 30V. 1988-

A History of Modern Tiber 1913 – 1951: the Demise of the Lamaist State. 1959.

Provincial

History of Kerala/ R. Leela Devi. 1988.

History of Orissa/ P. C. Das. 1992.

Local

Marshes to Metropolis - Calcutta 1481 – 1981/ B. Roy. 1982.

Subject

The Cambridge Illustrated History of World Science. 1983.

Manuscripts

Before the advent of printing men used to write in hand on papyrus, parchment, vellum, *bhurjapatra*, palm leaves, paper and other materials. Books produced in this way earned the name 'manuscripts'. These manuscripts have unfolded a great deal of information about the ancient civilisations of the world. Our *Vedas*, *Upanishads*, *Mahabharata*, *Ramayana* were all in the form of manuscripts before they were printed in the early 19th century. In many cases, till this date, the manuscripts are the original source of information. We have rich collections of manuscripts in the Khuda Baksh Oriental Public Library (20,000), Thanjavur Maharaja Serfoji's Sarasvati Mahal Library (46,695), and many other libraries.

Periodicals

A periodical is 'a publication with a distinctive title which appears at stated or regular intervals, without prior decision as to when the last issue shall appear [Harrod]. As per UNESCO, a publication will be called a periodical if it constitutes one issue in a continuous series under the same title, published at regular or irregular intervals, over an indefinite period, individual issues in the series being numbered consecutively or each issue being dated [Harrod]. The term **journal** is a synonym and serial a near synonym of the term **periodical**.

Periodicals are categorised as primary, secondary, and tertiary. **Primary periodicals** generally publish original contributions in the form of research articles and short communications. *Indian Journal of Pure and Applied Physics* is a research periodical on physics. Abstracting, indexing, and popular periodicals are known as **secondary periodicals**. *Indian Science Abstracts*, *Index Medicus*, and *Science Reporter* are respectively indexing, abstracting and popular periodicals. The periodicals that publish review articles are categorised as **tertiary periodicals**. During the past few decades reviewing periodicals have started coming out in large numbers. The titles of these periodicals usually start with *Advances in ...*, *Progress in ...*, *Annual Review of ...*, etc.

Periodicals are also categorised as research periodical, technical periodical, trade journal, popular periodical and house journal. **Research periodicals** fall under primary periodicals, which we have already discussed. **Technical periodicals** as the name suggest are devoted to technology. They aim to cater to the information needs of industry by gleaning information from primary sources. They highlight new techniques, and usually include news, letters to the editor, abstracts of articles of

interest to the industry, and information about new patents, standards, and developments in trade. *Indian Chemical Manufacturer* is a good example of a technical periodical. **Trade journals** are also like technical journals as far as content is concerned. However, trade journals are more biased to trade than technology. At times it becomes very difficult to draw a distinguishing line between the two. *Textile Trends* is an important trade journal on textiles. **Popular periodicals** serve not only scientists and technologists but also common men like students, technicians, teachers, and so on. Usually these periodicals are secondary sources of information and devoted to particular subjects. *Science Reporter* as pointed out earlier is a good example of a popular periodical. Many a time an industrial house, a scientific organisation, an education institution or other bodies bring out different categories of periodicals reflecting mainly the various activities of the house. These periodicals are usually called **house journals**. *Philips Electronic Application News*, and *GEC Journal of Science and Technology* are good examples of this type of journal.

In addition to these types, there are other periodicals like **magazines** meant for common readers [e.g. *Reader's Digest*].

Periodicals can also be categorised according to their producers. These producers are government bodies, learned societies, academic bodies, private bodies, and commercial publishers. Council of Scientific and Industrial Research, a government body of our country brings out around twenty periodicals. In these there are primary periodicals like *Indian Journal of Experimental Biology* and *Indian Journal of Chemical Technology*; and secondary periodicals like *Medicinal and Aromatic Plants Abstracts* and popular periodical like *Science Reporter*. Indian Association for the Cultivation of Science, a learned society, brings out *Indian Journal of Physics*, a primary periodical on physics. Academic bodies like universities also bring out periodicals. For example, Annamalai University, Karnataka University brings out their own journals respectively called *Journal of the Annamalai University*, and *Journal of the Karnataka University*. Private bodies like Indian Institute of Science also brings out a journal titled *Journal of the Indian Institute of Science*. Many commercial publishers in the world like Elsevier and Pergamon Press also publish journals.

Patents

The word 'patent' means an official right given to a person to make, use or sell a product, process, design, etc. invented by him/her for a fixed number of years. When we talk of patents as source of information, then the word means a document that provides the details of an invention which may be an equipment, a machine, a process, a product like a drug or a chemical, or any other object. A patent is considered, as the primary source of information and more often than not it is the only source of information on the topic, more detailed than any other source, and forms in many case the earliest literature on the topic. In a patent, the description in many cases is enriched with copious illustrations. The patents are issued by the patent office of the country.

Standards

A standard is something set up and established by authority as a rule for the measure of quantity, weight, extent, value or quality [Webster]. Here, we are concerned with the documents that provide the detailed description of a standard published by a standard issuing institution of a country like our Bureau of Indian Standards. These documents are also termed as **standard specifications**. Standards are always categorised as primary sources of information. These documents appear in A4 (210mm x 297mm) or A5 (148mm x 210mm) size and in most cases are pamphlets.

Standards are broadly categorised into two groups:

- 1) Technical/industrial standards, and
- 2) Physical and scientific standards.

Technical/industrial standards are further categorised as:

- 1) **Dimensional standards.** These standards are formulated to secure uniformity, interchangeability, and simplification of the types and sizes of one product. *Example: ISO/R169 – 1960. Sizes of photocopies (on paper) readable without optical devices.*
- 2) **Performance and quality standards.** These standards are meant for generating quality products. A product manufactured according to the standard will do or perform whatever it is expected to do or perform. For example, a pressure cooker manufactured in accordance with a standard will not burst under excessive pressure. The excess pressure will automatically come out through the pressure valve. *Example: IS: 3253-1965. Hourser-laid nylon rope for mountaineering purposes.*
- 3) **Standard test methods.** These standards prescribe standard methods for testing, chemical analysis, determination of constituents in a chemical compound, and so on. *Example: IS: 2188-1962. Methods of test for paper for electrical purposes.*
- 4) **Methods of use (Code of practice).** These standards are meant for correct application of materials and appliances; installation, operation, maintenance of machinery, plants, and so on. *Example: IS: 3916-1966. Code of practice for pig housing.*
- 5) **Definitions.** Definitions are standardised to ensure precise description of a concept, object, etc. *Example: ISO/R 597-1967. Definitions and terminology of cements.*
- 6) **Glossaries.** Glossaries are meant for securing uniformity in the use of terms so that a term in a subject always conveys the same meaning. *Example: IS:2550-1963. Glossary of classification terms.*
- 7) **Symbols.** Symbols are standardised so that a particular symbol conveys the same meaning or idea everywhere in the world, e.g. road symbols. *Example: IS:1890 (Part XI) – 1961. Mathematical signs and symbols for use in the physical sciences and technology.*

[IS: Indian Standard; ISO – Recommendation of International Organization for Standardization]

Physical and scientific standards apply to natural phenomenon, which are accurately determined and are not subject to change with the advancement of knowledge (e.g. length, mass, time, temperature, etc.).

Theses

The terms thesis and dissertation are used interchangeably. A thesis or dissertation is a document (usually unpublished) that contains details of a research conducted under the guidance of an expert. Apart from the hypotheses, objectives, scope, methodology, and results of the study, a thesis contains a detailed literature survey, which is useful for the compilation of a bibliography on the subject. Moreover, sometimes a thesis indicates the areas where further research can be conducted. In some cases, the researcher

gives birth to a new methodology, which becomes useful in subsequent research. The thesis is also a primary source of information. As only a few copies of the thesis are produced, it becomes difficult to have an access to the thesis. Nowadays, more and more theses are becoming available in digitised form, hence it can be expected that the problem of accessibility to theses will gradually reduce.

Conference Documents

Conference documents are also important sources of information in as much as many a time they contain nascent ideas. Thousands of conferences are held every year throughout the world. Some of these conferences are international; some are national, and some provincial. International Conference on Information Management in a Knowledge Society, organised to commemorate the golden jubilee of IASLIC, at Mumbai during 21 to 25 February 2005 was an international conference. Indian Library Association organised 49th All India Library Conference at Bundelkhand University, Jhansi, during 29th December 2003 to 1st January 2004. This was a national conference. Every year Bengal Library Association also organises a conference where librarians mostly from Bengal participate. This is basically a provincial conference.

Conferences generate different types of documents. Announcements, call for papers, programmes, etc. appear before the conference and are rightly called *pre-conference documents*. During the conference in many cases the volume containing the papers to be presented in the conference is released. For examples, the volume entitled *Information Support for Rural Development* released during 21st National Seminar of IASLIC (Calcutta: 31st December 2004 – 3rd January 2005) included about 60 papers and a dozen extended abstracts. In addition, the copies of inaugural addresses and other papers not included in the volume are sometimes distributed to the participants. Many a time, the organisers of a conference bring out a *souvenir* at the time of the conference. The detail of the souvenir brought out during the aforesaid conference will be discussed under the heading **Souvenirs**.

Conference proceedings, list of delegates, etc. appear after the conference and they are rightly called *post-conference documents*. Conference proceedings usually include discussions, speeches, minutes and resolutions. In certain cases, conference papers and the proceedings are brought out together at a later date by a publisher or as a special issue of a journal.

Souvenirs

A souvenir is something that is given to someone as a memento. When a souvenir takes the form of a publication, more often than not it becomes a good source of information. For example, the Organising Committee of 21st National Seminar of IASLIC (2004/05) has brought out a Souvenir that included the articles by various experts. Apart from the articles, the Souvenir included a small map of Kolkata; Programme of the XXI National Seminar of IASLIC, list of various committees and their members; IASLIC Council (2004–2005); list of presidents and general secretaries (since beginning till date). Thus, you can see that the souvenir has the material to act as a good reference source.

Festschriften

A festschrift is a collection of writings published in honour of a learned person. Every year more than one festschrift is brought out in our country in the area of LIS in honour of renowned librarians. Usually in a festschrift the biographical sketch of the person, discussion on his/her contributions, personal narratives about the person are

included. In addition, a number of articles contributed by his/her professional colleagues, students, friends, and others are also included. Sometimes, the articles are contributed on a specific topic.

In 2003, a festschrift has been brought out in honour of Mr. A. K. Dasgupta, a veteran among the living librarians of the country. It is titled as *National Bibliographical Control: Problems and Perspectives – Essays for A. K. Dasgupta*. In this case, the topic for the festschrift volume was fixed in advance. Accordingly contributions were asked from the authors. In all 33 articles devoted to the theme have been included in the volume. In addition, a bibliography of his writings numbering about 200 has been included.

It is rather unfortunate that there is no bibliographical control of the literature published in Indian festschrift volumes devoted to library and information science. Neither they are covered by international indexing and abstracting services. Literature included in these volumes as such do not attract the attention of the world audience, not do they find use to the desired extent.

Reports

In a library various types of reports are encountered. They may be categorised as Technical reports, Administrative reports, and Trip reports.

Technical reports are possibly the most important of the three categories. These reports usually originate through mission-oriented research projects of governments, industrial organisations or other agencies. Many a time, the agencies themselves do the experimentation. Of course, sometimes they are assigned to some other bodies that have the necessary infrastructure to carry out the experiment. Reports brought out depicting the various stages of the project are termed as Progress Report, Interim Report, Final Report, etc. In some cases only one Report is brought out. These reports are usually submitted within the stipulated time. Mostly these reports are in typed or mimeographed form; not printed or published; produced in limited number; used by the agency that carried out the research work itself or sponsored the research project; and are for restricted circulation. Majority of these reports belong to nuclear, aerospace and defence science. Hence, more often than not, they are stamped as 'Top Secret' 'Confidential' and so on and termed as 'Classified' reports. Professional editors do not edit these reports, nor they are refereed. Still these reports are considered as primary sources of information as they contain results of research.

A research-based technical report includes scope, objective, methodology, research results, application of research results, and so on. Basing these reports, engineers and technologists implement various projects.

As long as these reports are 'classified', they are used only by the selected people of the agency who has sponsored or produced the reports. At a particular point of time, many of these reports are 'declassified' and made available to the public. Now, the literature contained in these reports is open and can be used by anybody. Possibly, the largest number of technical reports is produced by the United States. National Technical Information Service (NTIS) of the US is the supplier of copies of all technical reports that are declassified or non-classified.

Administrative reports are usually brought out by ministries, departments, institutions, associations, etc. The commonest form of these reports are the Annual Reports. They are brought out every year and contain among others the details of the activities performed during the preceding year, plan for the next year, financial statements regarding income and expenditure, and so on. Reports of the institutions, associations,

etc. usually provide a number of other information as well. For example, *Annual Report ... and Audited Statement of Accounts ...* of IASLIC includes among others list of office bearers; reports on the annual general meeting; council meetings; executive and finance committee meetings; IASLIC national seminar/conference; divisional activities; study circle meetings; IASLIC library; annual lectures; librarians day; awards given by IASLIC, etc. In addition, the report includes the audited statement of accounts relating to income, expenditure, etc. These reports provide authentic information about the organisation.

Trip reports—Government officials, company executives, businessmen, scholars, scientists, and many others visit different parts of the world on various missions and purposes. During their visits, they hold talks with their counterparts; sign agreements; finalise business deals; attend conferences; study markets; go around various establishments, sites, trade fairs, and places of their interest; examine machinery and other products, etc. On their return, they are to submit a report to the authorities concerned. These reports are usually typewritten or computer-composed, stapled, produced in small number, and circulated only among the concerned employees. Hence, there is no bibliographical control for these reports. However, in many cases they form an important component of the knowledge base especially of companies or enterprises and classified as grey literature.

Many trip reports are available on the Internet. The site www.eurobirding.com provides links to more than 5,000 birding trip reports around the world. On the Internet, trip reports to various places like New Zealand, Las Vegas, and St Martins are also available.

Articles

All of you are familiar with articles. An article is a piece of writing included with others in a periodical, newspaper, conference proceedings, festschrift, and so on. Articles can also be categorised as popular, technical, research, review articles and so on. Articles that are published in a newspaper or magazine are generally called **popular articles** and meant for all and sundry. Articles that deal with technical matters are termed as **technical articles** and they are usually meant for technical people. **Research articles** are produced by researchers and convey the results of research and they are used by researchers and scholars. Primary periodicals usually contain research articles. **Review articles** project the state-of-the-art in a narrow area of study. An article before its formal publication in a journal or like media is called a **preprint**. In many cases, after the publication of an article in a journal, the author is supplied with a few printed copies of the article for his/her own use. These printed copies are called **reprints**. All articles contain different types of information and meet the requirements of different categories of people.

Diaries

Writers, scientists, scholars and many others maintain diaries. These diaries provide most authentic biographical material and plenty of other information. Normally these diaries are handwritten and sometimes depending on their importance they are published also. The diaries of Fanny Burney, English novelist, titled *Early Diary 1768-78*, and *Diary and Letters 1778 - 1840* beautifully depict the background of the period. Michael Faraday, popularly known as the 'Father of Electricity' meticulously maintained his diary recording all his research activities. Faraday's Diary is a bound and sequentially numbered set of books, containing 16,041 numbered entries dated 25th August 1832 to 6th March 1860 [<http://www.ccm.ua.edu/pdfs/343.pdf>]. This diary today serves as an inescapable source of information for biographers as well as historians of science. Diaries of scientists and their **laboratory notebooks** are more or less the same.

Letters

The practice of writing letters for communicating messages is very old. Even today this practice is continuing though with the spread of telephones and mobile phones it is showing signs of decline especially in the case of personal letters. With the advent of Internet, the channel of communication has also undergone change. Now, a huge number of letters has taken the form of e-mails. In official communications, however, letters continue to be as important as ever. Almost always, a letter contains information meant for the addressee. In our day-to-day life, a letter brings to us information about somebody's birth, passing an examination, getting an appointment, fixing of marriage, travel abroad, death, and so on. Before the advent of scientific periodicals, scientists in Europe convey the results of their research to fellow scientists through letters. Letters written by many authors have also been brought out in the form of books. For example, the famous book *Glimpses of World History* by Jawaharlal Nehru is a collection of his letters written to Indira Gandhi.

Office files

All decisions, big or small, taken by the government; governing body of an academic body, industrial enterprise, a research institution, a society, and so on are recorded in files. A service book (also a file) of an employee maintaining the papers relating to his/her appointment, promotion to the next higher grade, fixation of salary, report about his/her performance by his/her seniors, retirement, pension and so on is an important source of information about that person. Similarly, information regarding the establishment, running, closure, etc. of a ministry or department of a government, an industrial organisation, an academic body, a society, or any other non-government organisation, is also recorded in files. Hence, they are also important sources of information. The archives maintain important files and every effort is made to preserve each and every file, as files are such entities that have no copies or duplicates.

Computer files

A computer file is a collection of records or programs stored under a single filename. For computerisation of a library catalogue, we create a record for each and every book in a computer. All these records are stored in a computer under a single name. The collection of these records constitutes a file and the name given to it is called filename. A digitised form of a book, a periodical, a thesis, etc. can be a computer file.

Databases

A database is a collection of cross-referenced files so designed as to retrieve information from a number of angles. A large number of indexing and abstracting services of the world have created their own databases, which can be searched from any part of the world on payment basis to retrieve necessary information. There are a number of vendors that possess plenty of online databases. Obtaining the password from the vendor one can search all these databases from a single access point. For example, DIALOG, a service of The Dialog Corporation, has been serving users since 1972 with over 450 databases pertaining to a number of disciplines.

CD-ROMs

A CD-ROM becomes a source of information only when it contains data. The amount of data that a CD-ROM can contain may be gauged from the fact that **Compton's Reference Collection** harbours in a single CD-ROM, 24 volumes of *Compton's Concise Encyclopedia*, *Compton's World Atlas*, *The New York Public Library Desk Reference*, *The Macmillan Dictionary of Quotations*, *Webster's New World Dictionary*, *Webster's New World Thesaurus*, and five other business reference works.

The data accommodated in CD-ROMs in many cases include colourful pictures, sound, animation, and facility for interaction. In many cases the matter in CD-ROM is in hypertext that facilitates surfing from one item to another with ease.

**Information Sources:
Categorisation**

Video Recordings

A video recording harbours sound, colourful pictures, and animation. Many documentary films recorded in videotapes are excellent sources of information. Here, one not only gets the narration, but also the relevant pictures along with animation. This has a much better impact on the minds of the students and other viewers. The TV channels like Discovery and National Geographic are highly popular in as much as their shows are primarily based on video recordings.

Self Check Exercises

- 2) What is a treatise? How does it differ from a monograph?
- 3) Explain a handbook in simple terms.
- 4) Name a regional yearbook, and describe broadly its content.
- 5) Enumerate technical/industrial standards and describe the purpose of dimensional standards, and standard test methods.

Note: i) Write your answers in the space given below.
ii) Check your answers with the answers given at the end of the Unit.

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b) Non-Documentary Sources of Information

We have two types of non-documentary sources of information, i.e. **humans** and **organisations**.

Humans

Under humans there are numerous categories, however, we shall consider only the following categories:

- Consultants
- Experts
- Resource persons
- Extension workers
- Representatives of firms
- Technological gatekeepers
- Invisible college

- Common men

As you know most of them, hence we shall describe them one by one briefly.

Consultants – A consultant is a professional who provides advice usually on payment basis. There are various categories of consultants such as legal consultants, engineering consultants, consulting physician and so on. In the case of litigation, we take the advice of a legal consultant. For setting up an air conditioning plant for an office building, a cinema hall, etc. we consult an engineer who is an expert in the matter. For our ailments, we consult a physician. In all cases we are to pay fees fixed by the consultants.

Experts – An expert is a person who possesses sound knowledge on a subject, technique, and so on. On many occasions we need their help. For example, for appointing an information scientist in an organisation, we set up an interview board comprising experts. They interview the candidates, judge their suitability for the post, and finally choose the best candidate depending on his/her knowledge, skill, qualification and experience. For classifying a book, many a time a classifier cannot decide the subject. In such a case, he/she usually takes the help of an expert who knows the subject.

Resource Persons – The connotation of the term 'resource person' varies depending on the context. Normally a resource person enriches a programme. Suppose, you are organising a short-term course on computerised indexing. Here, you will require a resource person who will provide main intellectual input to the course.

Extension Workers – The meaning of the term 'extension worker' varies depending on the context. For example, an agricultural extension worker is an intermediary who helps in the transfer of research results from the laboratory to the farmers. For example, an agricultural university has developed a high-yielding variety of rice. Now, an extension worker will be trained as to the method of cultivation of the variety. The extension worker will in turn train the farmers, many of them may be illiterate, using the method of lecturing, demonstration in the field and so on. Apart from crop production, extension workers also help in the promotion of animal production, methods of healthy living, family planning, low cost housing and so on.

Representatives of Firms – A representative is a person who is employed by a firm for sales promotion and allied activities. Usually he/she is smart, speaks well, some times knows more than one language, has the capability of convincing people, and possesses basic knowledge about the products he/she puts into market. His/Her activities, among others, include sales promotion, market survey, study of user reaction, identifying competitors in the field, locate prospective buyers, and so on.

Technological Gatekeepers – A technological gatekeeper is a well-informed person in a particular field. Usually, some scientists, technologists, and professionals in business, etc. have got a tendency (possibly an inborn) to acquire information from various sources, to keep himself/herself abreast of the development in the field, and to disseminate the information to the person or group who may be interested in the information. There is no formal course to train a person as a technological gatekeeper. Almost automatically, they grow into a technological gatekeeper. According to Zagnoli [Internet 2] a technological gatekeeper should have:

- 1) 'technical authority, a high standard of technical and scientific professionalism and a high level of verifiable performance (scientific publications, congress communications and internal relationships, etc.);
- 2) a formal role in the organisation (often gatekeepers are coordinators of groups or project managers);

- 3) a proponent and constructive attitude to the general problems of the business; and
- 4) an open and interested attitude to innovation problems and to discussion with colleagues'.

Invisible College – In reality, an invisible college is not a college. Around 1645 a group of persons interested in natural philosophy and other parts of human learning started meeting secretly at Gresham College or elsewhere in London under the name of the 'invisible college'. In the meeting, they used to discuss about their research activities, results obtained, new areas that can be researched, and so on. The practice continues till today, of course, not in secret but in open meetings like national and international conferences where scholars belonging to the same discipline get acquainted with each other, come to know who is doing what, and discuss their areas of research, problems they are facing, latest findings, and so on. This acquaintance many a time turns into friendship and that continues when they exchange their reprints, correspond with one another through letters, talk over the phone, and so on. In this way, nowadays invisible colleges are formed. Hence, we can now define an invisible college as a loosely formed association of like-minded people who come together to share their experiences and knowledge.

Common Men – In our day-to-day life, we gather plenty of information from common men. Reaching a station we try to find out from the Enquiry Counter in which platform a particular train will be placed. Sometimes, we ask even a coolie the same question, and he normally gives the correct information. For a religious ceremony, normally we approach the priest. After consulting the almanac, he/she tells us about the date and time and also gives a list of items required for performing the ceremony. During census operations, or any other national, provincial or local survey, the information is usually obtained from the head or in his absence any other senior member of the family. During criminal investigations, the police try to gather information from the persons who were affected or witness to the incident. Thus, we find, even a common man like a coolie also acts as a source of information in many instances.

Self Check Exercise

- 6) Do you think a common man can also be a source of information? If so, for what type of information you will approach a common man. You can write the answer from your own experience.

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

ii) Check your answer with the answers given at the end of the Unit.

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Organisations

Organisations are also important sources of information. There are different categories of organisations and they provide different types of information. Information provided by an organisation is generally considered to be authentic. Here we are going to discuss

about the following categories of organisations highlighting the various types of information that these agencies can provide.

- International agencies
- Government ministries and departments
- Research and development organisations
- Academic institutions
- Societies
- Publishing houses
- Press
- Broadcasting houses
- Libraries and information centres
- Museums
- Archives
- Exhibitions
- Trade fairs
- Database vendors
- Information analysis centres
- Referral centres

International Agencies – These agencies can be broadly categorised into two groups – **international** and **regional**. The United Nations, UNESCO, FAO, WHO, etc. are the examples of international organisations. On the other hand, Asian Development Bank (ADB), South Asian Association for Regional Cooperation, (SAARC) etc. are the examples of regional organisations. All these agencies generate as well as gather information from various sources and then disseminate by placing the information on the Internet, bringing out various publications and other means. For example, Unesco gathers data from various member countries of the world on education, science and technology, culture and communication. Basing the data, statistical tables are compiled and published in the form of a book called *Unesco Statistical Yearbook* – a very important source of information on the subjects. Similarly, Asian Development Bank gathers socio-economic data from more than 40 developing countries and publish *Key Indicators* which is also available online.

Government Ministries and Departments – Ministries and departments not only generate but also gather information using their own sources. Hence, they act as the most authentic as well as up-to-date source of information. For example, if somebody is interested in the current figure of the Tenth Plan expenditure on Human Resource Development (HRD) in the country, he/she will have to approach the HRD ministry for the figures. The figures, available in the secondary sources may not be the latest. Similarly, for large varieties of information the ministries and departments are approached. The Press Information Bureau is the nodal agency of the Government of India that disseminates information to the media on government policies, programmes, initiatives and achievements [India 2001: p 275].

Research and Development (R&D) Organisations – Research laboratories, institutions, etc. generate information through research. This information is published in

the form of research papers, short communications, etc. Whenever a scientist receives a national or international award, media people flock to the organisation where the scientist is working to gather more information. The biographical data, service profile, correspondences, photographs, laboratory notebooks, and many other information about a scientist can be obtained from an R&D organisation.

Academic Institutions – Universities, colleges, polytechnics, schools, etc. are academic institutions. These institutions furnish information as to the number of courses they run, syllabus, duration, fees, faculty members, etc. of each course. They also keep substantial information for each student comprising his/her date of admission, date of leaving, results of various examinations, performances in sports, and so on. Various information about the teachers is also available with them. Sometimes photographs of students, teachers and other staff are also available with them. Hence, for collecting biographical material, these institutions provide a lot of help.

Societies – The terms society, association, etc. are synonymous. Thus, Society of Information Science (SIS), Indian Library Association (ILA), Indian Association of Special Libraries and Information Centres (IASLIC) are all societies. IASLIC since long has been performing some documentation functions as well. On demand, it answers to queries, compiles bibliographies, supplies photocopies of documents, and undertakes translations from a few foreign languages into English. In this way, it is acting as an information centre also. Some societies are very old and their archives are highly rich sources of information. For example, Royal Society of London was established in 1662 with many top-ranking scientists of England of the time like Robert Boyle as its members. It started publishing *Philosophical Transactions*, one of the top ranking scientific periodicals of all time, from May 1665. Both Royal Society and *Philosophical Transactions* exist till today. For about three and a half century almost all top grade scientists of the world has been associated with this Society. One can easily imagine the amount of information this Society harbours of the scientific development of the world that has taken place during the last 340 years. For historians of science, this Society is an inescapable source of information.

Publishing Houses – Publishing houses bring out books, periodicals, maps, atlases and various other documents and they have got a close link with the authors. Gradually a publishing house turns into a storehouse of manuscripts submitted by the authors, letters written by them, photographs incorporated in the books, and so on. At times these items become useful source of information. In addition, some publishers create databases and offer information services as well. For example, Oxford University Press (OUP), the publisher of world famous English dictionaries, has got a bank of new words. Authenticated new words are deposited with the bank, which in turn help in the revision of all Oxford dictionaries. OUP also has the Oxford Word and Language Service (OWLS) which answer language-related queries from teachers, writers, specialist institutions and so on.

Press – Under this heading, we include news agencies like Press Trust of India and newspaper publishing houses like The Times of India. Both news agencies and newspaper publishing houses try to gather and disseminate latest information. The newspaper publishing houses bring out papers of various periodicities like daily, tri-weekly, bi-weekly and so on. In these publishing houses gradually build up not only the collection of newspapers, but also of photographs, video clippings, and so on. And with the passage of time, these become valuable sources of information for researchers working on the history of a country, biography of a person, and so on. For example, if somebody is writing the history of freedom struggle of India, the archives of the newspaper publishing houses will be of immense help to him/her.

Broadcasting Houses – Radio broadcasting in our country started in 1927 with two privately owned transmitters at Bombay and Calcutta. In 1930, the British Government took over the control of the transmitters in 1930 and started broadcasting under the name Indian Broadcasting Service. The name was changed to All India Radio in 1936 and Akashvani in 1957. Since then the radio stations in our country gradually started multiplying to become six at the time of independence and about 200 by the year 2000 [India 2001: p 264].

Television broadcasting in India started on 15 September 1959 when transmission started from Akashvani Bhavan, New Delhi. The regular service with a news bulletin was started in 1965. Broadcasting started from Bombay in 1972, Calcutta in 1975, and then gradually from other Indian cities. By the end of 2000, Doordarshan, our national television, was operating through a network of more than 1,000 transmitters in the country and covering about 87% population of the country [India 2001: p.270]. Television broadcasting by private agencies started in India in 1990s and at present there are about 200 television channels transmitting numerous programmes. Some of the well-known private agencies operating in the field are Zee, Sony, Star TV, NDTV, Aaj Tak, and so on. Many of these radio and TV broadcasting houses are invaluable sources of information in as much as they possess numerous records of speeches, debates and discussions by ministers, political leaders, and other VIPs; music records possibly of all renowned singers and musicians; documentary and feature films; audiotapes, videotapes, audio CDs, video CDs, DVD's, still pictures, etc. of various events. Many of these agencies are having their own libraries providing information to various categories of users usually their own staff [Thakur, 2004].

Libraries and Information Centres (LICs) – You all know from your experience and studies how LICs are functioning possibly as the most common source of information to all. Researchers, scholars, teachers, students, even common men flock to the libraries for various types of information they need.

Archives – An archive is 'a collection of historical documents or records of a government, a family, a place, an organization, etc.' [Hornby: p52]. One specific feature of the archives is that a substantial portion of the documents is in the form of files. In general, unlike books duplicates of these documents are not available. A book is printed in thousands of copies. If one copy of a book is lost, there are many others in the world to look for. That is not the case with files. Of course, in some cases, microfilms of these files are made for the purpose of content preservation.

We have national as well as state archives. The National Archives of India was set up in 1891 as Imperial Record Department. 'It is the official custodian of all non-current record of permanent value of the Government of India and its predecessor bodies. It is the premier organised record repository in Asia with its holding running over 30 km of linear shelf space'. The library of the Archives is having about 200,000 volumes.

Museums – A museum is 'a building in which objects of historical, scientific, artistic or cultural interest are stored and exhibited' [Pearsall: p 939]. From subject point of view, museums are of two categories: general and special. General museums possess objects pertaining to various branches of knowledge. For example, Indian Museum of Calcutta is a general museum and has collections of archeology, art, botany, anthropology, geology, numismatics, zoology, and so on. Special museums are devoted to particular subjects. For example, our National Museum of Natural History located in Delhi is a special museum as the exhibits of the museum generally pertain to natural history.

From ownership point of view also museums can be categorised as government-owned museums and privately owned museums. Among the government-owned museums in

our country, there are national museums as well as state museums. National Museum of India belonged to the first category and Assam State Museum to the second category. Asutosh Museum of Indian Art is a privately owned museum as its ownership rests with the University of Calcutta.

Let us see how a museum acts as a source of information. A museum exhibits thousands of different objects. For each of them, brief information is given. Moreover, you can see the exhibit yourself and note down the various features of the object. Sometimes, detailed information about the object can also be obtained either from the museum authorities or from the publications they have brought out. For example, British Museum has brought out a booklet on the famous Rosetta Stone, which held the key to the decipherment of hieroglyphic scripts used by the ancient Egyptians to record their numerous events and facts. Another useful publication brought out by the Museum in 1986 is *The British Museum and its Collections*.

Exhibitions and Trade Fairs – An **exhibition** is a collection of art objects, handicrafts, industrial products and so on. Usually exhibitions are organised for a short period to mark a special occasion. For example, during Gandhiji's birthday a library may organise an exhibition of writings by Gandhiji and on Gandhiji, his photographs, press clippings related to him, and so on. This type of exhibition is highly informative and one can gather a good deal of information from the exhibition.

It may be noted that all exhibitions are not equally informative. For example, exhibitions organised by individual artists such as painters and sculptors with their own works are meant for the publicity of their own works and sale.

A **trade fair** as the name suggests is devoted to trade and organised in an open area for a particular duration, which may be one week or more, and in some cases may be less. In many cases these trade fairs are international and one can see stalls set up by various countries of the world. Manufacturers, traders, etc. also set up their own stalls and exhibit their products. Many of the manufacturers print their own product catalogues providing salient features of the products with diagrams and illustrations (sometimes colourful). These catalogues are primary sources of information and distributed free to potential customers. Smaller manufacturers also bring out leaflets, booklets, etc. describing their own products. Hence, a trade fair is a big source of information for buyers. They can see a product, say a cell phone, turned out by various manufacturers, compare the features, quality and cost, and finally take a decision to purchase one that suits him/her best. Hundreds of book fairs organised in our country are also trade fairs.

Information Analysis Centres – When we talk of an information centre we mean an organisation that provides information on demand. Suppose somebody wants information on the pros and cons about the construction of a dam at a particular place. The information centre will supply news items and other information available on the dam as it is. It will not analyse, evaluate and synthesise the information. On the other hand, if the same information is demanded from an information analysis centre, it will select the relevant information from databases, Internet and other sources; acquire them; then classify them in such categories as: (i) favouring the construction; (ii) opposing the construction; and (iii) providing neutral view. At the next stage, the literature so classified will be studied by experts and they will analyse, evaluate and finally synthesise the information sometimes with their own input. It is to be ensured that the information given is authoritative and substantially helpful in decision-making.

There are many information analysis centres in the world. The Carbon Dioxide Information Analysis Centre (CDIAC), for example, is the primary global-change data and information analysis centre belonging to the Department of Energy (DOE) of the United States. It attends to requests for data and information received from such users

all over the world as are concerned with the greenhouse effect and global climate change [Internet 3].

Referral Centres – A referral centre is an organisation that directs information seekers to appropriate sources of information such as libraries, information centres, and individuals that are likely to provide the information. A referral centre usually does not supply information or documents.

Internet

Internet is also a non-documentary source of information. However it is neither an organisation nor a human being. Hence, it is being treated separately. Nowadays Internet has proved to be the most powerful source of information. For any type of information we can search Internet, and it is most likely we shall get some information from it. The biggest facility Internet provides is the fact that Internet can be searched sitting at home from anywhere in the world.

5.3.2 Information Sources by Content

By content, information sources are categorised as primary, secondary and tertiary. This categorisation is mainly valid for scientific literature. We shall deal with them here in the same order.

a) Primary Sources

Primary sources usually contain original scientific contributions that have not appeared anywhere earlier. They are the first account of original research presented before the world audience. The account may be of a completely new discovery or invention; new interpretations of previously known facts; new application of a substance, device, etc.; new process to manufacture a product; new method of chemical analysis; and so on.

The types of documents that are considered as primary sources are research periodicals; technical reports; conference documents; theses/dissertations; patents; standards; trade catalogues; laboratory notebooks; diaries of scientists; correspondence; and so on.

b) Secondary Sources

These sources contain material derived from primary sources and organised or arranged following some systematic order. For example, an indexing periodical is a secondary source in as much as information recorded here are all derived from primary sources like primary periodicals, conference documents; and so on. These sources bring together in one place the information on literature scattered in various primary sources. The information may be in the form of just citations, abstracts, reviews, or popular articles. Secondary sources are in fact keys to the primary literature.

The types of documents that are included in secondary sources are bibliographies; indexing periodicals; abstracting periodicals; reviewing periodicals; textbooks; monographs; treatises; and reference books like dictionaries, encyclopaedias, handbooks, manuals, data books, catalogues, biographical dictionaries, gazetteers, guide books, maps, atlases, globes, and so on.

c) Tertiary Sources

Tertiary sources are of three types: (1) sources that are purely based on secondary sources e.g. bibliography of bibliographies; (2) sources that are key to primary and secondary sources, e.g. guides to reference sources; and (3) sources like research in progress.

Information sources can also be categorised according to media, i.e. print media and non-print media. Both these have been dealt with adequately in Unit no. 6 of this course.

5.4 SUMMARY

Having outlined the objectives, a brief introduction as to sources of information has been provided. The two concepts information sources and information resources have been explained and their differences outlined. Documentary and non-documentary sources have been dealt with Unit 6 of this course. Under documentary sources the following has been discussed: treatises; monographs; textbooks; dictionaries; encyclopaedias; handbooks; manuals; data books; catalogues; bibliographies; directories; yearbooks; almanacs; biographical dictionaries; atlases; gazetteers; guidebooks; historical information sources; manuscripts; periodicals; patents; standards; theses; conference documents; souvenirs; festschriften; reports (technical, administrative and trip); articles (popular, technical, research); diaries; letters; office files; CD-ROM recordings; video recordings; databases; computer files; laboratory notebooks; maps; and globes. There are two types of non-documentary sources, i.e. humans and organisations. Under humans the following has been discussed: consultants; experts; resource persons; extension workers; representatives of firms; technological gatekeepers; invisible college; and common men. Under organisations, the following has been dealt with: international agencies; government ministries and departments; research and development organisations; academic institutions; societies; publishing houses; press; broadcasting houses; libraries and information centres; museums; archives; exhibitions; trade fairs; database vendors; information analysis centres; and referral centres.

5.5 ANSWERS TO SELF CHECK EXERCISES

- 1) The sources wherefrom we get information are information sources. These sources comprise documents, organisations, and human beings. The two broad categories of source are: documentary and non-documentary sources. A dictionary is a documentary source and an expert or a university are non-documentary source.
- 2) A treatise is a learned piece of writing on a particular subject. For example, *A Treatise on Heat* by Saha and Srivastava is used by researchers, scholars, professors, students of physics of Master's degree course, and the like. It is not used by common men, school or college students. On the other hand, a monograph is also a piece of writing on a particular topic. But, it is written in a simple language whereby it can be used by a specialist, a student even by a common man.
- 3) Unlike encyclopaedias and dictionaries there is no general handbook. A handbook is always devoted to a particular subject or subjects and meant for practicing professionals. Only such information as are required by practicing professionals in their day-to-day work are included in handbooks. For example, *Machinery's Handbook* is meant for practicing mechanical engineers, designers, manufacturing engineers, draftsmen, toolmakers and machinists. Hence it contains such chapters as mathematics; mechanics; strength of materials; properties, treatment, and testing of materials; dimensioning, gauging and measuring; tools and tool making; machining operations; manufacturing processes; fasteners; threads and threading; gears, splines and cams; bearings and other machine elements; and measuring units.

- 4) *The Middle and the North Africa 2005* is a regional yearbook. The regional yearbooks are usually brought out by Europa Publications and they portray the economic and political survey of the region and description of each of the country forming the region. The description includes among others geography; history; economy; statistical survey and directory that embraces the constitution, government, legislature, political organisations, diplomatic representation, judicial system, religion, press, publishers, radio and television, finance, trade and industry, transport, tourism, atomic energy, defence, and education.
- 5) Technical/industrial standards can be enumerated as dimensional standards; performance or quality standards; standard test methods; methods of use (code of practice); definitions; glossaries and symbols. Dimensional standards are formulated to secure uniformity, interchangeability, and simplification of the types and sizes of one product. Standard test methods are formulated for testing, chemical analysis, determination of constituents in a chemical compound, and so on.
- 6) Yes, a common man can also be a source of information. During census operation, an enumerator approaches a common man for getting information about his/her family members, their qualifications, sources of income, family planning measures they have undertaken, and so on. For investigation of a crime, an accident, and so on, common people are approached for information, if they are witnesses.

5.6 KEYWORDS

Document	: A piece of written, printed or electronic matter that provides information or evidence or that serves as an official record.
Documentary Sources	Sources that are in the form of documents.
Non-Documentary Sources	: Sources that are not in the form of documents, e.g. organisations, persons.
Primary Sources	: Sources that carry original contributions, information that is appearing for the first time, etc. These are the base for secondary sources.
Secondary Sources	: Sources that are based on the material published in the primary sources.
Tertiary Sources	: Sources that are based on secondary sources, or act as key to the primary and secondary sources.

5.7 REFERENCES AND FURTHER READING

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UNIT 6 PRINT AND NON-PRINT SOURCES

Structure

- 6.0 Objectives
- 6.1 Introduction
- 6.2 Print Media
 - 6.2.1 Types
 - 6.2.2 Future of Print Media
- 6.3 Non-print Media
 - 6.3.1 Conventional Media
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 - 6.4.3 Microforms
 - 6.4.4 Other Non-Print Media
- 6.5 Summary
- 6.6 Answers to Self Check Exercises
- 6.7 Keywords
- 6.8 References and Further Reading

6.0 OBJECTIVES

After reading this Unit, you will be able to:

- gain adequate knowledge about print media and their components and characteristics;
- broadly view the future of print media;
- gather adequate knowledge about non-print media, their types and uses in libraries and information centres;
- grasp the advantages and disadvantages of non-print media vis-à-vis print media;
- decide the medium while bringing out a publication;
- visualise how cybermedia unfolds before you an entirely new world of information; and
- have a smattering of virtual reality products.

6.1 INTRODUCTION

Men have been communicating with speech for about 100,000 years. This form of communication, i.e. the oral form, reigned unrivalled for thousands and thousands of years. Gradually, it dawned on man that message can be left on some surface using

drawings or symbols. The great cave paintings of Altamira in Spain and Lascaux in France daubed on the cave walls some 20,000 years ago seem to convey some distinct message [Odhams]. Millennia passed by before drawings and paintings took the form of early pictorial writing. In some parts of the world pictorial writing gave birth to scripts. The oldest known writing we are aware of is that of Mesopotamia inscribed as early as 3,000 BC by the Sumerians. That only points to the fact that the practice of writing emerged only about 5,000 years ago. Printing that opened the floodgate for the production of books and revolutionised the spread of education came into being much later. Evidences suggest that the Chinese invented the method of block printing by 8th century AD. Their method remained more or less confined to China and did not spread all over the world and the production of books did not attain the necessary momentum.

In 1450s (according to some source 1454 AD) Johannes Gutenberg of Germany invented the method of printing using movable types. The impact of this method of printing was of unimaginable dimension. The method spread like wild fire and by the end of the 15th century some 9,000,000 books were in circulation in Europe, a scene the world has neither seen before nor after [Odhams: p55]. At one stroke, the world saw the birth and development of the printing industry, printing machinery industry, publishing and book trade industry, printing ink industry, sudden rise in pulp and paper industry, and so on. It also created in people a tremendous urge for reading leading to the growth of literacy, educational institutions like schools, colleges and universities. Moreover, it gave rise to professionals like printers, composers, proof readers, publishers, book traders, book binders, and so on.

The print media reigned supreme and unrivalled for about 500 years when at the 2nd half of the 20th century it faced a formidable challenge from non-print media.

Now, a big question has cropped up before the world whether the print media will be able to withstand the threat from the non-print media and continue as usual in future, or it will yield to the pressure and gradually vanish from the scene.

6.2 PRINT MEDIA

Printing involves a minimum of four different items: (i) manuscript, i.e. the piece of writing to be printed; (ii) composition of the matter either by hand or by machine; (iii) the physical medium, say, paper on which the matter is to be printed; and (iv) the ink with which the matter to be printed. For illustrations, blocks, etc. are also required. Products of printing are many and varied. For example, books, periodicals, newspapers, etc. are all products of printing and all of them represent one medium or the other. All these products taken together form the print media. Hence, in this Unit we are using the term print media instead of print medium.

6.2.1 Types

Print media can also be categorised according to the physical formats on which the matter is printed, say paper, plastic, cloth, metal sheet, and so on. In this writing, we are confining ourselves to such items as are printed on paper such as sheets, leaflets, booklets, books, periodicals, and so on.

Printed Sheets

A sheet is a piece of paper of varying sizes on which the written or typed matter is printed. Usually the printed sheets are used for advertising, campaigning and other purposes. The details of a product, items being sold at a shop, the opening of a new shop, showroom, restaurant, stall, etc. are printed on the sheet and the same is distributed to the prospective customers. Sometimes these sheets are also pasted on

the walls to attract the attention of the public. College and university students and teachers, politicians of all levels, and many others fighting some election use printed sheets for propaganda. Printing of the sheets is neither time consuming, nor costly. Moreover, they can be distributed by hand and pasted on walls, tree trunks, and other places with ease.

Leaflets

A leaflet is a small sheet of paper folded once and printed to make two or four pages. The pages follow the same sequence as those of a book. It is neither stitched nor stapled. It may be noted that in US and Canada, a leaflet or booklet is termed as a **folder**. At times, serials also appear in the form of leaflets. Examples: *Leaflet, Department of Agriculture, Bengal; Indian Forest Leaflet (1941 -)*, etc.

These leaflets contain product information, tourist information, road maps, and so on and generally distributed free. A tourist while proceeding on a journey can conveniently carry the leaflets and use them with utmost ease whenever necessary. Neither carrying nor using creates any difficulty. Many publishers send blurbs of their publications by post or courier to prospective buyers. The approach is personalised, not costly, but quite effective and can reach even the most undeveloped and remote area of a country.

Printed Cards

Cards are printed to convey greetings, invite people to attend marriage and other ceremonies, and so on. During Deepavali, New Year, Christmas, etc. we purchase the greeting cards and send them to near and dear ones. At times, these cards become valuable source of information in as much as the card gives us information about somebody's date of marriage, names of the bride and bridegroom and their parents and so on. If you see the cards in the archive of a celebrity, you will know with whom he/she had connections during his/her lifetime.

Pamphlets

As per Unesco's definition a pamphlet is a non-periodic printed publication of 5 to 48 pages excluding cover pages. It is stapled/stitched and cut. Pamphlets usually provide information on a topic in simple language and are meant for wide range of users. Many textbooks of kindergarten and elementary classes as well as for neo-literates are pamphlets. They are printed usually with large fonts and colourful illustrations.

Manuals supplied with various gadgets of domestic use like fridge, washing machine, etc. are also generally pamphlets. Nowadays mobile phones have turned into a ubiquitous gadget and become affordable. No wonder, of late mobile phones have outnumbered landline phones just within a few years of its appearance. Companies like Airtel and Hutch selling mobile phone connections have also brought out beautiful pamphlets for customers in various languages. Quite often customers are to use them to call somebody outside India, or making it roaming while going away to some other place and so on.

Some serials also appear in the form of pamphlets. Examples: *Forest Pamphlets*. Indian Forest Research Institute. Dehra Dun. No. 1 (1908)- 16 (1916); *Indigo Pamphlets*. Bihar Planters' Association. Calcutta. No. 1(1906) – 8 (1907).

Pamphlets are produced cheap; distributed by hand (say, in a gathering, fair, or an exhibition), post or courier; used for a long time; do not require any gadget for reading; and can reach any part of a country within a short time. Pamphlets in most cases are available free of cost.

People in all walks of life use pamphlets. A housewife uses pamphlets to run her microwave, fridge, etc. properly. An amateur horticulturist uses it for producing better roses and other flowers. An engineer uses a standard (most standards are

pamphlets) to generate quality products; to install, run and maintain a machine properly; and so on.

Books

According to Unesco, a book is a non-periodic printed publication of at least 49 pages exclusive of cover pages. A book is usually stapled/stitched along one edge and placed within protective covers to form a volume. In general libraries, the collection is predominated by books. The sizes of books vary. The size of *The New International Webster's Comprehensive Dictionary of the English Language* (Encyclopaedic ed.) is 28 x 21 cm. Atlases are usually still bigger. Textbook in general is of medium size. For example, *Reference Service* by Krishan Kumar measures 21 x 13 cm. *Computer Dictionary* by Ian Scales and Geof Wheelwright goes to another extreme measuring about 6 x 5 cm. According to the intellectual content, books can be categorised as textbooks, monographs, treatises, reference books and so on. Various categories of books have already been discussed in Unit 5 of this course.

Illustrations

Photographs, drawings, paintings, etc. become print media when they are printed. Illustrations are but a common component of a book. Children's books are usually adorned with colourful illustrations to make them more attractive and educative. Other educative books are also illustrated for making the matter easily comprehensible to the reader. For example, a book on birds usually includes coloured illustrations of almost each bird included in the book whereby a bird can be easily identified by a bird watcher. You will find in many cases predominance of illustrations especially in books on photography and architecture. Illustrations are of various types. Some of them are frontispiece, plate, photograph, portrait, map, plan, facsimile, table, chart and diagram. Most of them are known to you. A brief description of the less known ones follows. A **frontispiece** is an illustration that faces the title page. In many biographies and festschriften the photograph or the portrait of the celebrity appears as frontispiece. For example, the book *National Bibliographical Control: Problems and Perspectives* (New Delhi: Allied, 2003) brought out in honour of the renowned librarian A. K. Dasgupta, contains his photograph as the frontispiece. A **plate** is a photograph or an illustration printed anywhere in the book other than the page facing the title page. Normally, a plate covers the whole page. A **portrait** is 'an artistic representation of a person, especially one depicting only the face or head and shoulders [COD: p1116]. In some biographical dictionaries portraits of the persons are included along with their biographical sketches. A **plan** is a scale drawing of the horizontal section of a particular level of a building, structure or a machine. An exact copy of a piece of writing, painting, etc. is called a **facsimile**. A photocopy is an example of a facsimile.

Periodicals

You have already read about various categories of periodicals in Unit 5 of this course. The periodical is a powerful medium for the dissemination of information. Researchers all over the world publish their papers describing latest findings in primary periodicals. Secondary periodicals gather information from primary periodicals and present the same in the form of abstracts, popular articles or reviews. Going through these periodicals a researcher, teacher, student, and others keep themselves updated generally overriding the language barrier. Compared to textbooks, treatises or monographs, the information presented in periodicals is almost always more up-to-date.

Apart from **specialist periodicals**, which are devoted to particular subjects (e.g. *Current Science*) and are categorised as primary, secondary and tertiary. There are general periodicals also. A **general periodical** includes writings from various disciplines. For example, *India Today* – it covers articles related to politics and government, sports, business and trade, art and culture, and so on. There are also

periodicals called magazines. A *magazine* is meant for light reading and includes among others short stories, serialised fiction, poems, articles on films, theatres, sports, and so on. Sometimes these magazines are meant for children (e.g. *Chandamama*, *Suktar*), women (e.g. *Femina*, *Sananda*), neo-literates, and so on.

Newspapers

For centuries newspapers have been serving human community as a powerful medium of communication. Newspapers appear from almost all parts of the world in numerous languages. In India also, newspapers appear not only in English and Hindi but also in numerous regional languages like Bengali, Marathi, Gujarati, Tamil, Telugu, Assamese, Oriya, and so on. Circulation of newspapers varies from a few hundred to a few million. The usual frequency of a newspaper is daily. However, there are also newspapers, which are tri-weekly, bi-weekly or weekly. Newspapers can also be categorised as general newspaper and specialist newspaper.

General newspapers include current information pertaining to any important event occurring in any part of the world, nay, any part of the universe. Besides news, we find in it editorials and articles based on current events. In general, these newspapers publish news, editorials, articles, etc. on politics and government, crime, business and trade, accidents, sports, cultural events and so on. Very important events relating to science, medicine, technology, literature, religion, etc. are also covered. Newspapers are usually biased nationally or locally. For example, *The Times of India* is biased towards Indian news, whereas *Ananda Bazar Patrika* appearing from Calcutta is biased towards news from West Bengal. Unlike e-newspapers, updating of news several times a day is not possible in the printed newspaper.

The newspaper as a form of document enjoys the largest leadership. For example, the circulation of *Hindustan Times* appearing from a number of cities in India is more than one million. A newspaper in a house, club, library, office and in other places is read by many people. If we consider that a copy of *Hindustan Times* is read on average by four persons per day, then the daily readership of *Hindustan Times* comes to more than four million. You cannot think of any other type of document whose readership will be so large per day.

A **specialist newspaper** is usually devoted to a particular subject. *The Financial Express*, *The Economic Times*, etc. are the examples of specialist newspapers. In these newspapers you will find a predominance of the news on the subject to which the newspaper is devoted. Other important news also appears in these newspapers.

Maps

We all have learnt about maps during our school days and many a time have drawn them on sheets of papers. A map is a depiction of the earth's surface or any component of it (say, a country, state, city, roads, etc.) printed on a durable sheet of paper. The sizes of the sheets vary. Many maps are hung on the wall for easy reference. Reproduction of a map in printed form without the permission of the proper authority is illegal.

There are various types of maps such as political, demographic, and agricultural. Political maps indicate the political boundaries of each state; its capital, important towns, rivers, railroads, and so on. Demographic maps indicate the population from various angles of the world or a part of it such as a country or a state. Agricultural maps show soil types, crops grown, agricultural productivity and so on of a particular area.

We have maps of the sky as well where we can see various constellations, the signs of zodiac, planets of the earth, etc. The surface of the earth or any area of it is more or less constant. This is not the case with the sky. The winter sky is different from summer sky. Hence, we have different sky maps for different times of the year.

Government offices, industrial establishments, financial institutions, business houses, publishers and various other organisations bring out calendars and diaries every year and distribute them free of cost to its employees, customers, agents, and many others. Calendars usually provide the days and dates of a month indicating holidays usually with red colour or some other way. Some calendars contain colourful photographs on each page like temples, mountains, places of scenic beauty and so on. The name of the organisation figures prominently on the calendar which gives a little publicity to the organisation.

Diaries apart from days and dates provide more information. For example, the diary of Life Insurance Corporation of India (LIC) for the year 2004 distributed free of cost to its employees, agents, customers and so on included among others the following information: a general overview of life insurance; plans marketed by LIC; useful information about policy holders; group insurance schemes; tax benefits from life insurance; bonus; welfare activities; highlights of LIC's investments; progress on LIC since its inception in 1956, etc. Diaries for personal use sold in the market also include such information as list of holidays; income tax rates; STD codes; ISD codes; postal information; etc. In some diaries you may find maps of the country and important towns; world time chart and so on.

Computer Printouts

The computer printout is also a new variety of printed material. We can take a printout of a file or part of it stored in a floppy, compact disc, or database. Many of the computer files or databases are copyrighted according to law. Hence, downloading or taking a printout from a copyrighted file or database is illegal and a punishable offence.

Self Check Exercises

- 1) Name some products that comprise print media.
- 2) Do you think pamphlets are useful? If so, explain why.

Note: i) Write your answers in the space given below.
ii) Check your answers with the answers given at the end of the Unit.

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6.2.2 Future of Print Media

When we discuss the future of print media, we shall try to visualise the future of all the categories already discussed in this Unit.

Printed sheets, leaflets, printed cards, and pamphlets are not yet facing any major threat from non-print media. Till date in developing countries these are the cheapest and most effective media for publicity, propaganda, sales promotion, maintenance of friendly relation and family ties and so on. Through e-mail we can send colourful cards conveying greetings, inviting people for some ceremony, and so

on. However, the percentage of people having e-mail facility being very small in countries like India and China, we cannot reach everybody through this medium. Moreover, people appreciate invitation with a personal visit and invitation card much more than invitation through e-mail or phone. Hence, we can safely predict that these printed media are not going to vanish in foreseeable future.

Now, let us consider the position of **books**. With the passage of time, more and more e-books are appearing in the market. Books are also appearing in the form of video recordings. E-books and video recordings have got several advantages over printed books. Take for example, a CD-ROM, this particular storage medium can hold the data about 2000 books of 150 pages each. A CD-ROM is available at affordable cost, requires negligible amount of space for storing. The content of a CD-ROM can be uploaded to a computer and then can be made available to anybody in the world through Internet. Many e-books are produced with hypermedia facilities providing us not only text, but narration, sound, colourful picture, animation and interaction. We can also surf from one topic to the other with utmost ease. More or less similar is the case with video recordings. Blinds and deaf and dumb people can use e-books since the blinds can hear, and deaf and dumb can see. A CD or a floppy has negligible weight and can be carried easily in a pocket.

Despite all these advantages, e-books are failing to replace or displace conventional books in printed form in as much as an e-book is either in CD, or in a floppy that requires a computer for reading, which is costly, difficult to carry, and susceptible to breakdown due to fluctuation in power supply, heat, dust and so on. Moreover, a CD or a floppy can easily become unusable on such flimsy causes as a scratch or a fall. A printed book remains totally unaffected by all these factors. Moreover, we can carry a book with us, read it with naked eyes standing at a bus stop, sitting in a train, and even while walking in a lonely alley. Hence, it can be safely predicted that printed books will co-exist with e-books as newspapers co-exist with radios, and radios co-exist with TVs.

Periodicals nowadays are available in various forms such as printed form; electronic form, i.e., e-journals; and microform. Sometimes, they are available both in electronic and printed form. A small survey conducted by the author with a sample of about 550 titles in physics included in *Ulrich's* 1999 revealed that 85 titles were available in electronic form (4 in CDs) and the rest were in printed form. None was only in electronic form or in microform. It is unlikely that the situation has undergone a vast change by 2005. Renowned publishers of periodicals who used to bring out periodicals earlier in printed form, now they bring out an electronic version as well. Instances are rare where publishers have discontinued printed version in favour of the electronic version.

The facilities of e-journals are many and varied and cannot be ignored. We get e-journals much earlier through Internet than their printed versions since they reach us via postal channel, which takes time. Many e-journals provide facilities for downloading of articles free of cost. This is also a big advantage. Of course, for consulting most e-journals you will have to pay both for consulting the journal and downloading the article. If money is not a problem for a researcher, then he/she can browse through all e-journals of his/her interest sitting in the house or office room using his/her Internet connected computer. This saves him/her from the botheration of going to the library, moving from shelf to shelf, getting disappointed if some issues, volumes, are not available in the library.

Once purchased, you can use a printed journal any number of times for any number of years without paying anything extra. That is not the case with e-journals. Suppose,

you have paid for consulting an e-journal for the year 2004. Now, if you want to consult this journal in 2005, you will again have to pay. Moreover, e-journals are generally residents of databases; they cannot be accessed and read without a computer. Moreover, you cannot carry them with you according to your sweet will and read whenever you want. In all such cases printed journals fare much better.

Both printed journals and e-journals have some advantages and disadvantages. If we take a global view, then we find that like e-journals, new printed journals are also emerging every year. Readership of printed journals are not yet showing any sign of decline. Hence, we can conclude that the future of printed journals is not yet bleak and there is every possibility that printed journals will also co-exist with their electronic counterparts.

Despite the availability of Internet edition of many **newspapers** in the world, the readership of printed newspaper is not declining. Even in our country the newspapers like *Hindustan Times* (HT) and *The Times of India* (TOI) are having Internet editions. Strangely enough, the circulation of the printed edition of these newspapers are continuously increasing! Why is it so? Let us delve deep into the matter. Suppose somebody intends to read the Internet edition of HT in Delhi for half-an-hour a day. For this he/she needs Internet connection. There are different rates depending on the number of hours one subscribes to. For 100 hours, the VSNL rate is Rs 800. That means Rs. 4.00 for half an hour. In addition, you are to pay telephone charges at local rates, i.e. Rs. 10.00 for half an hour. So, for reading the Internet edition of HT or TOI for half an hour you are to pay Rs. 14.00, when the cost of the printed edition is only Rs. 1.50. Even if you take the cable connection for Internet like Sify broadband, the cost for 10 hours is more than Rs. 300.00. Moreover, one can read the printed edition sitting anywhere in the house, lying down on the bed, standing in a bus stop or railway platform, sitting in a bus or train, and so on. You cannot do the same thing with the Internet edition. May be, in future, the cost of Internet connection will reduce. But Internet edition will not be able to provide the facilities that a printed edition can provide. No wonder, with the growth of literacy, the readership of printed edition of newspapers is increasing. For countries like India the trend will continue. The findings of the National Readership Survey in India are indicating positive growth year after year. It is most likely that the printed edition and the Internet edition of newspapers will co-exist, and in developing countries printed edition will possibly enjoy more readership.

Computerisation of data gave birth to **computer printouts**, as data in computers is not safe. Virus can corrupt any file resident in a computer. Crashing of hard disk is also not uncommon. That is why the practice is to keep backup in a floppy or a compact disc (CD). More often than not, a floppy become unusable due to a variety of reasons and a simple scratch on a CD can make the entire data in CD inaccessible. In such a situation, the wisest step is to keep a printout on paper. If everything in electronic form gets corrupted or destroyed, the printout comes to our rescue. At least, the data is there. It can be inputted to computer whenever needed. However much we go for electronic media, the need for printouts is likely to be there always.

Maps are used by teachers, students, military personnel, travellers, common men and many others. Normally big size maps are hung on the wall for ready reference. The size of a computer screen being small, normally we are to see a map part by part in a computer whereby we do not get the full view of the map. Reducing the size of the map five to ten times we may get the full view sacrificing its readability. Of course, using a device called Liquid Crystal Display (LCD), we can project a map on a big screen and get its full view, but LCD is a costly equipment normally used by sophisticated educational institutions. The sum and substance of the matter is that the

ease with which printed maps can be consulted, its electronic counterparts cannot be. Hence, printed maps will also stay.

Conclusion – Summing up we can only say that there is no immediate threat to print media. In future, in some cases print media will dominate, in others non-print media. It can be safely predicted that both will co-exist for a long time to come.

6.3 NON-PRINT MEDIA

We shall categorise non-print media as conventional, electronic and cyber media.

6.3.1 Conventional Media

The conventional media can further be categorised as oral, audio, visual, and audio-visual media.

Oral

Once upon a time oral medium was the only medium that the human beings used to communicate. Even today we communicate maximum amount of information through oral medium. In our houses, offices, schools, colleges, universities, market places, practically everywhere, we use this medium for communication. No physical medium (except air) is needed for short distance communication. We just speak and others hear. By using physical medium like telephone, microphone, radio, and television oral communication can be transmitted over long distances. In oral medium we communicate information in different modes as discussed below.

One-to-One – This happens when two persons talk to each other. Talks between husband and wife, father and son, a teacher and a student, friend to friend, are examples of one-to-one communication. Many a time a reporter interviews a VIP. This is also a case of one-to-one communication.

One-to-a Few – This happens in a classroom, small gatherings, and so on. In a class room the teacher speaks and the students listen.

One-to-Many – This happens in big meetings, conferences, and so on. Before elections you have seen meetings addressed by political leaders. Here, the political leader speaks and hundreds and thousands of listeners listen.

Many-to-One – This is seen in meetings when a VIP (say, a minister, government official, etc.) meets common people to listen to their grievances, complaints, and so on. The persons, one by one, voice their grievances, and the VIP takes note of them and tells them about the action he/she is going to take. This also happens when a VIP calls for a press conference. The reporters put questions to the VIP and he/she answers. The same scene is seen in an interview also. The candidate is asked various questions by the members of the interview board which he/she answers.

Many-to-Many – This happens in a group discussion, round table conference, and so on. Here, one by one everyone speaks and others hear and react.

Audio

These are the media using which either we speak, or listen, or both speak and listen. In a big conference, we use microphones to speak so that others can hear the voice clearly. This is a device used only for speaking. We use record players, radio, etc. to listen to music, news, speech, and so on. These devices are only for hearing. A telephone, walkie-talkie, etc. are devices through which we can both speak and hear. A radio ever since its discovery has been a great source of information for one and all. It has

been a great help for the blinds for their education, awareness of current events, and entertainments.

Visual

Visual media comprise among others photographs, paintings, drawings, blueprints, slides, and transparencies. You all know about photographs, paintings, and drawings. Hence, we shall discuss here only about blue prints, slides and transparencies.

Blueprints – ‘A blueprint is a photographic copy of an early plan for a building or machine with white lines on a blue background’ [Cambridge International Dictionary: p140]. Many libraries of industrial enterprises, consultancy firms, etc. possess a huge collection of blueprints. The blueprints are frequently required by engineers, technicians and others for assembling or repairing a machine, erection of a plant, construction or extension of a building, and so on. Not much attention has been paid by librarians so far towards the classification, cataloguing, storage, etc. of these materials, which are of great value for an industrial organisation from the point of view of information.

Slides – ‘A slide is a small piece of photographic film in a frame which, when light is passed through it, shows a large image on a screen or plain surface’ [Cambridge: p1352]. For using slides a projector is needed. Slides are used while presenting a paper in a conference; delivering a lecture in a class or any other gathering; demonstrating the function of a machine, side effects of a drug, usefulness of a specific fertilizer, and so on. Slide shows are organised even in villages to educate illiterate farmers, craftsmen, and others about better method of cultivation, healthy living, low cost housing, usefulness of family planning, etc. Many scientists, scholars, teachers, demonstrators, etc. maintain slide collections of their own. Some libraries also possess slide collections.

Transparencies – A transparency is a transparent plastic sheet on which the matter to be projected is handwritten, photocopied, or printed. For using a transparency, a slide projector is needed. Its use is more or less the same as a slide. However, it is much more handy than a slide in as much as even in remote areas where preparation of a slide is difficult, a transparency can be easily prepared.

Audio-visual

Audio-visual media (A-V media) combine both audio medium and the visual medium. With the help of this media people not only see but also hear. Motion pictures, video recordings, television, are a few examples of A-V media.

Numerous **documentary films** almost on any subject have been produced in the world. These films show in most cases colourful pictures of objects with narration in lucid language. The colourful object such as a tiger hunting a deer is often animated. Seeing and hearing have deeper impact on our memory whereby we remember the scene quicker and retain in our memory for long. These films serve both for education and entertainment. As a result they are becoming important sources of information in libraries. These films are nowadays available in videocassettes that can be run on a Video Cassette Player (VCP) or Video Cassette Recorder (VCR). Many libraries have now a section on documentary films. There are film libraries as well.

The **television (TV)** has gradually become not only the source on entertainment but also a great source of current information. Apart from providing news at intervals, it also provides interesting discussions where politicians, journalist, experts, etc. take part; broadcasts live various sports like cricket and football matches, events of Olympic, Asiad, and so on; immediately flashes important declaration by the head of a state, information on accidents, disasters, and so on.

Self Check Exercise

3) Define and discuss the importance of blueprint in an industrial library.

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

ii) Check your answer with the answers given at the end of the Unit.

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6.3.2 Electronic Media

In this Section we shall deal with multimedia, hypermedia, hypertext, and cybermedia.

Multimedia

As the term suggests, multimedia encompasses several media, which are integrated into a single entity within a digital environment that accesses stored information with a computer system. Hence, the term multimedia is considered as 'singular' like media. It incorporates moving and still pictures, sound, music, text, and facilities for surfing.

Now let us try to understand the concept of multimedia. We have read textbooks in schools and colleges. These textbooks are printed and sometimes include black and white and/or coloured illustrations. Thus in textbooks we find at times the happy combination of two media, i.e. print and graphic media.

Suppose, in an encyclopaedia, you are reading about the bird called the cuckoo. In the text you are getting a good description of the bird's look, size, habitat, behaviour, nest, egg, and so on. The encyclopaedia may include a coloured illustration of the bird as well. From the article you get a very good idea about the bird. However, if you are interested to know about the call or the flying pattern of the bird, the encyclopaedia might give you the description of the call or flying pattern. But, it will not be able to reproduce the actual call or the flying pattern. Here comes the multimedia. A multimedia encyclopaedia can reproduce the actual call and the flying pattern of the bird. Once you remember the call, you will be able to identify the bird whenever you hear the call. Summing up, we can say that in a printed encyclopaedia we find the combination of text (description) and graphics (illustrations). In a multimedia encyclopaedia, we find the combination of text, graphics, audio (call of the bird), and animation (flying of the bird), and at times interaction. Many a time, a multimedia encyclopaedia is in hypertext, which helps the reader to move from one text to the other with ease. Suppose, while studying the article on birds in a multimedia encyclopaedia, you come across the term 'migratory birds' in different colour (an indication of hypertext). You click on 'migratory birds'. Immediately, the article on migratory birds appears on the computer screen. In this article, you find the name of the 'Siberian crane' in hypertext. Now, you can click on 'Siberian crane' to get the article on Siberian crane. This is how, in a multimedia encyclopaedia, we can move from one concept to the other practically without any loss of time or difficulty.

Multimedia Products – These products are available in CD-ROM. For using these products a well-configured computer system is needed. The computer should have CD drive, speakers, adequate memory, and so on.

Use – The use of multimedia is picking up at a rapid rate. It is finding ample use in education and training. In classroom lectures when something is demonstrated with multimedia, say, an open-heart surgery, it creates a deep impression in the minds of the pupil, because they are actually seeing the operation as if in reality and hearing what is happening at every moment. It is affecting simultaneously two sense organs, i.e. eyes and ears. The combined effect of both on the memory is definitely better than one.

Even handicapped students can reap the benefit of multimedia. Blind students can hear not only the narration of the text, but also the sound of other associated happenings related to the text. For example, while listening to the narration on rainy season, the blind student can hear the beautiful sound of rain, terrifying sound of thunder and devastating sound of storms.

For deaf and dumb students also, the multimedia has proved to be a boon. They can see the objects in colour as well as in motion and thereby can comprehend the matter much better.

Nowadays, even in seminars, conferences, workshops, etc. multimedia presentation is becoming pretty common. It helps the speaker greatly in presentation and the audience in comprehension.

In business and trade also, multimedia is entering in a big way. Many companies are giving multimedia demonstration of their products to the customers, and the questions raised by them are being answered then and there many a time with the help of multimedia. The development of multimedia has obviated to a great extent the need for carrying the machinery, product, etc. for demonstration. Seeing the multimedia demonstration, the customer can tentatively select the items, and finally see the items themselves before purchasing or placing order.

In publishing and book trade industry also, multimedia has entered in a big way. Encyclopaedias, dictionaries, atlases, collected works of various authors are now available in multimedia. Some publishers along with the printed book provide a CD-ROM also that harbours the electronic version of the book.

Libraries and information centres have also started procuring multimedia products for their uses. Multimedia publications are becoming formidable competitors to conventional printed books.

Multimedia is also entering entertainment market in a big way. Now you can get a documentary film, a feature film, a circus show, a cultural function, and so on in CDs.

Hypertext

While discussing multimedia, we have used the word ‘hypertext’. Now let us see what this hypertext is. Hypertext is defined as ‘a system of storing images, text, and other computer files that allow direct links to the related text, images, sound and other data’ [Encarta: p94]. To understand hypertext we are reproducing a small text from *Macmillan Science and Technology Encyclopedia*. The text reads as follows:

Palynology Study of SPORES, SEEDS, and POLLENS. It is a part of such disciplines as archaeology, PALAEOGEOGRAPHY, and PALAEOLOGY [Macmillan: p268].

You can see that in the above text, SPORES, SEEDS, POLLENS, PALAEOGEOGRAPHY, and PALAEOLOGY are all in capital letters. These capitalised words indicate that there are separate articles in the encyclopaedia on these topics. If somebody does not know the meaning of, say, palaeontology, he/she can go through the article on the topic included in the

encyclopaedia by turning the pages and can read it to have some idea on the topic. If you find this in multimedia, you will simply have to click on the word PALAEONTOLOGY, immediately the article on the topic will appear on the screen. The same text in hypermedia like World Wide Web (WWW) will showcase the list of websites containing the word PALAEONTOLOGY on the computer screen, in serial order. Now you will have to check the websites one by one to see which one provides the answer to your satisfaction. After clicking the selected website, you will get the article on the topic on your screen.

From the above discussion it is clear that for linking broad, related and narrower topics appearing in the text you will have to highlight the words either by capitalising or by using different colours or some other means so that the reader can go to any of the words to get its meaning as well as other details. In the text already discussed, the words have been highlighted using capital letters. In *Compton's Concise Encyclopedia* in CD-ROM, the topics have been highlighted in crimson. For images, a camera has been used as an icon, clicking which you can get the picture, and for chronology, a clock has been used as an icon, a click on which leads you to related timeline event.

You can see that in hypertext, words in the text are highlighted to link related topics existing in cyberspace, i.e. World Wide Web or Internet. This is not all. In hypertext, as in multimedia, we get sound, visual image including animation. Suppose we are reading an article on India in hypertext. There, in one section, the text of our national anthem Jana gana mana is included. In one corner, there is a musical symbol indicative of sound. Now, if you click on this symbol, immediately the computer system will reproduce the song along with the music. Similarly, if you click on the symbol of national flag, the flag will appear on the computer screen.

Hypermedia

We have already discussed print media and multimedia. In print media, we find text and graphics printed usually on paper. In multimedia we find text, graphics, sound, animation, and sometime mechanism for interaction. Multimedia products are in digitised form and usually available in CD-ROMs. If information is presented along with graphics, sound, animation and interactive mechanism in hypertext then we say that information is in hypermedia. Thus, hypermedia is defined as 'a hypertext system that supports the linking of graphics, audio and video elements and text.' [Encarta World English Dictionary: p926]. The World Wide Web is a beautiful example of hypermedia.

Self Check Exercise

- 4) Describe the usefulness of multimedia in education and training.

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

- ii) Check your answer with the answers given at the end of the Unit.

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6.3.3 Cybermedia

Both Internet and World Wide Web function in cyberspace. Hence these two media are being considered here as cybermedia. It may be noted that cybermedia and cyberspace are two different concepts. Cybermedia does not require an encompassing

space as cyberspace does. Moreover while using cybermedia, a person sees physical objects like computer in the real world. The media comprises interconnected databases on a worldwide scale and functions on receipt of input [Internet 1].

Internet – It is a worldwide network of computer networks connecting millions of computers harbouring every type of information retrievable usually from multiple angles practically in no time and from any part of the world.

The initial work for the launching of Internet was started by Advanced Research Projects Agency (ARPA) of the US Department of Defence (ARPA/DARPA) in early 1960s. JCR Licklider of MIT, the first head of the computer research programme at DARPA envisioned a globally interconnected set of networks through which anybody could access data or program from any site in the world. In 1969, four host computers were connected together to form a network. In 1972, e-mail was introduced over the network. The network has grown from four computers in 1969 to 100 in 1977, 28,000 plus in 1987 and 20,000,000 in 1997 [Meadow, 2000].

To enter the wonderful world of Internet, what you need is a computer of adequate capacity that will be equipped with a sound card, Internet connection that you may get from an Internet Service Provider (ISP) like Videsh Sanchar Nigam Ltd. (VSNL), a password, which the ISP will supply, and software like Netscape Navigator. In the system, there may be provisions for sending and receiving e-mails and voice mails and fitting a camera with which your photograph may be transmitted to the receiver when you speak and vice versa. Now you also can enter Internet as well as World Wide Web (or simply Web, in short). Using a search engine like Google, you can search any item that comes to your mind. The search engine is not something like a car engine. It is simply a powerful computer program that searches given keywords existing in the cyberspace and returns a list of websites wherein the given keywords exist. You can access the matter recorded in any of the websites by just clicking on it.

Internet can be compared with a huge library harbouring books, journals, newspapers, reports, patents, theses, video cassettes, and so on. However, this library we are calling Internet is imaginary. Four walls do not bound it, neither there are racks and shelves. For locating information on something, there is no dictionary or classified catalogue. But you have powerful search engines with which you can search the item(s) you need.

Internet is the most important reference source that man could ever evolve. In Internet you will find dictionaries, encyclopaedias, directories, yearbooks, bibliographies, primary periodicals, secondary periodicals, life sketches of persons, description of places, and so on. While searching Internet, you will have to remember that:

- i) all documents in Internet are in digitised form, not all of them can be browsed free of charge, neither all can be downloaded;
- ii) each and every document the world has produced is not available in Internet, what is available is only a small percentage;
- iii) there will be some documents in Internet which will not be available in your library and vice versa;
- iv) documents in Internet in many cases are more up-to-date than their counterparts available in your library;
- v) usually, documents in Internet are updated more frequently than printed documents;
- vi) Internet supplements your library collection and not replaces it;
- vii) Internet in no way makes a library or its collection redundant; and

- viii) most documents in Internet are copyrighted. Hence, downloading any of them without the permission of the concerned authority is illegal.

Many journals and newspapers are also available free of cost on Internet. For reading you do not need a password, neither you are to pay any extra money other than normal Internet charge and local telephone charge. A few examples of such journals and newspapers are given here with their URLs. *Reader's Digest* [Reader's Digest-rd.com]; *Hindustan Times* [www.hindustantimes.com]; *Nav Bharat Times* (Hindi newspaper) [navbharattimes.indiatimes.com]; and *Ananda Bazar Patrika* (Bengali newspaper) [www.anandabazar.com]. Apart from English, you can search Internet also in Hindi, Bengali, Telugu, Marathi and Tamil using the search engine Google.

There are thousands of other journals, which you can access through Internet on payment basis. One of the special features of the Internet edition of journals is that you get the latest issues of the journal in many cases earlier than their printed counterparts. For example, the latest issue of many American journals reaches India by sea mail about a month or more after its release in USA. Using Internet you can see the issue on the same day it is released.

The Internet edition of newspapers is updated several times a day. Hence, the news available in the Internet edition in many cases will be more up-to-date than their printed counterparts.

You have already come to know that for many documents available in Internet one has to pay. Let us see, how this payment is made. Suppose you want to subscribe to a few Internet edition of journals for your library. First of all, you are to contact the publishers of the journals. They will send you the bills for payment. Once you have made the payment, you will be given the URLs, i.e. web addresses, of the respective journals and their passwords. Now, whenever needed you can access the full-text of any of the journals following the normal procedure of using Internet.

World Wide Web – The abbreviation of World Wide Web is WWW. It is also referred simply as the web. The web does not have its own databases. However, it searches the databases owned by others and finds out the required information [Meadow: p3].

The World Wide Web was created by Tim Berners-Lee, a physicist of Centre Europeene Recherche Nuclear (CERN) by using a hypertext model and Standard Generalised Mark-up Language (SGML) with some extensions. To launch the web, an international telecommunication network was needed which Internet provided. Berners-Lee coded the documents in hypertext with Internet addresses that could be read by a program called *browser* that copied the hypertext documents from servers along with text and graphics.

The web is not only a medium for the exchange of scientific information, but also for advertising products, disseminating news, making friendship with like-minded people at different parts of the world, choosing life partners, and so on. It is an integral part of our culture today [Meadow: p33].

Millions of computers all over the world are holding databases created using various software. These databases are of various sizes and qualities and devoted to almost any subject we can think of. To harvest information from these databases a mechanism was needed. The Internet and the web combining together provided the most-wanted mechanism.

5) Explain why Internet is considered as the best reference source in the world.

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

ii) Check your answer with the answers given at the end of the Unit.

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6.3.4 Virtual Reality Products

The image that we see in a looking glass is a virtual image. In a virtual reality environment the observer gets a feeling as if he/she is a part of the system. Many of us are familiar with video games like car racing. The person who wants to play this video game sits in a chair in front of a computer screen and comes to know which car visible on the screen he/she is to drive. There are all the mechanisms needed for car driving whereby you can increase or decrease the speed of your car, change lane, take left or right turn, apply break and so on. The moment the race starts, you also start driving along with other cars. If your car is lagging behind, you increase speed of your car to catch up with other cars in the race and forge ahead by changing lane. If by chance, your car dashes with another, a big crashing sound is generated, flames emanate, and your car is reduced to ashes. Mind you, in real world you are still sitting on the static chair and nothing happens to you. If you want to play it again, you start afresh.

In virtual reality, real situation is simulated whereby one gets the feeling of a real world. Many car-driving schools nowadays use virtual reality products to teach car driving. These products prove to be the mainstay of video games.

6.4 STORAGE MEDIA

A storage medium is something in which information, data, etc. is stored. CD-ROMs, floppies, microforms are few examples of storage media. Storage media does not fall within the ambit of information sources since a blank medium does not carry any information. However, a person dealing with information sources should have some knowledge about the media in which information is stored. Here we shall discuss optical and magnetic media as well as microforms.

6.4.1 Optical Media

Optical media can be broadly divided into three categories: (i) read only media commercially produced for mass consumption; (ii) write-once recordable media (WORM) media; and (iii) rewritable media.

Read only media is usually meant for publishing and distribution, and WORM and rewritable media for storage and archiving. The read only media comprises among others videodiscs, hybrid discs, compact disc - read only memory (CD-ROM), CD-Interactive (CD-I), CD-Video (CD-V), Digital Video Discs (DVDs), etc. On the other hand WORM comprises among others WORM optical discs, and optical tapes. Rewritable media comprise erasable/rewritable optical discs, etc. [Oppenheim, 1992].

Data in CDs is stored in digitised form with microscopic pits pressed into a polycarbonate base that is coated with a light reflective layer. The reflective layer is usually of aluminium, though use of gold and silver is not uncommon. The reflective surface is then covered with transparent lacquer whereby it gets protected. The data being impressed, it can neither be altered nor rewritten.

A number of discs can be automatically accessed using jukeboxes.

CD-ROM

This particular medium is most widely known and used. A CD is a hard plastic disc, 1.2 mm thick and 12 cm (approximately 5 inches) in diameter, and has a silvery surface. Its storing capacity being around 650 megabytes a CD can store an unimaginably huge amount of data. Here, you may note that the capacity of a double-sided-double-density (DSDD) floppy is only 1.44 MB. That means a CD can store the entire data stored in around 450 floppies! The average access time to CD-ROM data varies from 300 millisecond to 130 millisecond.

Let us have some idea in concrete terms about the storage capacity of a CD-ROM. A typed page in an A4 size (297mm x 210mm) paper can store about 2,000 bytes of data. Hence, a CD-ROM can store $650,000,000 \div 2,000 = 325,000$ pages of data. On average a page of your course material contains 3,000 bytes of data. If a Unit of course material contains 25 pages, then a CD-ROM will contain $650,000,000 \div (25 \times 3000) = 8,667$ Units. Compton's Reference Collection brought out in 1996 in a single CD contains *Compton's Concise Reference Encyclopedia* (25 Vol.); *Webster's New World® Dictionary*; *Webster's New World® Thesaurus*; *Compton's World Atlas*; *The Macmillan Dictionary of Quotations*; *The New York Public Library Desk Reference*; and five other books.

A CD-ROM not only stores text but also images, pictures and sound. The text may also be in hypertext providing facility to surf. Thus the CD-ROM has become the choicest medium for multimedia products.

The CD-ROM is proving to be a boon for libraries as it is helping to save valuable space of a growing library. For example, the printed version of *The New Encyclopaedia Britannica* consumes about 100 cm of shelving space. On the other hand, *New Encyclopaedia Britannica 2003 CD-ROM* (4 discs with cases) does not need even 5 cm of shelf space. Many abstracting and indexing services like *Library and Information Science Abstracts*, *Science Citation Index* and other citation indexes are also available in CD-ROM.

All multimedia products are coming out in CD-ROMs and many libraries are acquiring CD-ROM versions of journals, reference books, and so on. Readers are also getting used to consulting CD-ROM products. Many publishers are also providing downloading facility from CD-ROMs.

For the preservation of old newspapers, manuscripts, books, etc. so far we have been taking the help of microforms. CD-ROM has opened up another option. Data stored in CD-ROMs about two decades ago are still intact. If it remains so for fifty or hundred years, the optical media will be ideal for preservation. The advantages of optical media for preservation are quite a few.

- i) A CD-ROM costing about Rs. 10.00 can store more than 300,000 pages with ease. There is no other medium that offers so cheap storage cost.
- ii) Data can be copied from one CD-ROM to another practically in no time. That is not the case with microforms.

- iii) CD-ROM data being in digitised form can be easily put into Internet and made available to the entire world. We cannot do the same with data stored in microforms
- iv) Search in CD-ROM is much quicker compared to microforms.
- v) Microforms can store only texts and still pictures. CD-ROMs can store texts, sound, still as well as animated pictures.
- vi) As far as portability is concerned, CD-ROMs score much above microforms. In a CD one can carry 300,000 pages of data in his/her pocket. The same data in microform may prove to be too heavy to carry by a person.

Videodiscs

Commercially available videodiscs are read only media that are used for the distribution and display of pre-recorded video, still frame images and sometimes-digital information. [Oppenheim: 1992, p9]

Hybrid Videodiscs

These are used to store digital data in analogue form, or a mixture of digital data and analogue information. [Oppenheim: p13]

CD Interactive

Also known as CD-i or CD-I. It was developed by Philips and Sony in the second half of 1980s as a multimedia system. Originally Philips envisaged the following five application areas: creative leisure; education and training; entertainment; home use; and use in car. Though its specification was launched in 1986, and updated subsequently, the player did not appear till around 1990. Around mid-1990s, Philips backed out after selling several hundred thousand pieces. The product did not find a big market ever. However, it is still being used in USA for education and training purposes. DVD has proved to be a better alternative compared to CD-I. [Oppenheim: p26-27; Internet 2].

CD-Video (CDV)

Philips gave birth to this product around 1987 combining LaserDisc (i.e. analogue video) and Compact Disc Digital Audio formats. The CDV was of the same size as that of a CD-ROM, i.e. 12cm and had the capacity to hold 5 minutes of video and 20 minutes of audio. Bigger size versions of 20cm and 30cm appeared afterwards. CD-Videos were made gold-coloured to differentiate them from ordinary CDs. The audio portion was playable on a standard CD player. The product did not find success in Europe or USA and disappeared from there by 1990. In Japan, however, it existed a little more till 1992. [Internet 3].

DVD

Originally DVD was the abbreviated form of Digital Video Disc. Now it has changed to Digital Versatile Disc because of its versatility. The DVD is used for storing almost everything from massive computer files to full-length movies. It usually stores video films, texts, and multimedia data. In size and appearance it is quite similar to a CD or CD-ROM and of 12cm diameter. As far as storage capacity is concerned, it outdistances its predecessors, i.e. CD or CD-ROM of 650MB capacity by a wide margin. The storage capacity of a standard single-layer, single-sided DVD is about eight times more than a CD, i.e. 4.7 GB. This is not all. The storage capacity of a two-layered standard DVD is 8.5 GB and that of a two-layered two-sided DVD 17 GB. For using DVDs, you need a new disk drive that will also be useful to read your older CD-ROMs and audio CDs. [Internet 4].

Write-Once Recordable Media (WORM)

The abbreviation WORM also stands for Write Once Read Many times. This media comprise recordable CDs or CD recordables (CD-R) that emerged in 1993. On it you can write only once, read the writing any number of times, and cannot erase or alter what you have written. It is like your notebook or diary where you write with ink only once and thereafter read any number of times, and normally cannot erase the writing without disfiguring the page. For writing on a CD, you are to install a CD-writer in your computer system apart from other peripherals. The matter to be written on a CD is to be either inputted or downloaded in a computer and then with necessary instructions to the computer the matter can be written on a CD. Copying from a CD to a CD is also possible. Its storage capacity and format are same as that of an audio CD or CD-ROM and can be played on a standard CD drive. The body of the disc is made of polycarbonate; there is a dye layer on the body coated with a metallic reflective layer. 'The dye layer carries the data in place of the pits of pressed discs. When recording, high-intensity laser pulses change the dye shape to optical properties. The low-intensity laser reads the changes in reflected light as a digital bit stream' [Internet 5]. CD writing drives run on different speed levels.

The **Photo-CD** is a CD-R that records photographs as electronic still images.

Standardisation in the case WORMs is still a far cry. A great variety of systems and formats exist today. Some firms produce WORMs with a continuous helical recording format analogous to a sound LP disc; others market discs with ring-shaped tracks as found on computer floppy and hard discs. Use of both formats is also possible. The physical dimensions of WORMs are yet to be standardised.

Optical Tape is produced by ICI and packaged in a cassette for use as a WORM format data storage medium. EMASS in the USA produce the tape drives. For recording, the same method is followed as that of CD-R. The tape being a sequential carrier, the access time can be pretty long. The storage capacity of a tape is mind-boggling and can go up to 100GB.

Rewritable Optical Media

We have already seen that in CD-ROM and WORM data is recorded only once and then read any number of times. We cannot erase or alter the data as we can do in a magnetic disc. However, the Magneto-Optic Technology (MOT) has emerged to provide that facility too. Now, we can read, alter and even erase data in an optical disc if that is required. This is because of the emergence of MOT that combines the facilities of both magnetic and optical storage devices. In a Magneto-Optic (M/O) device, laser beam is used to read, write and erase magnetic data. The writing and erasing mechanism is based on a thermo-magnetic process, and reading mechanism on a magneto-optic phenomenon called Kerr effect.

Phase-change technology, a recent development, has possibly given birth to a better recording method. In this case 'the carrier layer is coated with a thin semi-metal film, which can be both in an amorphous and in a crystalline state. A laser beam in the write mode can change single spots to either an amorphous or a crystalline state so that, again, a digital bit stream is created. The Phase-change may replace M/O in the future' [Internet 5].

So far rewritable optical discs were available in the 5.25 inch format, recently the 3.5 inch format has appeared in the market. The M/O discs are not affected by dust and other factors that affect magnetic discs. Neither the data is usually erased

accidentally. These discs in many ways resemble floppies as far as data manipulation is concerned and seem to be more suitable for long time data storage.

6.4.2 Magnetic Media

The media is so called, as data is stored in them on magnetic material such as iron oxide. The media comprises among others magnetic tapes, magnetic discs, and floppy disks, which we are going to describe one by one.

Magnetic Tapes

Magnetic tapes were used for the first time to store data in 1951 for UNIVAC computer. A magnetic tape is a thin ribbon made usually of plastic whose one side is coated with iron oxide. It is used to record sound, pictures, and data. Magnetic tapes are used on audio and videocassettes as well as in computers with tape drives.

Data on a magnetic tape is stored as tiny invisible dots. The stored data can be read and preserved for many years. The old data can be erased to store new data.

The storage capacity of these tapes can be gauged from the following facts. In one inch space, data comprising 800 bytes to 6,250 bytes can be stored depending on the tape drive used. You may note that an A4 size paper contains about 2,000 bytes of data when typed in single space.

A typical 10.5-inch reel contains 2,400 feet long tape that can hold data ranging from 23 MB to 180 MB. The cost of the reel is less than \$20.00 and weighs less than three pounds. Thus, it is cheap, portable and consumes less space. Data from the tape can be downloaded to a computer with ease.

Advantages – Tapes are used for archival storage of data and safe preservation; keeping a backup of data stored in a hard disc or removable disc; and distribution of bibliographic databases and catalogue records. It is also used as intermediary media for transferring data into a CD.

Disadvantages – Records in a magnetic tape are arranged sequentially making accessing or retrieving a particular piece of information time consuming. If frequent access to records is needed on a rapid and random basis then too much time of the operator is wasted, as the operator is to load and unload tapes time and again.

Dust, humidity, and high temperature affect tapes badly. Hence, tapes are to be kept always in dust-free air-conditioned rooms.

Magnetic Discs

Magnetic discs emerged as a data storage device in 1962. A magnetic disc is flat and circular in shape, made of mylar (a plastic material) or metal, and coated on both sides with iron oxide or similar magnetic material. Data is recorded on the surface of the disc in circular tracks by a recording device called read-write head while the disc is rotated by a drive. Data in the disc is usually divided into sectors. The read-write head can be positioned anywhere in the disc with great precision.

A collection of disks usually eleven in number is called a disc pack. It is mounted vertically on the spindle of a drive fitted with multiple read-write heads. A typical disc pack has capacity to hold 3MB of data.

The advantages of magnetic discs over magnetic tapes are as follows: (i) data is accessed directly; (ii) more data is held in a smaller area; and (iii) data can be accessed faster.

Magnetic discs are used with all sizes of computers and manufactured in the form of floppy discs or hard discs.

Floppy Discs hit the market in 1970s. The floppy disc is known by various names such as disc, disk, diskette, floppy, floppy diskette, and so on. It is a flat disc placed inside a plastic cover. Originally, it was 8 inches in diameter, then the size was reduced to 5.25 inches and finally to 3.5 inches. It is made of mylar and coated with magnetic material. The capacity of a floppy available in the market nowadays is 1.44MB.

The floppy is inserted into the disc drive (usually C drive) of a microcomputer when needed and removed when done with.

Floppies rotate slowly compared to hard discs because with the high speed of centrifugal force of rotation floppies bend and go out of shape. However, for microcomputers floppies have proved to be a good storage medium.

Use – Floppies being cheap, light and small in size have found a number of applications. Some of them are:

- Computer files at times get corrupted due to virus transmitted through e-mails; crashing of hard discs, and other factors. As a precaution, it is the practice to keep backup of each and every file in floppies.
- Nowadays publishers of books, journals, etc. want the author to send the typed manuscript along with the floppy. The matter in the floppy can be directly transmitted to the referee through e-mail for comments. This saves time as well as postal charges. Printing of the matter also becomes easy and quicker as fresh composition of the matter is not required.
- Lectures to be delivered in a class can be carried in a floppy. If the lecture is prepared using a software such as Microsoft PowerPoint, then the main points of the lecture can be beautifully highlighted on the screen with a device called Liquid Crystal Display (LCD). This makes the lecture interesting and help students to have a better grasp of the topic being taught. Nowadays, the same method is applied in conferences to present papers.

6.4.3 Microforms

Microforms connote film or paper that contains miniature reproductions too small to be read with naked eyes. For reading them magnification of various ranges is necessary. In many cases, 10 times magnification is sufficient. However, in some cases, magnification up to 210 times becomes essential.

Microforms contain miniature images not only of texts but also of graphics (illustrations etc.). We can have microforms of books, periodicals, newspapers, maps, and other printed and unpublished materials. Microforms being tough and durable, they are heavily used for the preservation of information contained in old and rare documents.

Advantages – The advantages of microforms are many and varied. Some of them are:

- Copies from microforms can be easily made on paper.
- Microforms save a great deal of space in a library. For example, 2,000 volumes of *Chemical Abstracts* occupy about 350 ft of shelf space, whereas the microforms of the same volume can be accommodated in a single file drawer.
- Microforms need no binding, hence binding expenditure is saved.
- Compared to books, microforms are less expensive.

- Mutilation or damage of printed documents is quite common in libraries. Usually, it is not the case with microforms. Of course, through heavy use, prints on microforms also fade.
- Books are often disfigured with marking, underlining, marginal notes, folding of the pages and so on. Such disfiguration of microforms usually do not take place.
- Microforms of documents can be mailed to a user at a very low cost.

Disadvantages

The disadvantages of microforms are also not negligible. A few of the disadvantages are:

- The greatest disadvantage is that microforms cannot be read with naked eyes. Usually they are read in the library with magnifying equipment. i.e. microform readers. The equipment is installed at a particular place in a library where one has to sit to read the microform.
- Microforms are not usually lent out for home use. Moreover, hardly anybody will have a microform reader in his/her house.
- Hard copies made from microforms are not always of good quality.

Of the microforms, **microfilms** are possibly the most important. Several varieties of microfilms are there. Here we shall discuss roll microfilm, computer output microfilm (COM), and flat microfilms.

Microfilming is done employing a mechanical process whereby written or printed texts and graphics are photographed in reduced size. Often the reduction is 100 times. Microfilming is done with special cameras that can photograph newspapers, maps, plans, etc. with high reduction [Compton's Reference Collection].

Roll Microfilm

Roll microfilm is usually 16mm or 35mm wide, wound on a reel or loaded into a cassette or cartridge. The length of the roll is usually 100 feet. The 35mm microfilms are being heavily used in libraries for quite sometime as microfilms of this width provide a large image area necessary for microfilming newspapers, maps, charts, plans, and so on. The greater film width also permits the recording of deteriorating books and manuscripts as low as 9X. This is the only microform that can be used for microfilming all types of library documents.

Voluminous publications and sets of journals are more secure in reel microfilms compared to microfiche or microcard.

In roll microfilms the arrangement of the images is in sequential order. Hence, finding a particular page or any other item at times takes a lot of time particularly when it is located towards the end of the roll. This is a major disadvantage.

The leader (a short strip of blank film at each end of the reel) and trailer (a blank strip of film at the end of the reel) in a reel also cause some wastage of microfilm space.

The shortcomings of roll microfilms noted above have been considerably remedied by cutting the roll in short strips of 23 cm. These strips do not have leaders and trailers whereby wastage of film space is eliminated. Moreover, the length of the film being short, any page can be located practically without any loss of time. However, it may be noted that the short strips are not suitable for microfilming books or long articles covering many pages.

Computer Output Microfilm (COM)

It is a product wherein textual and graphic data stored in a computer is directly transferred to a microfilm. Normally, in a microfilm the data printed on a page is captured through photographic process. In the case of COM, the data stored in a computer in digitised form is transferred to the microfilm in textual or graphic form as it happens in a computer printout.

The advantages of COM are quite analogous to microfilms described already. Moreover, no paper is needed for the production of COM as data stored in computer is used. Whenever, data in a computer is updated a revised COM can be obtained. Generating multiple copies of COM is also quite easy.

Flat Microforms

These microforms are available in the form of microfiche, superfiche and ultrafiche. We shall discuss all of them here.

Microfiche – A microfiche or fiche is a sheet of microfilm containing microimages of text and graphics laid out in a grid pattern of rows and columns as shown in the figure 6.1 below. It looks like a catalogue card. At the top, it displays catalogue entry or title readable with naked eyes.

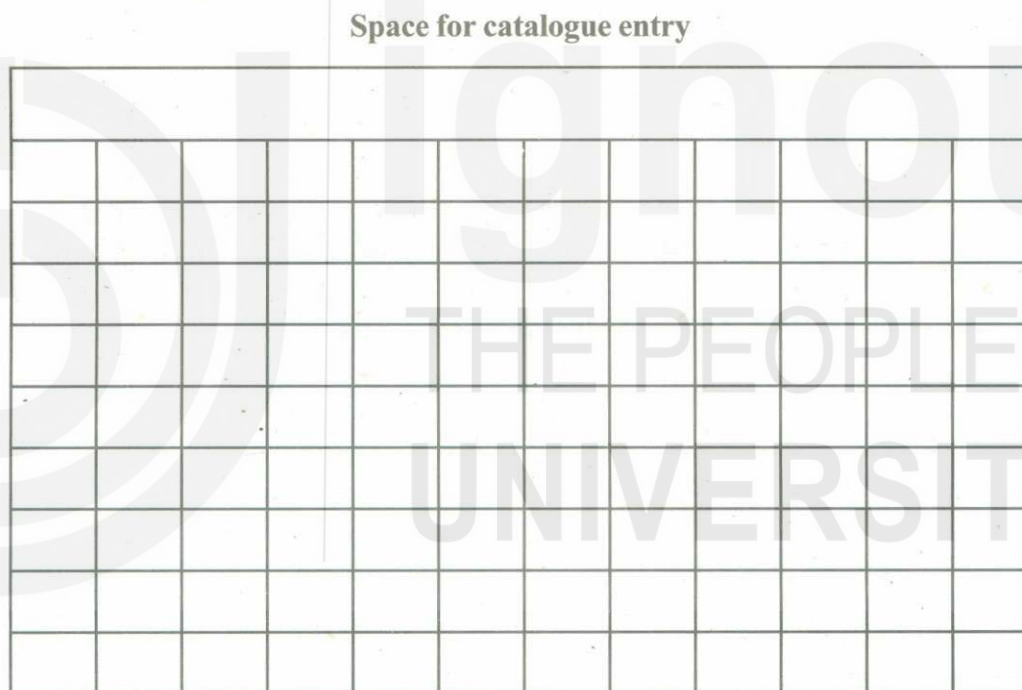


Fig. 6.1: Microfiche Grid Pattern

The size of a microfiche is either 4 × 6 inches (10cm × 15cm) or 3 × 5 inches (7.5 cm × 12.5 cm). The first variety as you can see is slightly bigger than a catalogue card. The second variety is of the same size of a catalogue card. A microfiche holds generally microimages of 200 pages reduced 18 to 72 times. Sometimes microimages of as many as 1,800 pages are found in a fiche [Compton's: Article on Microfilm].

The standard size of a frame is 11.25 × 16mm (single) and 23 × 16mm (double). When a document cannot be recorded in a single microfiche, it is then recorded in subsequent microfiche called trailer microfiche.

Different forms of microfiche are available. It may be a positive copy printed from a strip of microfilm; or an actual frame cut out from a microfilm; or it is made directly using a special camera.

Let us have some idea about reduction. When we take a photocopy of a page, normally there is no reduction. The size of the photocopy is same as that of the original.

Of course, in a photocopier there is provision for magnification or reduction. If needed, we can get a copy of larger size or reduced size. However, in microforms, there is always reduction. A printed page of A4 size measures 297×210 mm. If the microimage of the page is produced with 100-time reduction, it will measure about 3×2 mm.

Superfiche – It is a sheet of microfilm of the size of a microfiche. It holds around 1,000 frames per sheet and images are reduced on average by 75 times [International Encyclopaedia of LIS].

Ultrafiche – It is also a sheet of microfilm that contains microimages of thousands of pages. For example, a 4 x 6 inch ultrafiche can hold microimages up to 3,000 pages. Here, the images are reduced 90 times or more. [Compton's: Article on Microfilm; Harrod's]

For reading the information contained in a fiche, a reader/printer is needed. A reader/printer is a device that can magnify microimages to readable size and print the page, if necessary.

Compared to roll microfilms, fiche is easier to use and carry, and the required page can be located without much difficulty.

A microfiche normally contains the contents of a book or document. Hence, it is more a book in miniaturised form. The bibliographical details are also given at the top, which can be read with naked eyes. Hence, they can be filed and consulted just like catalogue cards. For saving of space, fiche seems to be more efficient than microfilms.

The production cost of fiche is comparatively high compared to microfilm. It is usually three to five times higher. Its ease of handling makes it vulnerable to theft.

When the reduction ratio is very high, copies produced from fiche at times become hazy, sometimes totally illegible.

Micro-opaques are sheets of opaque flat card on which images are recorded either photographically or photolithographically. Micro-opaques of varying sizes and capacities are available. **Microcards** and **microprints** are possibly most popular amongst them. These cards used to be produced by contact printing from 16 mm or 35 mm microfilms. Afterwards step-and-repeat camera started doing the job. It is to be noted that micro-opaques are not capable of extremely high resolution, and they require considerably brighter light for viewing.

6.4.4 Other Non-Print Media

Punched cards, punched tapes, aperture cards were useful data storage media of yesteryears. In a **punched card**, data used to be stored according to a code for processing by an automatic data processing machine. In **punched tape** also, data used to be stored according to a code, for conveying instructions or data to a data processor [COD: p1160]. **Aperture cards** are also punched cards having a window or aperture at one end. The aperture has a clear cellophane envelope wherein a single strip of 35 mm microfilm or several strips of 16 mm microfilm can be inserted. In some cases, the card has an adhesive edge around the aperture, onto which microfilm is mounted. Aperture cards of various sizes are available of which 3.25 x 7.37 inch size is quite common.

6.5 SUMMARY

The topics of the Unit have been discussed under three broad sections, namely, print, non-print, and storage media. The Unit describes the types of print media which include: printed sheets; leaflets; printed cards; pamphlets; books; illustrations; periodicals; newspapers; maps; calendars and diaries; computer printouts. The future of print

media has been portrayed with optimism as it is not facing any immediate threat. While dwelling on non-print media conventional media such as oral, audio, visual and audio-visual media have been discussed first. Multimedia, hypertext, hypermedia, cybermedia and virtual reality products have been covered under electronic media. Internet and World Wide Web have as usual figured under cybermedia. With the advent of information technology storage media has found a new dimension and grown rapidly with the emergence of numerous new products. The storage media has been broadly grouped into optical media, magnetic media and microforms. Under optical media CD-ROM, videodiscs, hybrid videodiscs, CD-Interactive, CD-Video, DVD, WORM, and rewritable optical media have been discussed. Magnetic tapes and discs have figured under magnetic media. As a storage media, the role of microforms cannot be overemphasised. Roll microfilms, computer output microfilm, flat microforms have all been discussed. Punched cards, punched tapes, etc. have been just touched upon as their use over the years has either stopped or greatly dwindled down.

6.6 ANSWERS TO SELF CHECK EXERCISES

- 1) Print media comprise such printed products as sheets, leaflets, cards, pamphlets, books, periodicals, newspapers, maps, calendars and diaries, and computer printouts.
- 2) Pamphlets are definitely useful publications. Many of the books used by kindergarten students, elementary school students, neo-literates are pamphlets. Companies distribute manuals along with their products to the purchasers. Most of these manuals are in fact pamphlets. Purchasers make good use of these manuals while installing, running or maintaining them. Most standards used by engineers and manufacturers are also pamphlets. They use these standards for maintaining uniformity as well as quality.
- 3) According to *Cambridge International Dictionary of English* a blueprint is a photographic copy of an early plan for a building or machine with white lines on a blue background. Huge collections of blueprints are available in the libraries of industrial plants, consultancy firms and so on. These blueprints are required by engineers, technicians and others for assembling or repairing a machine, erection of a plant, construction or extension of a building, and so on.
- 4) Multimedia products are finding profound use in education and training. In classroom lectures operation of a machine, a particular experimentation in a laboratory, a surgery in an operation theatre, etc. are being demonstrated with multimedia which is creating a deep impression in the minds of the pupil. Even handicapped students are reaping the benefit of multimedia. Blind students can hear not only the narration of the text, but also the sound of other associated happenings related to the text. Deaf and dumb students can see with their own eyes what is happening.
- 5) Internet is considered as the most important reference source in the world, because in Internet you will find a wonderful conglomeration of dictionaries, encyclopaedias, directories, yearbooks, bibliographies, primary periodicals, secondary periodicals, life sketches of persons, description of places, and websites of almost any other thing that you can think of. Moreover, information in these sources in most cases are more up-to-date than their printed counterparts and they are also usually updated much quicker than their printed counterparts.

6.7 KEYWORDS

- Cyberspace** : It is an imaginary place where data, messages, pictures, sound, etc. exist in digital form.
- e-book** : A book in electronic form.
- e-newspaper** : A newspaper in electronic form.
- Facsimile** : The exact copy of a piece of writing or graphic material is called a facsimile. Nowadays, the photocopy we get through Xerox machine is a facsimile.
- Frontispiece** : It is an illustration (photograph, map, etc.) that usually faces the title page of a book.
- Laser** : It is an acronym, the expanded form being light amplification by stimulated emission of radiation. It is also 'a device that generates an intense narrow beam of coherent monochromatic light' [COD: p.801].
- Manuscript** : A handwritten or typed text awaiting printing and publication.
- Matter** : Written material prepared for printing.
- Plate** : A plate is a photograph or an illustration that is printed anywhere in the book except facing the title page. Normally, a plate covers the whole page.
- Portrait** : A portrait is a painting, drawing, etc. usually of the face of a person.
- Surf (v)** : Move from website to website on the Internet.
- Text** : Material that is written or printed.
- URL** : Uniform [universal] resource locator, i.e. the address of a web page.

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UNIT 7 NATIONAL INFORMATION SYSTEMS AND PROGRAMMES

Structure

- 7.0 Objectives
- 7.1 Introduction
- 7.2 Information Systems and Programmes in Science and Technology
 - 7.2.1 National Information System for Science and Technology (NISSAT)
 - 7.2.2 National Informatics Centre (NIC)
 - 7.2.3 Biotechnology Information System (BTIS)
 - 7.2.4 Environmental Information System (ENVIS)
 - 7.2.5 INFLIBNET: Information and Library Network
 - 7.2.6 National Institute of Science Communication and Information Resources (NISCAIR)
 - 7.2.7 INDEST Consortium
- 7.3 Information Systems and Programmes in Social Sciences
 - 7.3.1 Indian Council of Social Science Research (ICSSR)
 - 7.3.2 UGC-Inter University Centre for International Studies
 - 7.3.3 UGC-Inter University Centre for Humanities and Social Sciences (IUCHSS)
- 7.4 Information Systems and Programmes in Humanities
 - 7.4.1 Indira Gandhi National Centre for Arts (IGNCA)
 - 7.4.2 National Mission for Manuscripts (NMM)
 - 7.4.3 Indian Council for Cultural Relations (ICCR)
 - 7.4.4 Indian Council of Historical Research (ICHR)
 - 7.4.5 Indian Council of Philosophical Research (ICPR)
 - 7.4.6 National Museum, New Delhi
 - 7.4.7 National Archives of India (NAI)
 - 7.4.8 Central Institute of English and Foreign Languages (CIEFL)
 - 7.4.9 Central Institute of Indian Languages (CIIL)
- 7.5 Summary
- 7.6 Answers to Self Check Exercises
- 7.7 Keywords
- 7.8 References and Further Reading

7.0 OBJECTIVES

After reading this Unit, you will be able to:

- get an overview of national information systems and programmes in Science and Technology, Social Sciences and Humanities, currently in progress in the country;
- learn about the objectives, structure, functions, products, and achievements of major information systems and programmes that are operating in the country; and
- know the role played by these systems and programmes in bringing required information to user's desktop computer.

7.1 INTRODUCTION

Information is a vital resource for cultural, socio-economic and scientific and technological development of a nation. Information plays a key role in education, training, research and knowledge development. Recognising the importance of information in education and research, Government of India has been making consistent efforts in setting up libraries and documentation centres along with the growth of academic and research institutions in the country since independence. In academic sector, efforts have been made to set up libraries at school, college and university level. Government has been strengthening Public Library System to cater to the information requirements of general public. In R&D sector, libraries and information centres have come up in the field of science and technology, social sciences and humanities. You have already been acquainted with activities of some of the information centres (in Unit 2 of this Block, Unit 9 of Block 2 also deals with national information organisations), that are operating at national level such as National Institute of Science Communication and Information Resources (NISCAIR, (formerly INSDOC)), Defence Scientific Documentation Centre (DESIDOC), National Social Science Documentation Centre (NASSDOC), Small Enterprises National Documentation Centre (SENDOC), etc.

Advances in computer and communication technologies paved the way for computerisation of information resources and networking of different organisations for sharing and exchange of information. To reap the benefits of emerging technologies, India recognised the need for strengthening the information base in the country by integrating different information agencies into a well-knit information system. Consequently, Government of India took several initiatives, particularly from 1975 onwards, by launching new programmes and setting up new institutions/departments to fulfil the above mentioned need. For example, setting up of NIC (National Informatics Centre) in 1975 and implementation of NISSAT (National Information System for Science and Technology) programme in 1977. Among other initiatives are, promotion and establishment of library networks (INFLIBNET, CALIBNET, DELNET, etc.); setting up of specialised information systems such as Biotechnology Information System (BTIS) and Environmental Information System (ENVIS), etc. It is expected that, Information Technology Act 2000 and more recently Right to Information Act 2005 will provide further impetus to Information Communication Technologies (ICTs) related activities in the country.

This Unit deals with some of the major National Information Systems and Programmes launched by Government of India in the country in the fields of S&T, Social Sciences and Humanities. Before proceeding to gain knowledge about these various information systems and programmes, let us try to understand the meaning of the terms “Information Systems” and “Information Programmes” and the difference between them. Information Programmes are launched by an authority like planners and policymakers in an organisation or by a government body. The Information Programmes specify the objectives to be achieved, infrastructure required and sources of funds for setting up an Information System. Whereas Information Systems are type of communication systems, which select, organise, store and disseminate public knowledge to the users as per the objectives laid down by the Information Programmes. An Information System is composed of all the components that collect, manipulate and disseminate data or information. It usually includes hardware, software, people, communication systems such as telephone lines and data itself. Activities involved include inputting of data, processing of data into information, storage of data and information and production of services and products.

7.2 INFORMATION SYSTEMS AND PROGRAMMES IN SCIENCE AND TECHNOLOGY

If we consider the amount of money spent on education, research and development activities in various disciplines or subject fields in the country, we can easily find that major portion of such expenditure goes every year to science and technology, rather than the subject fields of arts, social sciences, humanities, etc. It has been observed that major portion of this investment in science and technology is spent in building up and maintaining good libraries and information centres. India, therefore, has well developed library and information systems in the country in most of the disciplines covered by science and technology, like agricultural sciences, medical sciences, atomic energy, space sciences, engineering and technology, etc. To cover all the libraries and information centres in S&T operating in the country is beyond the scope of this Unit. In this Unit some of the information systems and programmes that are operating at national level have been covered.

7.2.1 National Information System for Science and Technology (NISSAT)

NISSAT programme was launched by Department of Scientific and Industrial Research (DSIR), with the broad objective of interlinking and coordinating a large number of information sources, systems and services into an effective network under an overall coordinating agency. The NISSAT programme was formally implemented in September 1977 with the following objectives:

- Development of national information services;
- Promotion of existing information systems and services;
- Introduction of modern information handling tools and techniques;
- Promotion of international cooperation in information;
- Development of indigenous products and services;
- Organisation of skill development programmes; and
- Promotion of R&D in information science and technology.

The National Focal Point (NFP) of NISSAT was located in DSIR, New Delhi. Thrust areas of NISSAT were continuously modified, keeping in tune with the global information scenario during its operations from 1977-2002. During its 25 years of operation, NISSAT programme achieved the following:

- 1) **Setting up of Information Centres:** NISSAT supported 13 national information and data centres in different areas (discipline, product or mission), which provided bibliographic as well as factual information services, to the users in academic, R&D sector and industry. These information centres (previously called Sectoral Information Centres) were built around existing information resources and facilities. List of NISSAT supported National Information Centres is given in Table 7.1.
- 2) **Setting up of Value Added Patent Information Systems (VAPIS):** To strengthen patents information activities in India, NISSAT established VAPIS in two areas viz. chemistry and chemical technology (at National Chemical Laboratory, Pune) and in engineering (at Central Manufacturing Technology Institute, Bangalore). Value addition to patent information included, preparation of trend reports, forecasting, identifying technological alternatives, research areas and business opportunities.
- 3) **National Access Centres to International Data Services (NACIDS):** During 1980s and mid 1990s, NISSAT established several NACIDS, to

provide online access to remotely held international databases through online search service providers such as DIALOG, STN, SDC, etc. These centres were established in R&D institutions in metro cities like Delhi, Mumbai, Bangalore, Kolkata, Pune, etc.

- 4) **CD-ROM National Collection Centre:** NISSAT supported national collection of CD-ROM databases on India and CD-ROM products produced in India. The centre was set up at Foundation for Innovations and Technology Transfer in Indian Institute of Technology, Delhi in 1996. The Centre rendered services from CD-ROM collection. This centre has stopped functioning since 2003.

Table 7.1: NISSAT Supported National Information Centres

S.No.	Information Centre	Host Institution
1	National Information Centre for Leather and Allied Industries (NICLAI)	Central Leather Institute, Chennai
2	National Information Centre for Food Sciences (NICFOS)	Central Food Technological Research Institute, Mysore
3	National Information Centre for Machine Tools and Production Engineering (NICMAP)	Central Machine Tools Institute, Bangalore
4	National Information Centre for Drugs and Pharmaceuticals (NICDAP)	Central Drug Research Institute, Lucknow
5.	National Information Centre for Textiles and Allied Subjects (NICTAS)	Ahmedabad Textile Industry's Research Association (ATIRA)
6.	National Information Centre for Chemistry and Chemical Technology (NICHEM)	National Chemical Laboratory, Pune
7.	National Information Centre for Management (NICMAN)	Indian Institute of Management, Ahmedabad
8.	National Information Centre for Marine and Aquatic Sciences (NICMAS)	National Institute of Oceanography, Goa
9.	National Information Centre for Advanced Ceramics (NICAC)	Central Glass and Ceramic Research Institute, Calcutta
10.	National Information Centre for Bibliometrics (NCB)	National Institute of Science Communication and Information Resources (NISCSIR), Delhi
11	National Information Centre for Crystallography (NICRYS)	University of Madras, Chennai
12.	National Information Centre for CD-Rom (NICDROM)	National Aerospace Laboratory, Bangalore
13.	CD-Rom National Collection Centre (NCCC)	Indian Institute of Technology, New Delhi

5) **Computers and Information Communication Technologies (ICTs) Based Activities:** Under these activities NISSAT supported development of indigenous databases in S&T areas; databases of union catalogues for resource sharing; establishment of library networks like DELNET, CALIBNET, BONET, PUNENET, ADINET, MYLIBNET in Delhi, Kolkata, Mumbai, Pune, Ahmedabad, Mysore respectively; establishment of websites/servers such as Indian Ocean Server at NIO, Goa, Indian Consultancy website at CDC, New Delhi, 'Vigyan', an Indian S&T website, and a discussion forum called 'LISFORUM' with NSCI at Indian Institute of Science, Bangalore.

6) **Promotion of Use of Standards:** NISSAT took active interest in the diffusion of standards for library and information activities. Its campaign supported with training, helped CCF (Common Communication Format) to earn the status of a de facto national standard for exchange of information, creation of databases, etc.

7) **Information Technology Applications:** NISSAT acquired two software packages namely CDS/ISIS (for bibliographical processing and retrieval) and IDAMS (for statistical data processing), from UNESCO for distribution to Indian institutions. At present, there are about 1940 CDS/ISIS installations and 100 IDAMS installations in India. NISSAT regularly monitored the implementation of these software packages through periodic surveys and user group meetings.

NISSAT in collaboration with DESIDOC, developed a software package SANJAY, for automation of house-keeping and service functions of libraries.

8) **Manpower Development in Information Science and Technology:** To upgrade the skill of library and information professionals, NISSAT encouraged and supported several training programmes in library and information fields such as application of computers in library and information centres; use of personal computers and CDS/ISIS; TQM in library services; technical communication, scientometrics; CD-ROM/online searching, etc.

9) **International Activities:** NISSAT Advisory Committee functioned as National Advisory Committee of UNISIST and the National Advisory Group for ASTINFO/ UNESCO (Regional Network for the Exchange of Information and Experience in Asia and the Pacific). UNESCO/ASTINFO often utilised NISSAT services for implementation of various programmes, such as preparation of teaching aids for CDS/ISIS, CCF and MIS for libraries, course material for marketing of information products and services, etc. NISSAT contributed a section on South Asia in the World Information Report 1997. NISSAT also conducted a cross country analysis of information scenario in Asia and Pacific Countries for the study on 'Information Infrastructure for Planning Information Systems and Networks in Asia and Pacific Countries' undertaken by UNESCO and the University of Library and Information Science, Tsukuba.

10) **R&D in Information Science and Technology:** NISSAT promoted and supported R&D activities and survey studies in information science and technology particularly in areas scientometric and infometric studies, such as National Mapping of Science, Indian Science through Bibliometric Indicators, Industrial Innovation Indicators, etc.

NISSAT published a quarterly newsletter, *NISSAT Newsletter* (the title changed to *Information Today & Tomorrow*), to provide information on information systems development in India and abroad, current events, new tools and techniques, interesting Internet sites, new database products and services, etc. It also published review articles on selected subjects.

NISSAT Programme closed its operations in March, 2002. Most of the National Information Centres, earlier supported by NISSAT in different R&D institutions, are still functioning with the support from their respective parent institution and providing the services.

Recognising the importance of digital information resources, DSIR launched a new programme namely, "Technology Information Facilitation Programme" (TIFP), as one of the components of its 'Technology Promotion, Development and Utilisation' (TPDU) Programme. Broad objective of TIF Programme is to generate endogenous capacities for development and utilisation of digital information resources and provide input to S&T research and development. The TIF Programme intends to strengthen the resource base of available information and provide a mechanism for optimal utilisation of the resources in the country. TIF would also facilitate collaborative research among industries and institutions.

7.2.2 National Informatics Centre (NIC)

NIC was set up in 1975 by Government of India, for developing computerised Management Information Systems (MIS) for Ministries and Departments of Central and State governments to facilitate planning and decision making process in the country. The Centre commissioned nation-wide online network system called NICNET in 1977 to enable efficient exchange of information between the Central and State Government Departments and between the States and their Districts. NICNET is one of the largest VSAT based network connecting the national capital, the state capitals and district headquarters to one another.

Presently NIC, under the Department of Information Technology, Ministry of Communication and Information Technology, New Delhi, is recognised as a premier information technology organisation providing network backbone and e-governance support to the Government of India at all levels. NIC has its Head Quarters(HQ) at New Delhi, 28 State Units at State Capitals, 7 Union Territories Units at UT Headquarters and 571 District Centres in almost all the Districts of India. In addition to these units, NIC has two other units namely NIC Training Unit at Mussoorie and Software Development Unit at Pune. At the NIC HQs, a large number of application divisions exist which provide total information support to the Ministries and Departments of the Central Government. NIC computer cells are located in all the Ministry Bhawans and the Central Government Apex Offices including Prime Minister's Office, Rashtrapati Bhawan and the Parliament House. In addition, NIC has various Resource Divisions at the HQs which specialise into different areas of Information Technology (IT) and facilitate Application Division as well as other NIC Centres in providing ICT services to the Government.

At the state level NIC's STATE/UT units provide informatics support to their respective State Government. At the district level NIC's District Centres provide effective informatics support to the Development, Revenue and Judiciary administration of the respective district.

NIC has developed a large number of information technology projects/products for various central, state government ministries, departments and organisations. Many of these projects are continuing projects being carried out by various divisions of NIC at New Delhi HQs., State and District Centres throughout the country. NIC offers following IT services: i) Computer Aided Design (CAD); ii) Computer Aided Paperless Examination System (CAPES); iii) Computer Telephony Interface (CTI); iv) Consultancy; v) E-Commerce; vi) Geographic Information System; vii) Informatics; viii) Internet Services; ix) Mathematical Modeling and Simulation; x) Networking; xi) Office Automation; xii) Software Design and Development; xiii) Training; xiv) Video Conferencing; and xv) Website Development and Hosting.

Consultancy: NIC provides extensive consultancy services in areas of information technology. The services covered are, right from identification of IT needs of an institution to setting up IT infrastructure on turnkey project bases. In addition it provides extensive training as well as maintenance support.

E-Commerce: NIC has set up a state-of-the-art E-Commerce server on NICNET. This server is based on Trading Post and incorporates Internet, WWW, EDI, mailing systems and directory services to provide integrated E-Commerce solutions to trading partners and subscribers of the service.

Informatics: Three types of information services viz. Biomedical Information Service, Patent Information Service and Rural Information Service, are provided.

Biomedical Information Service: NIC and ICMR (Indian Council of Medical Research) have jointly set up Indian Medlars Centre (IMC) to cater to the information needs of medical community of India. IMC has designed and developed 3 databases viz., IndMED, medIND and Union Catalogue of Biomedical Periodicals, to provide quick and easy access to Indian biomedical literature. IndMED database indexes 75 Indian biomedical periodicals from 1985 onwards. medIND provides full-text of 37 journals indexed in IndMED. Union Catalogue of Biomedical Periodicals is a database of serial holdings of 180 medical libraries in India. (<http://www.indmed.nic.in>).

Patent Information Service: NIC provides online and offline patents information services. Services offered are bibliographic search, abstracts and full-text patent document services. Databases used for online searching are EPIDOS-INPADOC databases from European Patents Office. EPIDOS-INPADOC databases are the largest patents databases in the World covering bibliography of patents applied and granted in 65 countries and patenting organisations since 1968, consisting of over 33 million references. The databases on CD-ROM are USPAT CD-ROM, CASSIS-BIB, CASSIS-ASSIGN, CASSIS CLASS and CASSIS-ASSIST. USPAT CD-ROM, published by Derwent Inc., USA, contains the bibliographic textual data of U.S. patents from 1975-1994. All CASSIS databases on CD-ROM are from United States Patents and Trademark office. (<http://www.patinfo.nic.in>).

Rural Information Service: In 1986, NIC introduced IT in villages to facilitate planning, monitoring and exchange of information between various agencies in Rural Development Administration. (<http://www.ruralinformatics.nic.in>).

Internet Services: Internet services are provided through NICNET, a satellite based computer communication network. Range of Internet services offered are: E-Mail; WWW Browsing; File Transfer Facility; Directory Services; and Gateway to SMTP/UUCP.

Networking: The network services offered are setting up of LAN, Virtual Private Network or setting up of Intranet at the user premises. Other specialised services offered on the network are Video-Conferencing, Electronic Data Interchange, etc.

Training: Training Centres of NIC are located at the HQs in New Delhi, at the Regional Centres and at all the State Centres. Regular training programmes to upgrade the skills of in-house staff are held throughout the year. In addition, customised training programmes for specialised groups such as civil servants, international teams visiting India, armed forces personnel, etc. are organised.

Video-Conferencing: NIC is currently providing video-conferencing services from 206 cities in India through NICNET. NIC is also providing video-conferencing services from many central and state government ministries using ISDN lines.

Temporary video-conferencing service for conferences, exhibitions, seminars and other important events are provided by NIC using portable VSAT.

Website Development and Hosting: Web services provided by NIC are Website Design and Development; Web Page Hosting and Maintenance; Review of Websites; and Enhancement of Existing Website. NIC maintains state-of-the-art web server at its HQs which currently hosts around 2000 websites.

NIC has also set up Storage Area Network (SAN) at its data center in Delhi. This high capacity SAN is used as storage infrastructure for websites, portals, citizen services, databases, e-mail services and other international services.

Self Check Exercise

1) When and why was NIC set up? Enumerate the services provided by NIC.

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

ii) Check your answer with the answers given at the end of the Unit.

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7.2.3 Biotechnology Information System (BTIS)

To promote R&D efforts in different areas of biotechnology viz. agricultural, animal, environmental, medical and plant biotechnology in India, Ministry of Science and Technology, set up a Department of Biotechnology (DBT) in 1986 at New Delhi. The department through its several programmes, accelerated the pace of development of biotechnology in the country. Since its establishment, DBT has made significant contributions in the growth and application of biotechnology in the broad areas of agriculture, health care, animal sciences, environment and industry through its various R&D projects and programmes. The research in biotechnology generates huge amount of biological data and analysis of such large data requires computer intensive techniques to solve complex biological problems such as genome sequencing, protein modeling and protein analysis, structural genomics, etc. This requirement led to the development of new multidisciplinary area called Bioinformatics. Recognising the importance of Bioinformatics in biotechnology research, India was the first country in the world to establish a Biotechnology Information System (BITS) network to create an infrastructure to harness, biotechnology through the application of Bioinformatics.

Established in 1987 by DBT, Biotechnology Information System (BTIS) – A National Bioinformatics Network is a distributed network system, to disseminate latest information resources to the research scientists and develop various bioinformatics tools for biotechnology and molecular biology applications.

National Bioinformatics Programme of DBT has following thrust areas:

- To undertake advanced research in frontier areas of bioinformatics and computational biology;
- To establish human resources in bioinformatics;
- To establish effective academia-industry interface;
- To pursue and promote international co-operation with leading institutions, organisations and countries in the world; and
- To create suitable platform for technology development, transfer and commercialisation.

At present, BTIS is one of the major scientific networks in the world dedicated to provide state-of-the-art infrastructure, education, manpower and tools in bioinformatics. The network consists of 10 Distributed Information Centres (DICs), 50 Distributed Information Sub-Centres (DISCs), and one Apex Biotechnology Information Centre (BTIC). Six interactive computer graphic facilities, to provide interactive molecular graphic support to researchers and five long-term educational programmes in bioinformatics are additional components of BTIS.

Apex Biotechnology Information Centre (BTIC) located at DBT, New Delhi performs the following functions:

- It coordinates the activities of BTISnet and provides nation-wide communication network between the Bioinformatics Centres.
- It also coordinates linkages and cooperation with external sources in bioinformatics including documentation and information centres located abroad.
- It initiates major research projects in bioinformatics and encourages bilateral and international collaboration in bioinformatics.
- It promotes standards for databases, data exchange and nomenclature for molecular biology data to facilitate sharing of such data amongst laboratories on a national and international scale.

A *Patent Facilitating Cell* is part of the Apex Centre which undertakes searching of patent information and patent filing.

The Apex Centre has developed a directory on the "Research Profiles of Biotechnology Activities in India". The directory lists more than 200 institutions and is available on the Internet (<http://www.bioinfo.ernet.in>). The Apex Centre maintains a database of R&D projects sponsored by DBT.

BTIS has 10 specialised Distributed Information Centres (DIC) providing discipline oriented information to various institutions and individuals. These centres act as repository of information on their specialised discipline; develop specialised databases using bioinformatics tools; carry out R&D activities in bioinformatics to develop new software tools for application in biotechnology and conduct training programmes in bioinformatics. Ten Distributed Information Centres are as follows:

Table 7.2: Ten Distributed Information Centres

Subject Covered	Distributed Information Centre
Genetic Engineering	Indian Institute of Science, Bangalore Bose Institute, Calcutta Madurai Kamraj University, Madurai Jawaharlal Nehru University, New Delhi
Virology and Animal Culture	Poona University, Pune
Plant Tissue Culture and Molecular Biology	IARI, New Delhi
Immunology	Indian Institute of Immunology, New Delhi
Nucleic Acid and Protein Sequencing Oncogenesis, Reproduction Physiology	CCMB, Hyderabad
Protein Modeling and Protein Engineering	Inst. of Microbial Technology, Chandigarh
Neuro Informatics	National Brain Research Centre, Gurgaon

There are 45 Distributed Information Sub-Centres (DISC) established at various universities and R&D institutions in the country. These Centres are engaged in research in specific areas of biotechnology and provide access mechanism for the information to be available at the Universities, R&D and Manufacturing Institutions.

DBT has established a high speed and high bandwidth network in the form of Virtual Public Network (VPN) named as BIOGRID INDIA. The network has been established through HCL Info system and is being coordinated by National Brain Research Centre. Eleven DICs, which are actively engaged in bioinformatics activities such as human resource development and R&D in bioinformatics, apart from disseminating biotechnology information to the researchers in the country, have already been networked in the first phase. In the second and third phase, remaining BTIS centres and DBT institutions will be networked under the faster track.

The BIOGRID allows exchange of databases and softwares which have been created or acquired by the DICs. The mirror sites of internationally recognised genomic databases such as Genome Databanks, Protein Data Bank, Plant Genome Databanks, Databases of European Bioinformatics Institute, and public domain bioinformatics software packages are also available on the BIOGRID.

Major activities of BTISnet are as follows:

- i) **Development of Databases:** BTIS centres are responsible for developing databases in the identified thrust areas. More than 100 subject specific databases have been developed by the centres and are available on the BTISnet. Some of these databases have received international recognition. For instance, a major database on animal viruses, developed by the centre at University of Pune has been recognised by the Microbial Strain Data Network, CODATA and other international bodies.
- ii) **R&D in Bioinformatics:** BTIS centres carry out research in gene analysis, protein structure prediction and engineering, molecular modeling, macromolecular assembly, evolutionary biology, development tools for peptide vaccine, metabolic pathways engineering, new tools for data mining, etc.
- iii) **Training in Bioinformatics:** To meet the requirement of trained bioinformatics professionals in the country, BTISnet has introduced several training programmes in bioinformatics such as: i) one year Advanced Post-graduate Diploma Course; ii) M.Sc. and M.Tech. Courses; iii) Ph.D. Programme and iv) Short-term Training Courses. Five universities viz. Madurai Kamaraj Univ., Pune Univ., Calcutta Univ., Jawaharlal Nehru Univ. and Pondicherry Univ. are conducting Advanced Post-graduate Diploma Course in bioinformatics. M.Sc. and M.Tech. Courses are conducted by Pune Univ. and SASTRA, Thanjavur. IIT, Allahabad is also conducting M.Tech course. About 50-60 Short-Term training courses are held every year by BITS's DICs and DISCs to train researchers and scholars in bioinformatics.
- iv) **Dissemination of Information:** BTIS resources are used by over 12,000 scientists in the country. Mirror sites established by BTISnet are also being accessed by scientists of other countries over the Internet. The services offered are analysis of biological data, bibliographic references to published literature on biotechnology (including patent data), software development for computationally intensive problems in molecular biology such as molecular modeling, genome analysis, protein engineering for rational drug design, etc. A printed directory of resources available at each centre is produced every year.

- v) **International Co-operation:** Under UNDP/FAO/UNIDO sponsored scheme, a Referral Centre has been set up as a part of Apex Bioinformatics Centre in DBT to maintain regional information on various aspects of the FARM Programme, viz. Farming Systems, Watershed Management, Agro Forestry, Integrated Pest Management, Safe Pesticides, Biotechnology and Biodiversity and People's Participation. Network connectivity has been established at national focal points in China, Indonesia, Philippines, Thailand and Vietnam. Another international cooperation with Weizmann Institute of Science (WIS), Israel has been initiated as a part of international cooperation in Bioinformatics sponsored by UNESCO. Under this programme, India will host a Regional Node in bioinformatics along with other regional nodes proposed in China, Poland and Turkey. The Central Node has been set up at WIS. India's Regional Node in bioinformatics will extend the regional cooperation to the SAARC countries also.

7.2.4 Environmental Information System (ENVIS)

Recognising the importance of environmental information for sustainable development and formulation of environmental management policies, Government of India set up ENVIS in 1982 under the Ministry of Environment and Forests (MOEF) erstwhile Department of Environment, as a decentralised system with a network of distributed subject specific centres to collect, collate, store, retrieve and disseminate relevant and timely environmental information to help in decision making in environmental planning and management. To begin with, ENVIS started with ten ENVIS centres located at different places in the country with Focal Point in the headquarters of Ministry of Environment and Forests, New Delhi, to coordinate the activities of ENVIS network. ENVIS centres were located mostly in R&D institutions dealing with different subject areas of environment such as pollution control, toxic chemicals, environmentally sound and appropriate technology, media and environment, coastal and offshore ecology, renewable energy and environment, eco toxicology, biodegradation of wastes, environment impact assessment, environmental management and occupational health. ENVIS, since its inception has been providing timely and relevant environmental information to all concerned.

In expanding the ENVIS network, to cover a wider range of disciplines as per the requirement of environmental information, the cooperation and active participation of State governments/Union Territories was felt necessary. Keeping this in view, the network was expanded gradually with the involvement of more environmental related areas and state government departments to make it more comprehensive.

ENVIS network, at present consists of 72 subject specific and state related centres, called ENVIS Centres. ENVIS Focal Point is located at the Ministry of Environment and Forests. Thirty Centres are set up in the state departments dealing with environment, 26 Centres are in R&D institutions/organisations covering various aspects of environment and 16 are NGOs (Non Government Organisations) who hold expertise in specific subject area of environment. Long-term and short-term objectives of ENVIS Programme are as follows:

Long-term objectives:

- To build up a repository and dissemination centre in Environmental Science and Engineering;
- To gear up the modern technologies of acquisition, processing, storage, retrieval and dissemination of information of environmental nature; and
- To support and promote research, development and innovation in environmental information technology.

Short-term objectives:

- To provide national environmental information service relevant to present needs and capable of development to meet the future needs of the users, originators, processors and disseminators of information;
- To build up storage, retrieval and dissemination capabilities with the ultimate objective of dissemination of information speedily to the users;
- To promote national and international co-operation and liaison for exchange of environment related information;
- To promote, support and assist education and personnel training programmes designed to enhance environmental information processing and utilisation capabilities; and
- To promote exchange of information amongst developing countries.

ENVIS Focal Point, under World Bank assisted Environment Management Capacity Building Technical Assistance Project (EMCBTAP), enlarged the ENVIS network and launched portal of ENVIS (<http://www.envis.nic.in>) connecting various ENVIS centres. The portal acts as a catalyst for inter-centre interaction and for different subject related environmental information. The websites of all the ENVIS network partners can be accessed through this portal. The portal provides information on major events, activities and current updates of entire network. The portal also links to other ENVIS related sites like DELNET, BTISNET, etc. ENVIS functions as a National Focal Point of the Global Information Network, INFOTERRA of UNEP, and provides the necessary inputs from the Ministry as and when required.

The ENVIS Focal Point at MOEF HQs performs following functions:

- Co-ordination of ENVIS network;
- Identification of ENVIS Centres in specialised areas, their location in selected institutes and their linkages with the Focal Point;
- Framing guidelines and designing procedures for ENVIS Centres;
- Monitoring and Reviewing of ENVIS;
- Organising training, seminars and workshops;
- Regularly updating Ministry's website (<http://www.envfor.nic.in>) and ENVIS portal;
- Responding through users queries directly or through ENVIS Centres;
- Liaison with national as well as international information systems;
- Publishing quarterly abstracting periodical '*Paryavaran Abstracts*'. The publication provides information on environmental research in India. About 350 national and international journals are referred to for compilation of abstracts. The abstract are arranged under major categories like air pollution, water pollution, noise pollution, environmental management, ecology, health and toxicology, forestry, wildlife, etc.;
- Publishing a quarterly newsletter '*ENVIRONews*' providing information on current activities, programmes, policies, legislations, new sanctioned projects and other important decisions taken by the Ministry.

ENVIS Centres, set up in state departments cater to the status of environment of the state such as status of air, water and land pollution, biodiversity, etc.

ENVIS Centres set up in various R&D organisations deal with wide range of subjects such as chemical waste and toxicology; flora, fauna and conservation; ecology and ecosystems; environment and energy management; environmental education and sustainable development; environmental law and trade, etc.

ENVIS Centres of NGOs provide information in the areas of Media, environment and sustainable development; eco-labeling and promotion of eco-friendly products; conservation of medicinal plants; conservation of ecological heritage and sacred sites in India; wetland ecosystem; women and environment; sewage treatment systems and technology; urban municipal waste management; environment audit and accounting, etc.

ENVIS Centres perform the following functions:

- Build extensive collection in their subject area for collation, storage, retrieval and dissemination of information to all concerned;
- Co-ordinate with the Focal Point for supplying relevant, adequate and timely information;
- Develop databanks/databases relating to the subject area;
- Respond to users queries;
- Bring out newsletters/publications in their subject area for wider dissemination; and
- Develop their websites to enable the users to access the information electronically.

7.2.5 INFLIBNET: Information and Library Network

INFLIBNET Centre is an autonomous Inter University Centre (IUC) of University Grant Commission (UGC) of India with its headquarters in Gujarat university campus, Ahmedabad. INFLIBNET is a major National Programme initiated by UGC in 1991. Initially started as a project under IUCAA (Inter University Centre for Astronomy and Astrophysics), INFLIBNET became an independent Inter University Centre in 1996. INFLIBNET Centre is involved in modernising university libraries, connecting them as well as information centres, through nation-wide high-speed data network for optimum utilisation of information. It serves as an information centre for transfer and access of information, supporting scholarship, learning and academic pursuits in universities, colleges and R&D institutions in the country. Primary objectives of INFLIBNET as laid down in Memorandum of Association are as follows:

- To promote and establish communication facilities to improve capabilities in information transfer and access, that provide support to scholarship, learning, research and academic pursuits through co-operation and involvement of agencies concerned; and
- To establish INFLIBNET, Information and Library Network for linking libraries and information centres in universities, deemed to be universities, colleges, UGC information centres, institutes of national importance, R&D institutions etc. avoiding duplication of efforts.

To fulfil the above objectives INFLIBNET Centre carries out well defined activities and provide nation wide services. The Centre performs following activities: i) Software Development; ii) Networking; iii) Database Development; iv) Library Automation; and v) Human Resource Development.

Software Development: One of the major activities of the Centre is to develop soft wares for library automation and other supporting tools for library automation. The Centre has developed Windows based library management software named 'SOUL'. The software comprises 6 modules viz. Acquisition, Catalogue, Circulation, OPAC, Serial Control and Administration. The software is based on client/server architecture and uses MS-SQL server as back end tool. It works on Windows and Windows NT environment. Some utility softwares have also been developed by the Centre to carry out data transfer and Union database activities, for example 'UCMS' (Union Catalogue Management System), a Windows based software developed for duplicate check, error correction and uploading of data.

Networking: UGC is modernising universities campuses with the state-of-the art campus wide network and setting up its own nation wide communication network named UGC-INFONET. INFLIBNET Centre is the nodal agency for co-ordination and management of UGC-INFONET, and facilitates linkages between ERNET and universities. Presently UGC-INFONET is linking more than 172 universities across the country.

Database Development: Development, management, and updating of union databases of books, serials, theses, etc. have been some of the major activities of the Centre. The Centre also assists participating libraries in database development, develop utility tools for retrospective conversion of union catalogues, develop software tools for multilingual database of union catalogue, etc. Following 8 databases have been developed and are continuously growing: i) *Books*: Union catalogue of books of participating libraries. ii) *Serials Holdings*: Holding information of serials of more than 200 university and institute's libraries in the country; iii) *Current Serials*: Currently subscribed journals by university libraries; iv) *Secondary Serials/CD-ROM*: Holding information of secondary serials in print as well as on CD-ROM in various university libraries; v) *Theses Database*: Doctoral theses submitted to various Indian universities till date; vi) *DDC Serials*: Database of currently subscribed serials by 6 universities identified as Document Delivery Centres; vii) *Research Projects Database*: Provides information about on-going research projects in Indian universities; vii) *Experts Database*: A database of profiles of scientists/researchers and faculty members working in leading R&D and other institutions involved in teaching and research. The database was developed under the project funded by NISSAT. viii) *Online Profile of Academic Community of Indian Universities*: Database provides the academic and research profile of senior level faculty members working in Indian universities, colleges and R&D organisation in the country.

Library Automation: Since library automation is a pre-requisite for networking and resource sharing, INFLIBNET Centre through UGC has been providing required support to university libraries in a phased manner. The universities are given initial grant of Rs. 6.5 lakhs each by UGC, to develop infrastructure for library automation. After installation of computer systems, further financial support is provided for 5 years to take care of the recurring expenditure. These libraries on receipt of initial grant, sign a Memorandum of Understanding with INFLIBNET. The library automation package 'SOUL' is installed and required training is provided. 'SOUL' has been well received by the university libraries. 'SOUL' has been installed at 600+ libraries including over 160 university libraries.

Human Resource Development (HRD): To enhance the skills of university library staff for implementation of INFLIBNET Programme, Centre conducts several training programmes and workshops on 'the application of computers in libraries and information services'. Workshops are conducted for senior level staff like university librarians and deputy librarians. One month training programme is conducted for operational staff of

the library providing exhaustive training on the application of computers to library and information activities. On-site training programmes are also conducted, where staff of INFLIBNET Centre visit the library, and conduct one-week training course on CDS/ISIS and Integrated Library Management Software (ILMS) or provide 'SOUL' training.

INFLIBNET Centre provides following services: i) Bibliographic Information Service; ii) Information Service from CD-ROM Collection; and iii) Document Delivery Service.

Bibliographic Information Service: INFLIBNET provides online access to all union databases developed by the Centre, over the Internet. Librarians and scholars can access these databases, there is no restriction.

Bibliographic Service from CD-ROM Collection: INFLIBNET Centre is subscribing to over 12 indexing/abstracting periodicals on CD-ROM such as LISA, Dissertation Abstracts International, Current Contents, ERIC, Sociological Abstracts, etc. for providing bibliography service to faculty members and researchers in the universities and colleges. On receipt of request, search output is provided via mail, in a floppy or through e-mail.

Document Delivery Service (DDS): The service is provided through six university libraries identified as Document Delivery Centres, at no profit no loss basis. These centres are located at Banaras Hindu University, Varanasi; University of Hyderabad, Hyderabad; Indian Institute of Science, Bangalore; Jawaharlal Nehru University, New Delhi; Punjab University, Chandigarh; and Tata Institute of Social Sciences, Mumbai. The libraries of these universities have requisite infrastructure and strong collection base to provide DDS in their respective region. The role of INFLIBNET Centre is to promote this service to the academic and research community in the country.

UGC-INFONET E-journals Consortium: Under the consortium 100 Indian universities are able to access 4000+ full text scholarly electronic journals in different disciplines, from 25 publishers, across the globe. The consortium provides current as well as archival access to these journals. The programme is fully funded by UGC and monitored by INFLIBNET Centre.

INFLIBNET Centre in collaboration with different universities organises a national convention, 'CALIBER' (Convention on Automation of Libraries in Education and Research) every year. The convention provides a forum for librarian and information professionals involved in library automation and networking, to come together and interact on subject of mutual interest.

7.2.6 National Institute of Science Communication and Information Resources (NISCAIR)

NISCAIR came into existence on October 1, 2002, following the merger of two CSIR institutions viz. Indian National Scientific Documentation Centre (INSDOC) and National Institute of Science Communication (NISCOM). Activities and services of NISCAIR have been dealt in detail in UNIT 9 of this Block. In this Unit you will be acquainted with some of the important current National Level Projects of NISCAIR viz. TKDL and NSDL.

Traditional Knowledge Digital Library (TKDL): India has rich collection of genetic resources and traditional knowledge, which is either undocumented or is available in ancient classical and other literature, often inaccessible to information managers and patent examiners due to language barrier. Escalating misappropriation of the traditional knowledge (TK) in recent times has necessitated the protection of TK and genetic

resources in the country. To prevent the grant of patents on non-patentable traditional knowledge, it is essential that TK is made accessible to the patent examiners in a language and a format that is easily understood by them.

Recognising the need for and importance of documenting the existing knowledge, available in public domain on various traditional systems of medicines, NISCAIR (Under CSIR), AYUSH (Department of Ayurveda, Yoga, and Naturopathy, Unani, Siddha and Homeopathy) and DIPP (Department of Industrial Policy and Promotion) collaborated to establish Traditional Knowledge Digital Library (TKDL) on Ayurveda. NISCAIR, being the implementing agency for the project, is responsible for developing user friendly software, setting up TKDL hardware and software platform for data entry operations, digitising images of 'slokas', making directory on Traditional Knowledge Resource Classification (TKRC), populating the database and hosting the database on web/portal. The TKDL software with its associated classification system, TKRC, translates Sanskrit 'slokas' into English, Spanish, German, French and Japanese languages. TKDL database at present consists of 36,000 formulations of Ayurveda from 14 authentic Ayurveda texts in a digitised patent application format, in five international languages mentioned above. TKDL includes search interface providing full-text search and retrieval of TK information on International Patent Classification (IPC) and keywords in multiple languages. Activities under the phase II of Ayurveda have also been initiated. This will cover 65,000 formulations from 45 Ayurveda texts. These formulations will be checked for the duplicates and new formulations will be transcribed. The activities of TKDL project have been diversified to cover Unani and Siddha systems of medicine also. Thus, TKDL has given legitimacy to existing traditional knowledge and has protected such information from getting patented and misused. TKDL has gained recognition at national as well as at international level and several countries have expressed their desire to adopt TKDL as a model for developing TKDLs for protecting their traditional knowledge.

TKDL Network Project: Nine CSIR laboratories viz., NBRI, Lucknow; CIMAP, Lucknow; ITRC, Lucknow; Institute of Himalayan Bioresource Technology, Palampur; CFTRI, Mysore; Unit for Research and Development of Information Product, Pune, RRL, Jammu; RRL, Bhubaneshwar and CBRI, Roorkee have joined TKDL as networking partners in Feb. 2004, and would be contributing to the TKDL database based on their core competencies.

National Science Digital Library (NSDL): Under NSDL Project, electronic access to digital resources of curriculum related material in science and technology will be provided to students in remote areas. NSDL will be implemented by NISCAIR with the active participation of UGC and Ministry of Human Resource Development. In the first phase, NSDL will cover the students of undergraduate level in Indian universities and colleges. It is proposed to create original and targeted contents by identified panel of experts/authors for about 1000 e-books for undergraduate students by the end of 2006-07. The contents of the e-books will be subject specific, location specific and university specific.

CSIR e-Journal Consortium: The Consortium provides access to about 3300 full-text S&T scholarly e-Journals from 11 publishers of international repute, to the scientific community in 38 CSIR laboratories. The project aims to cover 4500 world-class e-journals.

7.2.7 INDEST Consortium

Ministry of Human Resource Development (MHRD) has set up INDEST (Indian National Digital Library in Engineering, Science and Technology) Consortium, providing access to full-text e-journals. Ministry provides funds required for subscription to electronic resources to 38 institutions including IITs, IISc, NITs, IIMs and few other

centrally funded government institutions through Consortium headquarters set up at the IIT, New Delhi. Besides, government and government aided engineering colleges and technical departments in some universities have also joined the Consortium with financial support from the AICTE (All India Council for Technical Education). Eighty four engineering colleges and institutions have already joined the Consortium on their own. INDEST Consortium provides access to 4252+ full- text e-journals from 1028 publishers.

Self Check Exercise

2) What are the Long-term and Short-term objectives of ENVIS?

- Note:** i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of the Unit.

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7.3 INFORMATION SYSTEMS AND PROGRAMMES IN SOCIAL SCIENCES

Recognising the importance of social science research in the national development, Government of India, initiated several programmes after independence. One such initiative was setting up of Indian Council of Social Science Research. The Council recognised following disciplines for supporting social science research in the country: Economics (including commerce), Education, Management (including Business Administration), Political Science (including International Relations), Psychology, Public Administration, and Sociology (including Criminology and Social Work). The Council also supports proposals on social science aspects of the disciplines of Anthropology, Geography, History, Law, Library and Information Services and Linguistics, etc. The Council accorded documentation, bibliographical services and publications, as a priority programme for dissemination of social science information to the researchers in the country and set up National Social Science Documentation Centre (NASSDOC). In this section you will study about documentation and information related programmes of ICSSR and Inter University Centre in Humanities and Social Sciences announced recently by UGC.

7.3.1 Indian Council of Social Science Research(ICSSR)

Indian Council of Social Science Research (ICSSR) was established by Ministry of Human Resource Development (erstwhile Ministry of Education), Government of India, in 1969 to promote social science research in the country. ICSSR, an autonomous body, sponsors social science research programmes and projects in the country; administers grant to institutions and individuals; awards fellowship; sponsor and arrange technical training in research methodology and provide guidance for research; develop and support library and documentation centres for providing information services in social sciences; organises and support seminars, workshops and study groups and

undertakes publication work in social sciences. The council reviews the progress of research and advice Government of India on all matters pertaining to social science research in the country. The Council has its Head Quarters in New Delhi and 27 Research Centres and 6 Regional Centres spread all over the country. The Council has published over 350 books, pamphlets and monographs covering various aspects of social science. It publishes bi-annually '*Journal of Abstracts and Reviews*' in five disciplines viz. Economics, Geography, Political Science, Psychology and Sociology and Social Anthropology. It collaborates with Indian Institute of Public Administration, New Delhi and Indian Institute of Management, Ahmedabad in the publication of two quarterly journals, '*Documentation in Public Administration*' and '*Vikalpa*' respectively. Another scholarly journal, '*Indian Social Science Review*' was launched in Jan. 1999, by the Council. The Council also publishes quarterly *Newsletter* giving an account of major programmes and activities of the Centre, Research Institutes and Regional Centres. In addition, the newsletter provides a write up by the Chairman, write up by the Member-Secretary, an essay competition with a prize of Rs. 5000/-, and a human interest story with a prize of Rs. 1000/-.

National Social Science Documentation Centre (NASSDOC) was set up in 1969 as a division of ICSSR to provide library and information support to social science community. Over the years the Centre with rich collection of information resources in social sciences, has developed into a national level centre to meet the following objectives:

- To provide library and information support services to the researchers in the field of social sciences;
- To provide information support to those working in academic institutions, autonomous research organisations, policy making, planning and research units of government departments, business and industry, etc.;
- To disseminate information about developments in social science research;
- To provide guidance to libraries of ICSSR Regional Centres and ICSSR maintained Research Institutions;
- To provide financial assistance for documentation and bibliographic projects;
- To conduct short-term training courses for social scientists, research scholars, librarians and IT professionals; and
- To make available study grant to doctoral students for collection of research material from libraries located in various parts of the country.

Information services and publications of NASSDOC have been dealt in detail in Unit 9 of Block-2 of this course. In addition, NASSDOC is planning to create an integrated and computerised database INSSPEL (Indian Social Sciences Periodical Literature). The database will cover articles published in 240 Indian social sciences periodicals since their inception till 1970. The database will cover of 43,272 issues of journals containing 346,176 articles, thereby providing bibliographical control over social science literature published during last 100 years. Indexes of some of these journals covering main disciplines such as sociology, psychology, economics, political science, geography, history and Indology are also available in print form.

INDO-DUTCH Programme on Alternatives in Development (IDPAD): Formally initiated in mid 1981, IDPAD, is a collaborative international research programme of ICSSR, New Delhi and The Netherlands Foundation for the Advancement of Tropical

Research (WOTRO), The Hague. The programme has been launched to promote new thinking and research on ways to bring about India's all-round and rapid development. IDPAD is a phase bound programme. Since 1981, four phases have been completed, each lasting for four years. The fifth phase (2002-2006) was launched in July, 2002 with the following key areas of activities:

- Research Projects: Sponsor joint Indo-Dutch research projects in social sciences;
- Seminars and workshops: Fund International conferences;
- Exchange of Scholars: To undertake research, for consultation, deliver lectures etc.;
- Publication and Dissemination: The reports and findings of research and seminars are published as books, monographs and working papers. IDPAD also publishes a newsletter (bi-annual) giving information on current research projects and its other activities; and
- Access to Information: IDPAD has initiated funding for networking of 6 ICSSR Regional Centres and 27 Research Institutes through a special network of computers. From the available funds, the Project Directors will also be provided with PCs and Internet facility. The networking will help in setting up of National Information System in Social Sciences (NISSS). The NISSS will help in coordinating the activities, sharing of the resources and services of the network partners and in launching collaborative programmes with national and international organisations engaged in social science information.

Documentation Centre for Asian Studies (DOCAS): Recognising the importance of India's foreign, economic and cultural relations with the neighboring countries and to promote trade, business and industry with the Asian countries, a Documentation Centre on Asian Studies was set up by ICSSR with financial assistance from Japan. The Centre located in the Council's HQs in New Delhi, is building collection on Asian studies and providing documentation services. The subject areas covered are mostly social sciences including environmental sciences, public health, etc., to help the policy makers in Asia to evolve new programmes to establish better relations among the Asian countries for the welfare of the people of the region.

Library: The Centre has a library with about 3000 books and subscribes to 30 periodicals and 11 newspapers.

The Centre performs the following activities: i) Dissemination of Information; ii) Development of Databases; and iii) Exchange of Literature.

Dissemination of Information: Centre brings out following two publications at regular intervals: a) *Conference on Asian Studies* – It is a calendar of forthcoming conferences, seminars, workshops, etc. related to Asian Studies, b) *Select Journals on Asian Studies*.

Contents-by-Journal for current awareness purposes and to bring the literature published in the region under bibliographical control.

Database Development: The Centre is developing following two databases: a) *Bibliography of Indian Literature on Asia*: The database covers literature published in India on Asian Studies. About 2000 records have been computerised. b) *Directory of Research Institution on Asian Studies*: It is an online database of institutions/organisations working on Asian Studies in India.

Exchange of Literature: The Centre has established exchange relations with SAARC, International Institute of Asian Studies, The Netherlands, ESCAPE, etc. and has been regularly receiving their publications on exchange basis.

7.3.2 UGC-Inter University Centre for International Studies

University Grant Commission has been establishing Inter University Centres (IUCs) to provide common state-of-the-art equipment and facilities to the researchers working in different universities, since heavy investment in infrastructure and input is beyond the reach of the individual university for research purposes. Till recently most of the IUCs have been established in the field of S&T. The UGC now plans to establish the first IUC in the fields of Humanities and Social Sciences by taking over academic and physical infrastructure available at Indo-American Centre for International Studies, situated at Osmania University Campus, Hyderabad.

Main objective of UGC-IUC for International Studies would be, to provide dynamic and vibrant platform for research, to academicians from India, SAARC region, Central Asia and other countries. The ICU will address contemporary developmental issues with multi-disciplinary approach in the following areas:

- Education, Commerce, and Economics of development of these countries along with the interface with the developed countries;
- World trade, GATTs, IPR, financial management for international understanding;
- Conflict management, diplomacy, development and peace initiatives between various countries;
- Human rights, values, life, skills and learning to live together; and
- Art, literature and other allied areas.

Indo-American Centre for International Studies (IACIS), founded in 1964, is a fully autonomous membership society registered under Indian law. Situated in the campus of Osmania University, Hyderabad, it is one of the largest research centres on American Studies in Asia or Africa. Library of the Centre has extensive collection of over 1,90,000 books, 2725 periodical titles (in print and electronic media), 1300 audio/visual materials, 40,000 micro documents and other materials on American literature, history, politics, economics, geography, philosophy, religion, sociology, law, art, international relations, foreign policy, S&T, etc.

For Scholars IACIS conducts workshops, seminars, short-courses and lectures on various aspects of American Studies.

For Business IACIS offers information, consultation, resources and conference facilities.

For students IACIS offers information about post-graduate study in the United States as well as access to the library.

Courses sponsored by UGC are open to all university students.

As mentioned above, UGC plans to take over academic and physical infrastructure available at IACIS and establish 'UGC-IUC for International Studies', the first IUC for humanities and social sciences.

7.3.3 UGC-Inter University Centre for Humanities and Social Sciences (IUCHSS)

UGC has established four National Facility Centres in selected universities. One such centre is IUCHSS, set up at Indian Institute of Advanced Studies, Shimla. The main objectives of the centre are to invite teachers from universities and colleges to the Institute as Associate of the IUC, organise Research Seminars for researchers and young teachers in universities and colleges and to organise "Study Week" for discussing important problems of national and international interest.

Self Check Exercise

3) What are the objectives of NASSDOC?

- Note:** i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of the Unit.

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7.4 INFORMATION SYSTEMS AND PROGRAMMES IN HUMANITIES

The World Book Dictionary defines Humanities as 'cultural studies as opposed to science, including language, literature, philosophy and art'. Humanity or humanism is a way of looking at the world, which emphasises the importance of human being, their nature and their place in the universe. Many educators and philosophers believe that the greatest challenge to humanism, and indeed a threat to the safety of society come from too great an emphasis on science and technology. It is increasingly being felt that though, scientific achievements increase the knowledge and power; it is humanism which teaches how to use this knowledge and power in a moral, human way. Humanities, thus is mainly concerned with human values and human culture and covers religion, philosophy, arts, language, literature, and history as different subjects.

To promote and support research in the field of humanities, several institutions have come up in India, in addition to the academic institutions like universities and colleges. Some of these institutions at the national level are Indian Council of Philosophical Research (ICPR), Indian Council for Cultural Relations (ICCR), Indira Gandhi National Centre for Arts (IGNCA), Indian Council of Historical Research (ICHR), Sahitya Akademi, Central Institute of English and Foreign Languages, Central Institute of Indian Languages, National Archives of India, National Museum, and many more. Libraries and information centres attached to these institutions as well as those supported by these institutions, provide information and publication support in their respective areas of specialisation. However, like NASSDOC in the field of social sciences and NISCAIR in the field of S&T, there is no National Information System in the field of humanities to coordinate the information activities scattered over wide range of institutions and provide centralised services to the scholars/researchers to avoid duplication of research efforts. Nevertheless, two important programmes of the government of India viz. setting up Indira Ganthi National Centre for Arts and launching of National Mission for Manuscripts attempt to fulfill this long felt need to some extent. In this section you will study about various systems and programmes of IGNCA, National Mission for Manuscripts and some of the national level institutions in the field of humanities.

7.4.1 Indira Ganthi National Centre for Arts (IGNCA)

Set up by the Ministry of Culture, Government of India in 1985, IGNCA is a premier institution in the preservation and dissemination of knowledge in the fields of arts, culture, lifestyle studies and folklore. The Centre aims to serve as a major resource centre for

the arts, especially written, oral and visual resource materials; undertake research and publication programmes of reference works, glossaries, dictionaries and encyclopaedias concerning the arts, humanities and general cultural heritage; develop computerised National Information System and Databank on arts, humanities and cultural heritage and create a networks of communication with other national and international centres of arts and culture.

The Centre comprises five divisions viz. i) Kala Nidhi, ii) Kala Kosa, iii) Janpada Sampada, iv) Kala Darsana, and v) Sutra Dhara.

Kala Nidhi: This division collects, primary and secondary material on broad areas of humanities, organises the information and develops databases. It aims to develop a computerised National Information System and Databank on arts, humanities and cultural heritage. It has a reference library with large collection of books, manuscripts in Sanskrit, Pali, Persian and Arabic languages in microfilm, microfiche, or reprographic form. The collection of books covers following subject areas: archeology, philosophy, religion, ritual studies, history and anthropology, art and literature as well as folk, pastoral and community studies. The library also has rich collection of rare books and personal collection of illustrious scholars like Prof. Sunil Kumar Chatterjee, Thakur Jaidev Singh, Krishna Kriplani, Dr. Hazari Prasad Dwivdi, etc. The library is building a complete catalogue on manuscripts of Indic and Asian origin, published world over. At present it has about 10 million folios of unpublished Sanskrit, Pali, Persian and Arabic manuscripts. The manuscripts have been acquired in the form of micrographic records from institutions across the country like Khuda Baksh Oriental Public Library (Patna), Bhandarkar Oriental Research Institute (Pune), Asiatic Society (Calcutta), Manipur State Kala Akedemy (Imphal), Saraswati Bhawan Library (Varanasi), Government Oriental MSS Library (Madras), Oriental Research Institute and MSS Library (Trivandrum), Tanjavur Maharaja Serfoji's Saraswati Mahal Library (Tanajavur), etc. Reprographic material of many primary and secondary texts has been obtained from foreign institutions in UK, USA, France, Germany and Italy.

Cultural Archives: Materials relating to different genres in the original or its copies are acquired, classified and catalogued in the Cultural Archives of the Kala Nidhi. The acquired collection of the Cultural Archives is in seven categories viz. i) Literature, ii) Architecture and Sculpture, iii) Photographs, iv) Music, v) Films and Video Documentation, and vi) Films and Videos acquired, and vii) Living Legend Series.

In slide section of the library, a slide collection of over half a million art objects and illustrated miniatures in Indian and foreign collections have been compiled and documented. The slide collection, include slides collection acquired from Victoria and Albert Museum, Chester Berry Collection and American Association of South Asian Arts, among others.

In photographs section of the library, several prestigious collection have been acquired, including glass-plate negatives and original prints of Raja Deen Dayal, the grand master of Indian Photography, Henri Cartier Bressson's photographs of India comprising Indian freedom struggle, R.D. Wadia collection and photo historian Sunil Janah's collection, etc.

Rare Books: Acquisition of rare books is the special feature of the library. It has acquired books published in 18th and 19th century.

Journals: Library subscribes to over 400 journals relating to arts.

Kala Kosa: It is concerned with research and publication activities of IGNCA. It has published over 13 books on subjects like Indo-Chinese studies, life style studies, nature

and cosmology, culture and development series, etc. It publishes scholarly journal '*Kala Kalpa*'. Published bi-annually, '*Kala Kalpa*' covers subjects like arts, philosophy, religion and literature. IGNCA also brings out fortnightly newsletter. All publications of the Centre are available in print as well as in electronic form. Another important activity of this division is to organise workshops on 'Manuscriptology and Palaeography'. Six workshops have been organised in collaboration with various universities and oriental research institutes in different parts of the country.

Janpada Sampada: It complements the programme of Kala Kosa. It envisages understanding arts in their eco-cultural and socio-economic context. It covers life-style studies, multi-media presentation and events, children's world, etc.

Kala Darshan: Deals with exhibitions, lectures and conferences, thereby providing forum for discussion on various aspects of art and culture.

Sutra Dhara: Comprises Administrative Division and International Dialogue Unit (IDU). The Administrative Division provides administrative, managerial and organisational support to all the other divisions. The interaction with various institutions and agencies is facilitated by IDU of Sutra Dhara. IDU helps coordinate international dialogue for the benefit of all the divisions. When any such programme is through, its formulation and implementation is carried out by the concerned division. For instance, UNDP is assisting the programme for setting up the 'National Facility for Multi-Media Documentation of Cultural Resources' on diverse media using latest technology. The Ford Foundation has assisted the 'Data Information Services' and The 'Archival Material Acquisition' Programmes of IGNCA.

The Digital Library ('*Kala Sampada*') of IGNCA, serves as a major resource centre for Indian cultural heritage. It provides electronic access to books, journal and newsletter published by IGNCA, papers presented by scholars and visitors, digital images from multimedia projects, research reports, conference proceedings and selected contents from printed material and various collections of IGNCA.

Cultural Informatics Laboratory of IGNCA, established in 1994 with UNDP assisted Multimedia Documentation Project, develops interactive multimedia CD-ROMs. The Centre has brought out following three CD-ROMs: Muktesvara Temple, Rock Art, Devadasi Murai. Many more are under development.

COIL Net (Content Development in Indian Languages Network): It is a project sponsored by Ministry of Communication and Information Technology. The project envisages to develop web enabled Hindi based multimedia cultural heritage library using digital technology.

The Southern Regional Centre (SRC) of IGNCA: It was established in 2001 at Bangalore, the SRC serves as a nodal centre for the study, research and dissemination of the art and culture with particular focus on South India.

Narivada- Gender, Culture and Civilization Network: IGNCA has been involved in projecting several dimensions of women's creativity in the fields of photography, fine arts, performing arts and indigenous expressions of women through local knowledge systems such as embroidery, crafts, poetry, folklore and rituals. Narivada network was set up following an international seminar on "Reframing gender in the context of culture of India" organised by IGNCA in 2003. The primary aim of Narivada Network is to carry out research based on oral and written traditions, ancient scriptures and texts, life style of primal communities to explore the areas where 'culture becomes the main resource for women's empowerment'. The projects in this area covers research, publications, promoting awareness and advocacy, networking with other institutions,

government bodies and resource persons and organising seminars, conferences, workshops, etc. Following two major projects have been explored:

- Documentation on the oral history of women about making of Indian Nation; and
- Documentation of endangered wisdom traditions and traditional knowledge systems of women.

7.4.2 National Mission for Manuscripts (NMM)

Manuscripts are a major source of art, science and culture of a nation. India with its rich cultural heritage has fairly large collection (about 30 million) of manuscripts located in different parts of India and abroad. In India, manuscripts are located in a variety of places from university libraries to temples, maths, madrasas, monasteries and private collection. Majority of these collections are yet to be identified and catalogued. A large number of organisations are facing critical preservation problems due to lack of resources and technical expertise. The National Mission for Manuscripts (NMM) was launched by Ministry of Culture, Government of India, in Feb. 2003 to locate, catalogue and preserve India's manuscripts; enhance their access, spread awareness and encourage their use for educational purposes.

The Department of Culture is the implementing Ministry and IGNCA is the nodal agency for the Mission along with specially identified Manuscript Resource Centres (MRCs) and Manuscripts Conservation Centres (MCCs.) in different states spread all over the country.

Mission's objectives are as follows:

- *Survey and Locate:* The Mission launches extensive surveys around the country to locate manuscripts in the care of variety of custodians;
- *Catalogue and Compile:* Through extensive cataloguing, create an electronic database of manuscripts;
- *Conserve and Preserve:* By networking with leading conservation agencies in the country, conserve damaged or threatened manuscripts and set standards for manuscript conservation;
- *Promote Access:* Promote access through ready availability of databases on the Internet and setting up National Manuscripts Library at IGNCA;
- *Promote Scholarship:* By documenting and preserving manuscripts, through research and publications and through training programmes to promote their use to increase knowledge and improve learning; and
- *Public Outreach:* Carry out a number of public outreach programmes like talks, seminars, newsletter and other programmes to cover all the members of public starting from school children to retired persons.

The Mission has collected data on manuscripts located in different places in India and abroad. Manuscripts are in different languages such as Sanskrit, Pali, Prakrit, Urdu, Persian and different regional languages. The Mission is organising courses in Manuscriptology and Paleography in all parts of the country to build up scholars who can read, decipher, translate and take up research and interpret these manuscripts. The Mission has launched extensive conservation and preservation programme. It will give preventive conservation treatment to all the deserving manuscripts in India, target the most endangered manuscripts for curative conservation and set up 200 Manuscript Conservation Centres with all basic conservation facilities and trained conservators.

Mission plans to conserve one lakh manuscripts per year. The Mission will also be digitising the manuscripts and store them systematically for future reference. The Mission is establishing a National Manuscript Library (NML) in IGNCA, the national nodal agency of the Mission. The NML would contain digital resources, books, donated manuscripts with state-of-the-art facilities for teachers, students and researchers. The Mission supports publication initiatives on: i) Catalogues of Indian manuscripts, ii) Critical editions of important manuscripts, and iii) Original work on different aspects of manuscripts. The Mission is planning to publish a bi-monthly newsletter '*Kriti Rakshan*' to provide regular updates on various activities of the Mission.

Self Check Exercise

4) What is National Mission for Manuscripts?

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

ii) Check your answer with the answers given at the end of the Unit.

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7.4.3 Indian Council for Cultural Relations (ICCR)

It was established in 1950 for strengthening the ties of cultural cooperation and exchange between India and other countries. The objectives of the Council as defined in Memorandum of Association are to:

- participate in the formulation and implementation of policies and programmes relating to India's external cultural relations;
- promote cultural exchange with other countries and people;
- promote and strengthen cultural relation and mutual understanding between India and other countries; and
- establish and develop relations with national and international organisations in the field of culture.

The Council has 8 Regional Offices in India and over 14 in foreign countries. The Council collaborates actively in the operation of some foreign cultural centres in India. For instance, nine out of thirteen British Libraries in India are run jointly by the ICCR and British Council.

The Council with its headquarters in New Delhi, performs its activities through two wings namely: i) Programme Wing, and ii) Administration and Education Wing.

The Programme Wing is involved with exchange of visits of scholars, academicians, artists, writers and performing art groups; commissioning of statues of Indian leaders abroad; facilitation and participation of seminars and symposia abroad; presentation of informatics, audio-visual material, books on India and Indian musical instruments abroad and collaboration with foreign cultural centres in India.

The Administration and Education Wing deals with providing scholarship for foreign students in India for study and research. The Council has 700 such scholarship schemes available for students. The Wing assists in participation of seminars and symposia in India; maintains the Council's Regional Offices in India and Cultural Offices abroad; establishes and maintains Chairs and Professorship for Indian Studies in universities abroad; holds Maulana Azad Memorial Lectures, Maulana Azad Essay Competition and institutes Jawaharlal Nehru Award for International Understanding.

The Council has published books in English, Hindi and in some foreign languages covering the subjects of arts, culture, philosophy and literature. The Council's website provides online links to various Indian art forms and websites of artists empanelled with ICCR, festivals and institutions.

7.4.4 Indian Council of Historical Research (ICHR)

It is an autonomous body established in 1972 by Government of India, to promote and support historical research in the country. The Council promotes the study of historical methods to study the social sciences and humanities to achieve the goal of an interdisciplinary approach in historical perspectives. The Council provides financial assistance for holding seminars, conferences, workshops, etc. related to history. It also provides subsidy for publications of conference proceedings. The Council has brought out 900 publications which fall into following three categories: i) Indian history and allied disciplines, ii) Reference books, iii) History of Asia and neighboring countries.

The Council has two Regional Centres namely ICHR- North-East Regional Centre (Guwahati) and ICHR- Southern Regional Centre (Bangalore) for providing assistance to researchers and scholars of the respective regions. The Council publishes two biannual journals titled '*The Indian Historical Review*' in English and '*Itihas*' in Hindi.

The Council has library cum documentation centre to cater to the information needs of the scholars.

7.4.5 Indian Council of Philosophical Research (ICPR)

ICPR was established in March 1977. It promotes teaching and research in philosophy. The Council awards fellowships to scholars, supports and organises seminars in different areas of philosophy and related disciplines, organises special lectures by eminent Indian and foreign scholars, conducts annual essay competition among young scholars to encourage them to think critically and philosophically on the issues facing the nation, conducts exchange programme between India and Foreign countries, provides grant for publication of digests, periodicals and scholarly works in philosophy.

The Council publishes important and philosophical works by scholars and fellows of the Council, Proceedings of ICPR sponsored seminars and undertakes re-publication of rare and out of print works of renowned authors. The Council has published over 75 books in the areas of philosophy and related disciplines and reference works like Who's Who of teachers and scholars in philosophy in India. The Council publishes a tri-annual scholarly journal '*Journal of Indian Council of Philosophical Research*'.

The Academic Centre of ICPR located in Lucknow, has a specialised library in philosophy with collection of over 20,000 volumes and subscribes to 105 philosophical journals and receives 15 on exchange basis.

The important project which ICPR is planning to undertake in collaboration with the Ministry of Human Resource Development, UGC, ICHR, ICSSR, INSA and Anthropological Survey of India, is a 10 volumes work on the 'Development of Philosophy, Science and Culture'.

ICPR is planning to form a Network Group consisting of its readers who would like to receive the contents of special features of its journal, *Journal of Indian Council of Philosophical Research*, electronically such as 'Focus', 'Agenda for Research' and 'Notes & Queries' before their publication.

7.4.6 National Museum, New Delhi

The museum is preserving India's cultural heritage. The museum has in possession over 2 lakhs works of art, both Indian and Foreign origin covering more than 5000 years of cultural heritage. The collection includes Pre-Historic Archaeology, Archaeology, Jewellery, Paintings, Decorative arts, Manuscripts, Arms and Armour, etc. The Museum has a Conservation Laboratory for restoration of all organic and inorganic art objects and for providing training facilities to the students.

The National Museum Institute of History of Art, Conservation and Museology, set up in 1983, is a deemed university, offering various courses with its campus at National Museum.

Publication department of National Museum publishes books for children, visitors and for the scholars interested in the study of art, architecture, painting, sculptures, history, religion, culture, etc. The Reference library of The Museum is equipped with wide range of books, periodicals, etc. on the above mentioned subjects.

7.4.7 National Archives of India (NAI)

NAI is the repository of non-current records of Government of India. It was set up in March 1891 in Calcutta as the 'Imperial Record Department', shifted to New Delhi in 1911 and is now housed in present building since 1926. NAI's holdings comprise government records from the year 1748 onwards covering later Mughal period, East India Company, British Rule and emergence of freedom struggle in India. The records are of 4 categories: i) Public Records, ii) Oriental Records, iii) Manuscripts, and iv) Private Papers. Private papers are of important leaders like Mahatama Gandhi, Maulana Azad, Sardar Patel, etc. NAI preserves and documents the collection for use by the scholars, provides training in various aspects of Archival Science at professional and sub-professional level, and provides assistance to state archives, museums, libraries and voluntary organisations for preservation and microfilming of rare manuscripts and books in their custody.

The library of NAI has rich collection of books and reports (over 1.78 lakhs), selection from vernacular native newspapers (400), selections from Government of India/ State Government records (over 4200 volumes), Indian Parliamentary Papers (over 4500 volumes), Gazettes, publications in foreign languages and journals and periodicals (3560 titles). The library has also computerised its collection.

The computerisation and digitisation of government records using 'Archival Information Management System' software has been initiated. Considerable collection has been digitised and is now available for online searching in the Research Room by Research Scholars/Archivists/ Users of Archives.

NAI has also taken up digitisation of rare books and manuscripts with the assistance of National Institute of Advanced Studies, Bangalore.

Networking of five major libraries including NAI library, under the Ministry of Culture, is in progress. The other four libraries are Central Secretariat Library, National Museum Library, National Gallery of Modern Art Library and Archaeological Survey of India Library. WAN connectivity will provide intra-library accessibility of records and remote log into internal database network of these libraries.

7.4.8 Central Institute of English and Foreign Languages (CIEFL)

CIEFL is a National Institute of higher education in English and Foreign languages. The institute offers academic programmes in English, Arabic, French, German, Japanese, Russian and Spanish languages. Apart from offering study and research facilities in English and foreign language and literature, the Institute provides for training of teachers, production of teaching materials and extension services, to help improve standards of teaching of English and foreign languages in India.

The Institute publishes research monographs, scholarly works, text books in English for schools and colleges, graded supplementary readers, textbooks and reference books in foreign languages. The Institute brings out four journals, of which three are half yearly periodicals titled '*CIEFL Bulletin*', '*Journal of English and Foreign Languages*' and '*ESSAIS*', and one is an annual periodical '*Russian Philosophy*'.

Ramesh Mohan Library of the Institute has rich collection of books (over 118,000 volumes) in English and foreign languages and literature and books on Indological literature. The other collection includes periodicals, dissertations, reports, off-prints and microfilms. The library is planning to computerise the collection.

7.4.9 Central Institute of Indian Languages (CIIL)

The Institute was established to coordinate the development of Indian languages, to bring about the essential unity of Indian languages through scientific studies, and promote interdisciplinary research to contribute towards mutual enrichment of Indian languages. The Institute advises and assists Central and State governments in the matter of languages, contributes to the development of all Indian languages by creating contents and corpus, protects and documents Minor, Minority and Tribal languages, and promotes linguistic harmony by teaching 15 Indian languages to non-native learners. CIIL has nine centres dealing with different aspects of languages such as language planning and development, educational technology, translation and book promotion, creative writing and lexicography, language technology, materials production, etc.

The CIIL library is a research library specialising in Indian languages, linguistics and related areas. The library provides information support to the staff of the institute and scholars from various parts of the country and abroad. The collection include 63,000 volumes, 250 professional journals and periodicals and other materials like microfiche, microfilms, cassette tapes, film strips, maps and charts.

Since 2001, the library is subscribing to electronic journals through EBSCO Information Services Group, providing access to its two databases namely 'Academic Search Premier, and 'Academic Search Elite', providing online access to 2,800 full-text journals and abstracts and indexes of 2,647 journals in the areas of humanities, social sciences, education, etc.

The digitisation work has been taken up in a phased manner using WINISIS package developed by UNESCO. The library is planning to create a National Database for Linguistics of Indian languages and develop as a National Information Centre for Linguistics of Indian Languages.

CIIL has number of IT based programmes. One such programme is LIS-India (Language Information Service-India). It is a web based online, multimedia authentic, comprehensive information source in the public domain on the Indian languages. It covers all the Indian languages including English. It provides information on grammar, history, functions, scripts, number of speakers, and their spread including their literacy, education level,

etc. LIS aims to provide additional utility packages such as online-learning, lexical resources and language corpora, spelling and grammar checkers, pronunciation patterns, translation tools and services, etc. on Indian languages.

7.5 SUMMARY

The Unit provides an overview of National Information Systems and Programmes in the fields of science and technology, social sciences and humanities, currently in operation in the country. In the field of science and technology, brief description of NISSAT programme and its achievements in 25 years of its operation and major activities and nationwide information services of National Informatics Centre, Biotechnology Information System, Environmental Information System, INFLIBNET and NISCAIR are covered. All the above mentioned systems and institutions (except INFLIBNET) are providing information services in science and technology. INFLIBNET is concerned with providing information services covering all the fields of knowledge, viz. S&T, social sciences and humanities. In the field of social sciences, major information systems programmes of Indian Council of Social Sciences Research and University Grant Commission are covered. In the field of humanities, information related activities and programmes of Indira Gandhi National Centre for Arts, National Mission for Manuscripts, Indian Council for Cultural Relation, Indian Council of Historical Research, Indian Council of Philosophical Research, Central Institute of English and Foreign Languages, Central Institute of Indian Languages, National Archives of India and National Museum, new Delhi are covered. Like NASSDOC in social sciences and NISCAIR in S&T, there is no National Information Centre in the field of humanities in the country. The trend is towards networking and sharing the resources electronically, as is evident from number of e-journal consortia operating in the country. Networking help in coordinating the activities, sharing the resources and services of network partners. Most of the institutions have set up their websites to disseminate latest information about their activities and programmes.

7.6 ANSWERS TO SELF CHECK EXERCISES

- 1) 1) National Informatics Centre (NIC) was set up in 1975 to provide network backbone and e-governance support to government of India at all levels i.e., at central, state as well as at district level. NIC offers following IT services: i) Computer Aided Design (CAD); ii) Computer Aided Paperless Examination System (CAPES); iii) Computer Telephony Interface (CTI); iv) Consultancy; v) E-Commerce; vi) Geographic Information System; vii) Informatics; viii) Internet Services; ix) Mathematical Modeling and Simulation; x) Networking; xi) Office Automation; xii) Software Design and Development; xiii) Training; xiv) Video Conferencing; and xv) Website Development and Hosting.
- 2) Long-term objectives of ENVIS are to:
 - buildup a repository and dissemination centre in Environmental Science and Engineering;
 - gear up the modern technologies of acquisition, processing, storage, retrieval and dissemination of information of environmental nature; and
 - support and promote research, development and innovation in environmental information technology.

Short-term objectives of ENVIS are to:

- provide national environmental information services relevant to present needs and capable of development to meet the future needs of the users, originators, processors and disseminators of information;
- build up storage, retrieval and dissemination capabilities with the ultimate objective of dissemination of information speedily to the users;
- promote national and international co-operation and liaison for exchange of environment related information;
- promote, support and assist education and personnel training programmes designed to enhance environmental information processing and utilisation capabilities; and
- promote exchange of information amongst developing countries.

3) Objectives of NASSDOC are:

- To provide library and information support services to the researchers in the field of social sciences;
- To provide information support to those working in academic institutions, autonomous research organisations, policy making, planning and research units of government departments, business and industry, etc.;
- To disseminate information about developments in social science research;
- To provide guidance to libraries of ICSSR Regional Centres and ICSSR maintained Research Institutions;
- To provide financial assistance for documentation and bibliographic projects;
- To conduct short-term training courses for social scientists, research scholars, librarians and IT professionals; and
- To make available study grant to doctoral students for collection of research material from libraries located in various parts of the country.

4) The National Mission for Manuscripts (NMM) is the programme, launched by Ministry of Culture, Government of India, in Feb. 2003 to locate, catalogue and preserve India's manuscripts scattered in diverse locations in India and abroad; enhance their access, spread awareness and encourage their use for educational purposes.

The Department of Culture is the implementing Ministry and IGNCA is the nodal agency for the Mission along with specially identified Manuscript Resource Centres (MRCs) and Manuscripts Conservation Centres (MCCs.) in different states spread all over the country.

Mission's Objectives are as follows:

- *Survey and Locate:* The Mission launches extensive surveys around the country to locate manuscripts in the care of variety of custodians;
- *Catalogue and Compile:* Through extensive cataloguing, create an electronic database of manuscripts;
- *Conserve and Preserve:* By networking with leading conservation agencies in the country, conserve damage or threatened manuscripts and set standards for manuscript conservation;

- *Promote Access:* Promote access through ready availability of databases on the Internet and Setting up National Manuscripts Library at IGNCA;
- *Promote Scholarship:* By documenting and preserving manuscripts, through research and publications and through training programmes to promote their use to increase knowledge and improve learning; and
- *Public Outreach:* Carry out a number of public outreach programmes like talks, seminars, newsletter and other programmes to cover all the members of public starting from school children to retired persons.

7.7 KEYWORDS

CBRI	: Central Building Research Institute
CCMB	: Centre for Cellular and Molecular Biology
CIMAP	: Central Institute for Medicinal and Aromatic Plants
IARI	: Indian Agricultural Research Institute
INSA	: Indian National Science Academy
ISDN	: Integrated Services Digital Network
ITRC	: Indian Toxicological Research Centre
NBRI	: National Botanical Research Institute
RRL	: Regional Research Laboratory
SMTP/UUCP	: Simple Mail Transfer Protocol/ Unix to Unix Copy
Videoconferencing	: A real time video session between two or more users or between two or more locations.
VSAT	: Very Small Aperture Satellite

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UNIT 8 GLOBAL INFORMATION SYSTEMS AND PROGRAMMES

Structure

- 8.0 Objectives
- 8.1 Introduction
- 8.2 Global Information Systems
- 8.3 INIS
- 8.4 AGRIS
- 8.5 INFOTERRA
- 8.6 UNESCO Science and Technology Policy Programme
- 8.7 ASTINFO
- 8.8 MEDLARS
- 8.9 CAS
- 8.10 INSPEC
- 8.11 BIOSIS
- 8.12 Summary
- 8.13 Answers to Self Check Exercises
- 8.14 Keywords
- 8.15 References and Further Reading

8.0 OBJECTIVES

After reading this Unit, you will be able to:

- identify global information systems;
- understand their role in providing information;
- list and elaborate various global information systems; and
- explain the activities and programmes undertaken by such organisations in promotion of library and information services.

8.1 INTRODUCTION

Right information to the right user at right time is of vital importance in the present day context. The advent of computers has enhanced the possibility of creating electronic databases which has opened new opportunities for the development of international information systems.

In this Unit, we bring you descriptive account of some of the international information systems also referred to as global information systems. These include United Nations governed International Nuclear Information System (INIS), International Information System on Agricultural Sciences and Technology (AGRIS), INFOTERRA, etc. among others. The programmes and activities of these organisations in the promotion,

coordination and development of library and information services are explained. Their useful role is increasingly recognised in the present day context as we are aware that knowledge of networking, systems approach, resource sharing and library cooperation leads to problem solving of issues related to information handling and information services.

8.2 GLOBAL INFORMATION SYSTEMS

A large number of international organisations are engaged in the development of library and information services, these also include global information systems devoted to collection, processing and dissemination of information in various countries.

Use of computers for location, collection, storage and processing of information has opened up the possibilities of creating machine-readable databases which have led to the development of international/global information systems. This new development has been harnessed further by the very concept of decentralised input of information from the member countries of a participating system, where centralised processing of information is possible through computers, while decentralised dissemination of information is again possible at the users' end. This principle is behind the success of the INIS, the International Nuclear Information System, which had paved the way for other similar systems like AGRIS, DEVSIS, INFOTERRA, SPINES, CAS, INSPEC, BIOSIS and APINESS. In all these systems, the input to the system is made available by the member country from where information originates, leading to reliability, timeliness and comprehensibility. The input thus collected nationally is entered in prescribed standardised format, usually a machine-readable format to ensure compatibility.

The inputs from all member countries thus are passed onto the centralised agency which processes the information and eventually distributes usable output in machine-readable form or in printed form back to the member states for use by end users. This approach commenced with INIS and has found to be working well with majority of global information systems.

Some of the global information systems being covered in this Unit include:

- a) INIS
- b) AGRIS
- c) INFOTERRA
- d) UNESCO's Science and Technology Policy Programme
- e) ASTINFO
- f) MEDLARS
- g) CAS
- h) INSPEC
- i) BIOSIS

Let us study each one of the systems in detail.

8.3 INIS

The acronym INIS stands for International Nuclear Information System. INIS sponsored by the International Atomic Energy Agency (IAEA), Vienna started

functioning in 1970. It is a cooperative, decentralised computerised abstracting and indexing system providing worldwide coverage of the literature on the peaceful uses of nuclear energy. It processes and merges input provided by its members and redistributes the information in machine-readable form as well as in print form. INIS, the International Nuclear Information System is appropriate for those who need information on the peaceful applications of nuclear science and technology.

INIS is an international co-operative information system, operated by the *International Atomic Energy Agency (IAEA)* in collaboration with 132 members that include 114 Member States and 19 International Organisations, with over 30 years of experience.

INIS processes most of the world's scientific and technical literature that falls within its subject scope. INIS maintains a bibliographic database which presently covers over 2.5 million abstracted and indexed records and a comprehensive collection of over 600,000 of full-texts of INIS scope publications which are not easily available through the commercial channels, thus making it the world's most comprehensive and leading information source on the peaceful applications of nuclear science and technology.

Subject Scope

INIS subject coverage has been developed keeping in view the information needs of the international user community for whom the interests and activities of International Atomic Energy Agency are relevant especially with regard to peaceful applications of nuclear science and technology.

The chief subject areas are: nuclear reactors, reactor safety, nuclear fusion, applications of radiation and radioisotopes in medicine, agriculture, industry and pest control. Besides the above some related fields are nuclear chemistry, nuclear physics and materials science.

Literature Coverage

The literature coverage by the INIS Database includes bibliographic citations and abstracts from relevant scholarly journal articles, R & D reports, papers presented in seminars and conferences, books, patents, theses, laws, regulations and standards. Besides these, the INIS inputting centres located all over the world regularly scan over 2,400 periodicals for articles relevant to the nuclear science field. An important feature of the INIS is the very fact that most of the abstracts of INIS records are in English as a carrier language. This is what has made INIS so popular internationally.

Additionally, the INIS Database also contains bibliographic references to various literature types that include journal articles, books, reports, patents, etc. INIS Database can be accessed by individual users and institutions in the Member States of INIS and the other cooperating institutions of INIS.

Input Processing

For processing the input to the INIS database, the procedure is as given below:

Literature in each INIS member state collected by a designated national inputting centre that submits input to the INIS Secretariat in pre-prepared machine-readable form usually through e-mail or on diskette or magnetic media. The standardised format in which inputs are to be submitted conforms to the guidelines as provided by the INIS Reference Series.

Almost all the inputting centres send data through the 'FIBRE' (Friendly Inputting of Bibliographic Records), which is a PC based input preparation package especially designed for the purpose by INIS. FIBRE is a tool that not only helps the INIS Centres to streamline their input preparation but also ensures data of higher quality and consistency thereby reducing the costs through lower correction efforts and results in improving processing time.

After the input reaches the INIS Secretariat, bibliographic description of records are processed thoroughly by checking programs in order to identify the errors and omissions which are corrected by specialists employed by the INIS Secretariat. The input is then converted with the help of computer programs into an internal working format and is made ready for final processing.

Prior to final processing, the inputs are checked for the indexing and abstracting of records which are subjected to a continuing quality control based on an Expert System. For this, the system identifies records with a high probability of error for scrutiny by subject specialists of the INIS Secretariat.

Lastly, towards the end of each processing cycle, a final consolidated output file is created which becomes the input to further programs that firstly create the INIS output files in the INIS exchange format (ISO-2709) and eventually create the INIS Database for online and CD-ROM retrieval.

Besides the procedure discussed above, an important activity carried out at the INIS Secretariat is the processing of Non-Conventional Literature (NCL) submitted by the INIS members. Here, the full-text of such literature is received in electronic form or hard copy and is then processed for distribution in the form of microfiche, CD-ROMs or electronic mail.

INIS Products and Services

INIS makes available different products and services which are available to the end users in various INIS member countries. These vary from country to country and in each country, it is the responsibility of the designated National Liaison Officer to make available detailed information about available INIS products and services in that particular country.

The various products and services of INIS include the INIS Database and INIS Non-Conventional Literature. Let us know some details of the available products and services of INIS.

1) *INIS Database*

The INIS database is one of the leading information sources for worldwide published scientific literature on the peaceful applications of nuclear science and technology and other related fields. It is available from the year 1970 to till date. In the database, over 2.5 million scientific and technical bibliographic references have been indexed and abstracted in English as the carrier language and all this is according to agreed rules and standards. The INIS Database also includes the economic and environmental aspects of all non-nuclear energy sources published since 1992. The database not only contains validated and high quality references but also has comprehensive international coverage.

2) *INIS Non-Conventional Literature (NCL)*

Easy access to the full-text of the non-conventional literature has remained one of the key features of INIS all these years. It is a well known fact that the literature

represented in the INIS Database belongs to two chief categories, that is, conventional and non-conventional. The conventional literature is commercially available through normal distribution channels, such as books and journals. On the other hand, the non-conventional literature includes the scientific and technical reports, patent documents, conference papers and theses, which are usually not readily available through commercial channels.

3) *Reference Series*

INIS Reference Series tells us the rules, standards, formats, codes and authority lists on which the International Nuclear Information System is based. The various reference series are in the form of manuals which are being published since 1969 and are an essential tool for users of the system, which includes cataloguers, indexers, abstractors or searchers. These reference manuals are being revised all the time on continuing basis and are available for purchase worldwide.

A widely used manual of INIS is the IAEA-INIS-13 (Rev 38) 1999 - INIS: Thesaurus. Details of other INIS manuals are available from INIS website: www.iaea.org/inis

4) *INIS Web Services*

The INIS web services includes maintaining of links to websites on the Internet in various fields of interest to nuclear science and technology subject and to any other work related to the IAEA. Besides these, INIS also offers subject access to the contents of the IAEA website and the sites of various related international and multinational organisations in the field of nuclear science and technology.

5) *Marketing and Promotion*

INIS is carrying out extensive marketing and promotion of its products and services, which is handled by the INIS Secretariat in Vienna and the individual member states in the respective countries. At the IAEA Secretariat, the INIS marketing and promotion activities are carried out with the help of online/ CD-ROM demonstrations, by advertisements, by publishing articles in professional journals and by distribution of material, demo CDs, video films and other promotional tools.

INIS member states, on the other hand, are assigned the responsibility for establishing and carrying out promotional activities in the area or regions under their domain in order to make aware the INIS potential to the users desiring information and information services in the field of nuclear science and technology. For this, they are assisted by the INIS Secretariat which assists by providing general promotional and informational materials about INIS and its databases.

6) *Training*

A range of training activities provided by INIS meet a number of objectives that include: establishment and improvement of a national information infrastructure, transfer of modern information technology, enabling exchange of scientific and technical information, ensure high quality and coverage of the INIS Database, facilitate maximum utilisation of INIS output products and are responsiveness to a country needs.

Alert Services

Based on the INIS products, alert services are provided usually in the form of SDI services to the users requiring current information in field of nuclear science and technology. These services are mostly available through the National INIS Liaison-

Officer of the individual INIS member states. Here the alert services are in the form of individual searches which are performed against individual subject interest profiles of the users.

Document Delivery Service

For providing the document delivery services, INIS has made arrangements with several INIS national centres which make available full-texts of INIS non-conventional literature to users in the individual INIS member state. This service, however, is limited only to the users of the particular INIS member state. For requests received from countries where no such facility is available, service is available by referring to the Knowledge Preservation Group of INIS.

Services in India

From the very beginning India has been actively associated with INIS. In India, Library and Information Services Division of BARC is the National Centre for INIS activities. This centre collects information on the subject and then sends it to the Centre Processing Unit and passes the output to the users. The INIS database can be accessed online through Internet and CDs which are distributed by IAEA. The non-conventional literature of INIS is available in the form of CDs, microforms.

Besides the above products, each member state offers a host of individualised services based on INIS products received from the INIS Secretariat. Details of the exact availability of INIS related services in the particular country are available from the National INIS Liaison Officer.

Contact details in India:

INIS Liaison Officer, Head, Scientific Information Resource Division, Bhabha Atomic Research Centre ((BARC), Trombay, Bombay 400085.

Self Check Exercises

- 1) What are the salient features of INIS?
- 2) Give details of the participating institution from India in the INIS programme.

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

ii) Check your answers with the answers given at the end of the Unit.

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8.4 AGRIS

AGRIS, the International Information System for the Agricultural Sciences and Technology, was started in 1974 by the Food and Agriculture Organisation (FAO) of the United Nations. AGRIS became fully operational in 1975 with the first issue of AGRINDEX and was modeled on the INIS pattern to facilitate information exchange and to bring together the world literature dealing with all aspects of agriculture. Presently, FAO's another programme, Current Agricultural Research Information System (CARIS) and AGRIS are functioning collectively.

AGRIS is a cooperative system in which participating member countries input references to the literature produced within their country irrespective of the language and, in return, draw on the information provided by the other participants. To date, 242 national, international and intergovernmental centres are participating in the AGRIS/CARIS programme. AGRIS was established with the following objectives:

- “Creation of a single, comprehensive, current inventory of world-wide agricultural literature reflecting agricultural research results, food production, rural development and to help users to identify problems concerning all aspects of world food supply,
- Meeting the information requirements of users requiring agricultural information by offering specialised subject retrieval services, providing documents on request, current awareness and selective dissemination of information services, and
- Collaborating with new and existing specialised secondary information services so as to increase efficiency and eliminate unnecessary duplication.”

Background and Development of the AGRIS Network

AGRIS has been operational since 1975. Its main aim is “to build an information system in the field of agriculture science and technology and related subjects”. It is a system of collaborative network of agricultural institutions of the world. The basic principles on which AGRIS was established as an agricultural network are given below:

AGRIS is an international/global system that is:

- “entirely international in scope as all United Nations Member Countries are participating in the programme;
- multilingual with English as a carrier language;
- a centralised collection of bibliographic details of publications, outputs and activities of agricultural research programmes of various United Nations Member States;
- special emphasis is on non - conventional (grey) literature in Member States;
- a global system which is participatory as it is based on a designated national AGRIS Input Centre in each United Nations Member State and other related agricultural international organisations;
- an information system supported by Food and Agricultural Organisation (FAO) which has complete coordination with regard to application of tools and methodologies, data processing, training, and other technical back-up activities; and
- a system where all UN Member States have common ownership of agricultural data alongwith facility of easy access to the collective information base maintained at the AGRIS headquarters.”

The subject areas of the AGRIS include various aspects of agriculture, including forestry, food, environment, animal sciences, aquatic sciences and fisheries, human nutrition and all other aspects related to agricultural sciences from participating countries all over the world. AGRIS centres input information from periodical literature, monographs, reports, patents, standards, etc. on standardised data input formats. The covered literature also includes unique material such as unpublished scientific and technical reports, theses, conference papers, government publications, and more.

Approximately 1,30,000 records are added each year with keywords in English, French, and Spanish. The centralised processing is then done at the AGRIS Coordinating Centre in Rome.

The AGRIS information system has till date a total of 242 participating centres located in various United Nations Member States. Each AGRIS National Centre acts as a focal point in the concerned country or region which makes available information to the user community thereby acting as a decentralised system. Some of the centres are carrying out not only the documentation of scientific and technical literature, but are also working for the development of agricultural information management.

In the last three decades, AGRIS has been quite successful in achieving its initially stated goals, but there have been some problems faced by the participating centres which at times hamper overall progress of the network. Some of these problems are:

1) *Access to the original documents*

All AGRIS records comprise bibliographic reference. The abstract is usually available for only about 30% of AGRIS records. The access to the full-text of the documents, however, is only possible through document delivery (for example, by post or fax). Therefore, most developing countries have not been able to offer this service properly and this leads to a lot of problems.

2) *Incomplete coverage*

In the last few years, a review of the input statistics of literature received from Asia/Pacific region, Africa and Latin American/Caribbean regions to the central AGRIS database shows slight decline in the number of records input to the database. This has been in contrast to the statistics gathered from other sources that show a fast upward trend of global production of documentation and other outputs related to agricultural development and food security which too is a cause for alarm.

3) *Agriculture related systems other than AGRIS*

As per a chief objective of AGRIS, its database receives all inputs from the United Nations Member States only. But many national bibliographic databases, and even collections of electronic full-text documents pertinent to the scope of AGRIS, exist outside the framework of AGRIS, and thus have no involvement with FAO.

4) *Lack of structural and institutional linkages*

The overall setup lacks network linkages due to structural and institutional barriers. Thus the existing AGRIS system lacks proper coverage due to its centres not being linked in any significant way to the wider community of organisations and programmes working in food security or rural development.

Since its inception, the chief objective of AGRIS has been capacity building, improving access and exchange of information in the area of agricultural science and technology. Besides this, the system also aims to review the present day available technologies and user requirements for the future of development of the AGRIS. Presently, the strengthening of the AGRIS initiative has gone far beyond the creation and development of bibliographical databases. The focus has always been to improve accessibility of science and technology information to facilitate agricultural development and food security. AGRIS plays vital role in highlighting the need and importance of agriculture and information related to agricultural activities in the developing and developed countries thereby indicating that agriculture can be a central part of the developments in these nations. Although this effort is entirely based on the awareness and goodwill

of the international community. AGRIS can lead to improving electronic publishing of documentation in agricultural science and technology, linking information about institutions, scientists and researchers, and activities, without too much of efforts and thus leading to a collaborative framework.

With the above in view, the AGRIS has revised its principles in collaboration with the Member Countries for the AGRIS network to achieve its objective in the near future. The revised principles take into account the aspects related to adopting a decentralised approach, more emphasis on national partnerships, improved linkages, capacity building, making available full-text of documents in the field of agriculture science and technology, web-enabled methodologies and tools and need for establishment of standards.

AGRIS Network and AGRIS Resource Centres

Efforts are on to improve the activities of AGRIS Resource Centres and thus improve the capabilities of the AGRIS Network. With this in view, a high level committee was set up in June 2000, which recommended that AGRIS Input Centres be renamed as AGRIS Resource Centres in order to reflect their revised role. These centres just like the input centres, are recommended to be located in various national, regional or international organisations. The Resource Centres are expected to play a key role in capacity building with focus on national and regional partnership. The international network on the other hand would lead to exchange of agricultural information and knowledge with help of the modern available tools and technologies.

Some of the functions that are essential for the AGRIS Resource Centres are:

- “adoption and implementation of standards for cataloguing and indexing agricultural information, especially the categorisations schemes, thesauri and the development of standard exchange formats;
- collection, recording and organisation of non-conventional and conventional scientific and technical literature relevant to AGRIS which is produced in the region;
- creation of digital repositories for literature and other types of related scientific and technical information produced in their area, in consultation with FAO; and
- maximum use of Internet-based tools for data processing and dissemination.”

Other areas where efforts have been made include:

- FAO and AGRIS Information Centre/Website
- Improving Access to Documentation on Science and Technology
- Strengthening and Establishment of Standards
- The Central AGRIS Website/Database
- Deployment of New Methods and WebAGRIIS Tools

Information Activities

The information collected from various input centres from all over the world is processed by AGRIS and is available to users in the form of various current and ongoing agricultural information projects in both AGRIS and CARIS. Some of these are:

WebAGRIIS

It covers the current and ongoing agricultural information projects in AGRIS and CARIS and is considered as networking for AGRIS in the future. The target users are those that require information related to all areas of agricultural and rural development.

AGRIS AP

AGRIS Application Profile (AP) gives the Guidelines for Description of Information Objects for the International Information System on Agricultural Sciences and Technology. This document contains specifications about the metadata that should be exchanged and disseminated through the AGRIS system.

Electronic Discussion Forum

This is the discussion group workspace for the exchange of ideas on using the AGRIS AP, WebAGRIS. The ideal target audience consists of coordinators and facilitators of established or incipient communities, as well as groups of individuals with shared interests in agricultural and rural development.

AGROVOC

AGROVOC is the multilingual international agricultural thesaurus. The terms are in English, French and Spanish. Each key term included in the AGROVOC is either a descriptor or a non-descriptor. AGROVOC is also available online referred to as AGROVOC Online.

AGRIS Information Products

Various products of AGRIS available from the AGRIS Secretariat are:

- AGRIS and CARIS on CD – This includes the bibliographic references, CARIS Project Data, the AGROVOC Thesaurus and the FAO Catalogue.
- AGRIS Manuals – Several manual of AGRIS are available for immediate downloading for use by the resource centres.
- AGRIS and CARIS - FTP site - Makes available AGRIS and CARIS data.
- FAO Documentation – Food and Agricultural Organisation documents starting from 1980 to 2000 are available with complete text from the document repository of AGRIS.

AGRIS Categorisation Schemes

These are categorisation schemes for information in the areas of agriculture, nutrition, forestry and fisheries. The categorisation schemes available from AGRIS are:

- AGRIS/CARIS Subject Categories – A List of 17 AGRIS/CARIS Subject Categories
- Countries Codes – A List of Member Country Codes
- Language Codes – A List of Language Codes
- AGRIS/CARIS Categorisation Scheme

Services in India

India has been actively participating in AGRIS from the very beginning. The participating AGRIS/CARIS institution from India is the Agricultural Research Information Centre, Indian Council of Agricultural Research, Krishi Anusandhan Bhavan, Pusa Road New Delhi 110 012. On an average, 3500 bibliographic entries are submitted to AGRIS database as Indian input every year.

The Agricultural Research Information Centre, every month, receives from FAO updated machine-readable AGRIS outputs. Retrieval is then provided to agricultural

scientists requiring information in the country. A computerised SDI service is also made available to agricultural researchers of India.

Contact details in India

AGRIS Liaison Officer, National AGRIS Centre, Agricultural Research Information Centre, Indian Council of Agricultural Research, Krishi Anusandhan Bhavan, Pusa Road, New Delhi 110 012.

Self Check Exercise

3) List the principles of the AGRIS Network.

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

ii) Check your answer with the answers given at the end of the Unit.

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8.5 INFOTERRA

INFOTERRA is an information network of the United Nations Environment Programme (UNEP) established for facilitating global environmental information exchange. The programme is functionally successful because of an efficient system that operates through national focal points designated by various governments that are members of the United Nations. At present, INFOTERRA has 178 members in various Member States of UN.

The INFOTERRA national focal point in each member state is mostly a national information centre dealing with environmental science and usually is located in the ministry or a government agency responsible for activities concerned with environmental protection. The primary function of each centre is to provide a national environmental information service.

INFOTERRA was conceived in the year 1972 at the Stockholm Conference on the Human Environment which stressed on the exiting gap and recommended the need and establishment of an effective mechanism for exchange of environmental information and experiences among the United Nations Member Countries. Subsequent to this recommendation, UNEP established the INFOTERRA network (then known as IRS - International Referral System) and the UN Member Governments were requested to designate a suitable national focal point in the respective member country to participate and coordinate INFOTERRA activities at the country level. Later in the year 1992, the Rio Conference on Environment and Development (UNCED) reiterated the need and importance of information for decision-making and requested the member countries for strengthening of the INFOTERRA network in order to improve information availability in the field of environmental sciences.

In each UN Member State, INFOTERRA national focal points provide a wide range of environmental information products and services including bibliographies in the topic related to environmental sciences; directories of sources of information; information services; leaflets for environmental awareness and also access to Internet services.

The INFOTERRA Secretariat is situated at the UNEP Headquarters in Nairobi. It supports the national focal points by providing technical services and publishing reference tools that include the International Directory of Sources, the EnVoc Multilingual Thesaurus of Environmental Terms, various training manuals; sourcebooks and other promotional materials. Besides these, the focal points in developing countries are also provided with the facility of a capacity building programme.

The users seeking information on the areas related to environment can contact the INFOTERRA network through the following:

- UNEP World Wide Web (WWW) site (<http://www.unep.org>);
- INFOTERRA List Server; and
- INFOTERRA Secretariat.

UNEP-INFOTERRA Products and Services

INFOTERRA offers a wide range of environment related information products and services. Some of the products and services include:

- 1) *INFOTERRA Technical Services*
 - Query Response Service
 - Availability of Environmental Literature
 - Bibliographies on Environmental Topics
 - Directories of Environmental Information Sources
 - Access to INFOTERRA Internet Services
 - UNEP-INFOTERRA Publications
- 2) *Training Manuals, Environmental Source Books and Promotional Material*
- 3) *ENVOC Multilingual Thesaurus of Environmental Terms*
- 4) *INFOTERRA-ISIS (International System of Information Sources)* – It is a database management system which enables each INFOTERRA national focal point to maintain a national database (directory) of institutional sources on environmental information with the integration of these national databases into an international database of sources, INFOTERRA-ISIS provides the INFOTERRA International Directory of Sources.
- 5) *SASIN Environmental Database* - SASIN (Southern African Sub-regional INFOTERRA Network) Environmental Database website is a part of INFOTERRA's global environmental information exchange network. This website has a searchable database of over 29,000 bibliographic references that includes books and journal articles on the subject of environmental sciences acquired from SASIN member organisations.
- 6) *Sources of Information on Environment and Development available on CD-ROM and the Internet*
- 7) *National Focal Point Fact Sheet Database*
- 8) *Query-Response Service*
- 9) *List Servers - INFOTERRA in the Electronic Universe* - INFOTERRA has been in operation, since 1994, and is an Internet subscription list for promotion of exchange of environmental information amongst Internet users. This has led to effective in the dissemination of environmental information.

10) UNEP-INFOTERRA International Directory

Address of INFOTERRA Secretariat - Division of Environmental Information, Assessment and Early Warning, United Nations Environment Programme, P.O. Box 30552, Nairobi, Kenya.

Services in India

India, being a member of the United Nations has been actively participating in the INFOTERRA Programme. ENVIS, the Environmental Information System, due to its comprehensive network has been designed as the National Focal Point (NFP) for INFOTERRA from India. In order to strengthen the information activities of the NFP, ENVIS was designated as the Regional Service Centre (RSC) of INFOTERRA of UNEP in 1985 for the South Asia Sub-Region countries.

The ENVIS has built up a reasonably good information base in the form of publications, reports, reprints, bibliographies, abstracts, databases, etc. as well as numerical data i.e., statistics relating to environment. The services of ENVIS include answering queries, referral services, abstracting services and documentation and information dissemination of environmental related information.

The contact point for India is UNEP INFOTERRA National Focal Point Manager, Senior Adviser and Director (ENVIS), Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, Lodi Road, New Delhi 110003, India. The URL is <http://envfor.nic.in/envis>

Self Check Exercise

4) What is INFOTERRA?

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

ii) Check your answer with the answers given at the end of the Unit.

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8.6 UNESCO SCIENCE AND TECHNOLOGY POLICY PROGRAMME

The Division of Science and Technology Policies of UNESCO had established SPINES Pilot Programme which was superseded by the Science and Technology Policies Information Exchange Programme (PIPS) in 1984. It was established to facilitate exchange, at the national and international levels, the documents and factual data that have a direct bearing on the formulation and monitoring of national science and technology policies. The PIPS programme contributed to development of compatible information services dealing with science and technology in UNESCO Member Countries.

This programme is now referred to as UNESCO Science and Technology Policy Programme and is part of UNESCO's Thematic Area- Natural Sciences and under this is Science Policy.

As part of Science Policy Resolution, assistance is given to countries in formulating policies, strategies, plans and legislations for the development of their scientific and technological capabilities.

As per the requirement of UNESCO Member States, and the recommendations of the World Conference on Science held in Budapest in 1999, UNESCO's Division of Science Analysis and Policies (SC/AP) was assigned the responsibility to:

- contribute to the advancement of science;
- promote a new contract between science and society; and
- provide assistance in the formulation and implementation of science and technology policies at the national, regional and world-wide levels.

This was with a view to increase and mobilise scientific and technological resources for the advancement of knowledge and in the support of sustainable development and peace.

UNESCO also provides guidance with regard to science policy in its member states. Guidance is available with regard to provide technical advise on formulation, implementation, monitoring, and review of policies and plans concerning national S&T activities and encouragement and effective utilisation of scientific and technological potential.

Role of UNESCO

UNESCO plays a major role as a promoter of international co-operation by carrying out Science and Technology Policy activities in member states leading to reforms and innovations in scientific pursuits. For this, UNESCO carries out programmes at regional and international levels, develops analytical work in co-operation with other international organisations, supports regional S&T policy networks and also serves as a clearing house.

UNESCO's role thus covers the following domains:

- Governance of S&T and its implications in UNESCO Member States,
- Evolving Policy Guidance,
- Encouraging capacity building in its Member States, and
- Prospective thinking and developing scientific temper amongst individuals.

Self Check Exercise

5) Write down the objectives of the science policy programme of UNESCO.

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

ii) Check your answer with the answers given at the end of the Unit.

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8.7 ASTINFO

ASTINFO stands for Regional Network for Exchange of Information and Experience in Science and Technology in Asia and Pacific. It aims to promote the exchange of information and experience in science and technology among countries in the Asia/Pacific region. It was established in 1983 as an outcome of the Second Conference of the Science Ministers and Economic Planning Bodies in the Asia/Pacific region (CASTASIA II), held in March 1982 in Manila (Philippines). ASTINFO has co-ordinating units in 18 Member States; and some 82 national/regional institutions now hold the status of ASTINFO Associated Centres and Networks. A quarterly Newsletter is also being published. The aims and benefits of ASTINFO include the following:

- “Computerisation of library and information management services;
- Pilot projects on Specialised information systems and services;
- Development of National Information Policies and Standards;
- Innovative approaches to education and training of library and information personnel;
- Establishment of document delivery systems and services; and
- Serving as a forum for communication and information exchange.”

ASTINFO helps Member States in acquiring/developing the necessary policies, methodologies, guidance, and expert advice to generate, store, process, retrieve, exchange, use and share information in the area of Science and Technology.

In the year 1986 UNESCO launched another network, called Asia-Pacific Information Network in Social Science (APINESS) with the collaboration of Association of Asian Social Research Councils.

Since the year 2000, UNESCO had revised its various activities and programmes and included ASTINFO and APINESS Programmes in the APIN (Asia Pacific Information Network). APIN is a network formed by a merger of the Regional Network for the Exchange of Information and Experiences (ASTINFO), the Regional Informatics Network for Southeast Asia and the Pacific (RINSEAP) and the Regional Informatics Network for South and Central Asia (RINSCA).

APIN Programme of UNESCO is linked with UNESCO's Information for All Programme (IFAP) and promotes ICT literacy and application, information and knowledge networking, sharing of information resources, and use of international standards and best practices in communication, information and informatics.

Self Check Exercise

6) What are the aims and benefits of ASTINFO Programme ?

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

ii) Check your answer with the answers given at the end of the Unit.

8.8 MEDLARS

The United States National Library of Medicine (NLM), a component of the National Institutes of Health (NIH) is located in the campus of NIH in Bethesda, Maryland. NLM is one of the largest medical libraries of the world. It collects materials in all major areas of the health sciences and related areas which include chemistry and physics. The goal of the library is to collect material and provide information and research services in all areas of biomedicine and health care.

The NLM is presently having more than 7 million items that include books, journals, technical reports, manuscripts, microfilms, photographs and images. This library is equipped with one of the world's finest medical history collections of old and rare medical works. The collections of the library can be consulted either in the reading room or through inter-library loan. NLM is a national resource for all U.S. health science libraries which is a national network of libraries of medicine.

Medical Literature Analysis and Retrieval System (MEDLARS) was established in 1964 as a computerised storage and retrieval system at the NLM. It provides bibliographic access to the NLM's large biomedical literature collection. It became functional with the first computer-produced issue of *Index Medicus*.

The NLM has been publishing the *Index Medicus*, a monthly subject/author index guide to articles in 4000 journals for over 125 years. All the information available in *Index Medicus*, is also available in the database MEDLINE, the major component of PubMed which is freely accessible via the World Wide Web. Other databases of MEDLARS provide information on monographs (books), audio-visual materials, and on various specialised subjects such as toxicology, environmental health, and molecular biology.

MEDLINE is the National Library of Medicine's bibliographic database, covers the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and the preclinical sciences. MEDLINE can be accessed through PubMed and the NLM Gateway.

PubMed, a service of the National Library of Medicine, contains over 15 million citations for biomedical articles back to the 1950's. These citations are from MEDLINE and additional life science journals. PubMed has links to many sites providing full-text articles and other related resources.

NLM also has a large number of databases and other electronic resources which can be accessed online. These include TOXLINE, NLM Catalog, MedlinePlus, ClinicalTrials.gov, DIRLINE, Genetics Home Reference, Meeting Abstracts, HSRProj, OMIM, HSDB and NCBI Bookshelf.

Indian MEDLARS Centre (IMC)

NIC and ICMR have jointly set up Indian MEDLARS Centre to cater to the information needs of medical community of India. We all know that Indian contribution in the areas of biomedical research and health care has been significant and conforming to international standards. Unfortunately only a small fraction of it is available for reference through international bibliographic databases. The ICMR-NIC Centre for Biomedical Information (Indian MEDLARS Centre or IMC) has developed a bibliographic database of peer reviewed Indian biomedical literature. This database covers prominent Indian journals. Which have been selected from more than 200 journals. More journals would be added to the list as their quality

improves in coming years. It is proposed to cover the journals from 1985 onwards in this database.

IndMED

This database is covering prominent peer reviewed Indian biomedical journals. It is basically designed to provide medical professionals/researchers/students and the medical library professionals a quick and an easy access to Indian literature covering biomedical field.

Self Check Exercises

7) Write a brief note on MEDLINE.

8) What is PubMed?

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

ii) Check your answers with the answers given at the end of the Unit.

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8.9 CAS

In the year 1907, the Chemical Abstracts Service (CAS) was started. It is a non-profit organisation of the American Chemical Society (ACS), located in Columbus, Ohio. It disseminates chemistry related information derived from the scientific and technical literature and patents world wide. CAS covers publications in 50 languages from about 150 countries of the world and uses advanced computer based systems for processing, storing, searching and disseminating relevant scientific, technical and industry information. The most important feature of CAS is the computerised Chemical Registry that identifies chemical substances by structure and assigns each one a unique number. This is used in CAS products to link the structure with related names, bibliographic references and other information on the substances.

Presently, CAS being the world's leader in providing scientists online and web access to chemistry related research data, is also the largest and most comprehensive producer of databases of chemical information. Besides this, CAS has a team of scientists who create and deliver the most complete and effective digital information environment for scientific research and discovery by providing access to published research from journals world over along with patent literature that includes virtually everything relevant to chemistry plus a wealth of information in the life sciences and a wide range of other scientific disciplines from the very beginning of the 20th century.

Every year, CAS indexes and abstracts articles and patents from approximately 9,000 scientific journals, conference proceedings, and other documents relevant to chemistry, life sciences and many other related subject areas. Thus, every year, on an average, CAS scientists provide abstracts and indexing for over 800,000 journal articles, patents, and other research materials and also assign CAS Registry Numbers and substance records for more than 15 million substances. CAS has, therefore,

since 1907, indexed and summarised chemistry-related articles from more than 40,000 scientific journals, in addition to patents, conference proceedings and other documents pertinent to chemistry, life sciences and many other fields. As per a latest count, abstracts for more than 24 million documents belonging to chemistry-related literature and patents and more than 25 million organic and inorganic substances and over 56 million sequences are accessible online through CAS.

CAS provides a number of print and computer-based information products and services, including Chemical Abstracts, its principal publication, computer readable bibliographic and registry databases, and the CAS Online Service. To facilitate access to its products and services, Chemical Abstracts Service licenses information centres to provide current awareness and other information services to the scientific community in their region. Through the printed CA, CA on CD, STN, the CAS files distributed through licensed vendors, the SciFinder and SciFinder Scholar, desktop research tools, and the STN Easy or STN on the Web services, data produced by CAS is accessible to virtually any scientific researcher worldwide in industry, governmental research institutions, and academia.

Chemical Abstracts Service has a vast range of products and services, some of which are:

Chemical Abstracts (CA)

Chemical Abstracts (CA) is a weekly abstracting journal covering abstracts from both journal articles and patents. It is available in print, microform, and CD-ROM. CA has been alerting its subscribers about the most recent published breakthroughs in science since the beginning of the 20th century. The unique abstracting journal is highly popular with scientific community due to its indexes. The indexes of CA are: Author Index, Keyword Index, Patent Index, General Subject Index, Chemical Substance Index and Formula Index. Chemical Abstracts is distributed as Printed CA and CA on CD.

STN

STN International meets the information needs of knowledge managers, information professionals and research scientists. STN connects scientists, engineers and others requiring technical information to the world's most complete and authoritative 200 databases covering chemistry, life sciences, engineering, patents, business, etc. STN provides in-depth databases in science and technology to give the users quick, direct links to the literature, patents, and chemical catalogues.

STN on the Web

STN on the Web is a full-featured service developed for searchers/users who are familiar with using a command language to search online databases. CAS offers a variety of ways to help users for searching information from STN which ranges from hands-on training to self learning training materials and documentation. STN on the Web thus offers web-browser access to the complete content and functionality of STN for information professionals and advanced end users.

STN Easy

STN Easy is web access to 100 of the most essential STN databases with the users having no need to learn command language. Here easy and advanced Patent Lookup and CAS Registry Number searches are available. In addition, facility to save predefined searches or search terms for later use are also available.

SciFinder is a desktop tool that allows users to explore research topics, browse scientific journals and stay current with the scientific literature. CAS databases can be searched by author, keyword, (sub)structure, sequence, etc.

SciFinder Scholar

SciFinder Scholar is one of the leading services of CAS which provides the most accurate and comprehensive chemical and related scientific information to the users. This desktop research tool for students, researchers and faculty provides easy access to scientific information offered by the CAS databases such as patent and journal references, substance information, regulated chemicals, chemical reactions and chemical supplier information. SciFinder Scholar offers a variety of pathways and powerful tools to explore CAS databases and MEDLINE.

CAS Registry

The main feature of CAS is substance identification. As you know, presently CAS is the largest substance identification system. When a chemical substance, newly encountered in the literature, is processed by CAS, its molecular structure diagram, systematic chemical name, molecular formula, and other identifying information are added to the Registry and it is assigned a unique CAS Registry Number. Registry now contains records of more than 25 million organic and inorganic substances, and 56 million sequences.

CAS Product Finder

CAS products have developed to match scientific information needs of the users. The user may be an experienced information professional or an infrequent searcher who still needs current and accurate information. This service, offered online on the CAS website, allows a user to select the option that most closely describes a situation and finds out which CAS/STN electronic product is best for the particular user category.

Self Check Exercise

- 9) List some computer-based products and services of CAS.

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

- ii) Check your answer with the answers given at the end of the Unit.

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8.10 INSPEC

INSPEC, started in the year 1967, by the Institution of Electrical Engineers (IEE), United Kingdom. Presently it is one of the leading bibliographic information services available in English-language. It provides access to the world's scientific and technical literature in physics, electrical engineering, electronics, communications, control engineering, computers and computing, and information technology. INSPEC is

based on the Science Abstracts service which has been available from the IEE since 1898. The major effort in this respect is preparation of the INSPEC database, since 1969, which provides all the services from INSPEC. The back files of Science Abstracts are also available from 1898 to 1968 to which electronic access is facilitated from the INSPEC Archive.

INSPEC is useful to engineers, scientists and others in their research for locating relevant journal articles, conference papers and other documents. In addition, the database is also used for providing current awareness services, information about the new products from IEE, technological forecasting, competitive intelligence and patent-related searching.

The database is updated every year after scanning over 3400 scientific and technical journals, about 2000 conference proceedings, books, reports and dissertations. INSPEC has skilled staff for scanning relevant articles which are abstracted and indexed for inclusion in the database. Currently the database contains over 8 million bibliographic records and is growing at the rate of 400,000 records each year.

INSPEC has comprehensive subject coverage. It is a comprehensive index to the literature in physics, electrical/electronic engineering, computing, control engineering and information technology. Besides this, it also covers areas like materials science, oceanography, nuclear engineering, geophysics, biomedical engineering and biophysics. The full scope of subject coverage by INSPEC is given in INSPEC Classification.

Products and Services

The IEE is internationally well known for its wide range of print and electronic publications that include books, journals, magazines, conference proceedings concerning various areas of electrical and electronic engineering, including telecommunications, computing, power, control, radar, circuits, materials and more. The IEE also publishes the Wiring Regulations and a range of associated publications.

Apart from this, the IEE also produces the INSPEC bibliographic database, which covers literature in the fields of physics, electronics, electrical engineering, computing, control and information technology. IEE Publishing is a member of the CrossRef initiative.

INSPEC is available in a wide range of products:

1) *Electronic Format*

This includes:

- Online database for remote access to information from INSPEC
- Inspec Ondisc (CD-ROM)
- Inspec Archive - Electronic Access to Science Abstracts 1898 to 1968
- Inspec Web
- Site licences and direct data services for in-house and remote access information systems
- INSPEC Specialised Databases – These are three subject oriented databases in the areas of photonics, biomedical technology, and information and communication technology.

2) *Abstracting Journals*

Physics Abstracts, Electrical and Electronics Abstracts and Computer and Control Abstracts together form the Science Abstracts series of journals from IEE. These journals together contain almost all of the 350,000 or more short summaries of published articles which also appear annually in the INSPEC database.

3) *Current Awareness*

INSPEC offers a range of current awareness services including some online products, which offer specialised areas to meet the needs of specific individuals and research groups.

4) *User Aids*

The following user aids offered by INSPEC are available in print and CD format as INSPEC Search Aids CD-ROM on a single CD.

- INSPEC Thesaurus
- INSPEC Classification
- INSPEC List of Journals

5) *INSPEC Services*

- Document Delivery Service-Publications indexed by INSPEC are warehoused for this service.
- IEL - IEEE/IEE Electronic Library full-text of IEEE and IEE publications with INSPEC index.
- Electronic Materials Information Service (EMIS) giving data and background text on the properties and technology of semiconductors.

Self Check Exercises

10) List the abstracting journals brought out by INSPEC.

11) Which are the user aids offered by INSPEC in CD-ROM?

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

ii) Check your answers with the answers given at the end of the Unit.

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8.11 BIOSIS

BIOSIS, provided by Thompson Scientific. It is serving the life science community by providing researchers, students, and librarians with references to research published and found in journal articles, conference proceedings, meetings, patents, book chapters and other sources of information. For this, BIOSIS selects more than 600,000 new entries each year. Based on the collected information, BIOSIS provides flexible information services which include databases and customised information products to the life sciences community globally.

This benefits the user community who require life sciences information quickly and efficiently. It reduces the search time of users by using authoritative BIOSIS databases which aggregate information from more sources than any user could otherwise read or have access to.

BIOSIS databases are, the most complete resource for finding life sciences information. The databases are interdisciplinary as most important subjects from different fields all over biology are covered. The coverage of these databases includes international publications with a unique indexing system that allows flexible, efficient searching. These databases are prepared by gathering information from diverse sources as citations for articles, meetings, patents, book chapters, etc.

The BIOSIS databases are used by librarians, information specialists, researchers, students, academicians, legal experts, product development experts, government officials and product development experts requiring information related to the life sciences.

BIOSIS Products and Databases

Following are the BIOSIS products and databases available in print and electronic form.

Biological Abstracts (BA)

Usually referred to as an index to the world's life sciences journal literature, BA is an abstracting journal that covers articles from over 3,700 journals from all over the world and from subjects like botany, pharmacology, biochemistry, ecology and other biological areas. The publication includes over 350,000 citations each year with author abstracts. There are over 8 million archival records available from 1969. A unique feature of BA is its comprehensive coverage and context-sensitive indexing which makes available information useful for all researchers requiring life science information.

BA can be accessed on CD, through the web, or in print. Electronic versions of BA are updated quarterly. Print versions are issued twice each month.

Biological Abstracts/RRM

Biological Abstracts/RRM (Reports, Reviews, Meetings) is a complementary product to the BA. Every year, BA/RRM adds 215,000 references to non-journal documents. This information is collected from Meetings and Conferences, Literature Reviews, US patents, Books, CD-ROMs and other life science media. Updated quarterly, the non-journal information in BA/RRM usually precedes and complements the journal data thus offering a total solution to information requirements of any life sciences information user.

BIOSIS Previews

This is a comprehensive index to life sciences and biomedical research. BIOSIS Previews contains citations from Biological Abstracts (BA), and Biological Abstracts/Reports, Reviews, and Meetings (BA/RRM) (formerly BioResearch Index). Together, these publications constitute the major English language service providing comprehensive worldwide coverage of research in the biological and biomedical sciences.

BIOSIS Search Guide

An essential tool for all users of the BIOSIS databases.

An essential tool for all users of the BIOSIS databases.

BasicBIOSIS

Life science database for students new to research.

Abstracts of Entomology

Provides insects related research from all over the world covering over 20,000 new references each year. Abstracts of Entomology is a monthly current awareness publication providing the most extensive reference to entomological studies published in world's life science literature. All references are derived from the BIOSIS Previews database. Coverage is from 5,500 international serial publications, books, conference proceedings and other related materials.

Abstracts of Mycology

A specialised resource that indexes mycology resources. Abstracts of Mycology is a monthly current awareness publication providing the most extensive references to mycological studies reported in worldwide life science literature. All references in this publication are derived from the BIOSIS Previews database. Abstracts of Mycology contains 17,000 new references each year from about 5,000 international serial publications, books, conference proceedings and other related materials.

Zoological Record (ZR)

This indispensable reference database covers topics covering the field of animal biology, including animal behaviour, conservation, ecology, marine biology, ornithology, parasitology, toxicology, zoology, veterinary sciences and other related areas. ZR's coverage dates back to 1864 and it has been known to the world's unofficial register of animal names. The ZR database indexes over 4,500 serials from all over the world besides books, reports, conferences, etc. Every year about 72,000 indexed records are added with about 1.5 million record archives is electronic format. ZR is available in print, CD and online formats depending on the users' requirements covering information from every field in animal biology.

Zoological Record Search Guide

An essential tool for all users of the Zoological Record databases.

Zoological Record Serial Sources

An essential tool for all users of the Zoological Record databases.

Self Check Exercises

12) Give a brief account of Biological Abstracts.

13) Elaborate the uses of BIOSIS databases.

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

ii) Check your answers with the answers given at the end of the Unit.

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8.12 SUMMARY

Information is a vital resource for users requiring timely information. There are many international organisations, systems and centres contributing towards promotion, coordination and development of library and information services for assisting the users. In this Unit, we have covered global information systems like INIS, AGRIS and INFOTERRA that provide cooperative systems and services and work on the principle of decentralised input, centralised processing and decentralised output.

The growing demand for information and increasing use of present facilities and services indicates the need and importance of information systems and centres as components of our information infrastructure. The advent of computers, as a major tool in information processing, has enhanced the possibility of creating machine-readable database which has enhanced the use and capabilities of the present day global information systems.

8.13 ANSWERS TO SELF CHECK EXERCISES

- 1) INIS, sponsored by the International Atomic Energy Agency, Vienna started functioning in 1970. It is a cooperative, decentralised computerised abstracting and indexing system providing worldwide coverage of the literature on the peaceful uses of nuclear energy. It processes and merges input provided by its members and redistributes the information in machine-readable form as well as in print form. INIS, the International Nuclear Information System, the right place for those who need information on the peaceful applications of nuclear science and technology.
- 2) India has been actively participating in INIS from the very beginning. The Library and Information Services Division of the Bhabha Atomic Research Centre, Trombay, is the national centre responsible for INIS activities in India. The centre has been quite successful in collecting information on the subject, sending the same to the centralised processing unit and then receiving and passing the output to the users in the country.
- 3) Some principles of AGRIS Network are:
 - “a decentralised approach with greater emphasis on national partnerships with greater autonomy but with improved links;
 - a greater diversity of research-oriented organisations participating in a strengthened global AGRIS network;
 - a strengthened role in capacity building, including improved linkages between the AGRIS network and other FAO initiatives in Member Countries;
 - a focus on management of full-text of documents in agricultural science and technology information resources;
 - a greater availability of associated information about activities, organisations, and people in agricultural science and technology;
 - a continually improving set of web-enabled AGRIS methodologies and tools”.
- 4) INFOTERRA is the global environmental information exchange network of the United Nations Environment Programme. The network operates through a system of government-designated national focal points which are 178 presently. An

INFOTERRA national focal point is essentially a national environmental information centre usually located in the ministry or agency responsible for environmental protection. The primary function of each centre is to provide a national environmental information service.

- 5) As part of the Science Policy Resolution, assistance is given to countries in formulating policies, strategies, plan and legislations for the development of their scientific and technological capabilities.
- 6) The aims and benefits of ASTINFO include: Computerisation of Library and Information Management Services; Pilot Projects on Specialised Information Systems and Services; Development of National Information Policies and Standards; Innovative Approaches to Education and Training of Library and Information Personnel; Establishment of Document Delivery Systems and Services; and Serving as a Forum for Communication and Information Exchange.
- 7) MEDLINE is the National Library of Medicine's premier bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and the preclinical sciences. Access to MEDLINE is through PubMed and NLM Gateway.
- 8) PubMed, a service of the National Library of Medicine, includes over 15 million citations for biomedical articles back to the 1950's. These citations are from MEDLINE and additional life science journals. PubMed includes links to many sites providing full-text articles and other related resources.
- 9) Some computer- based products and services of CAS are:
 - Chemical Abstracts (CA)
 - STN International
 - STN on the Web
 - STN Easy
 - SciFinder
 - SciFinder Scholar
- 10) Physics Abstracts, Electrical and Electronics Abstracts and Computer and Control Abstracts together form the Science Abstracts series of journals from IEE. These journals together contain almost all of the 350,000 or more short summaries of published articles which also appear annually in the INSPEC database.
- 11) The following user aids offered by INSPEC are available in print and CD format as INSPEC Search Aids CD-ROM on a single CD:
 - INSPEC Thesaurus
 - INSPEC Classification
 - INSPEC List of Journals
- 12) Biological Abstracts (BA) is referred to as an index to the world's life sciences journal literature. BA is an abstracting journal that covers articles from over 3,700 journals from all over the world and from subjects like botany, pharmacology, biochemistry, ecology and other biological areas. The publication includes over 350,000 citations each year with author abstracts. There are over 8 million archival records available from 1969. A unique feature of BA is its

comprehensive coverage and context-sensitive indexing which makes available information useful for all researchers requiring life science information. BA can be accessed on CD, through the web, or in print. Electronic versions of BA are updated quarterly. Print versions are issued twice each month.

- 13) The BIOSIS databases are used by librarians, information specialists, researchers, students, academicians, legal experts, product development experts, government officials and product development experts requiring information related to the life sciences.

8.14 KEYWORDS

ENVIS	: Environmental Information System set-up by Ministry of Environment and Forests, Government of India.
FAO	: Food and Agricultural Organisation.
Global Information System	: An international venture in terms of coverage of documents, variety of services and products to users for achieving economy in terms of money, time and efforts.
IAEA	: International Atomic Energy Agency.
IEE	: Institution of Electrical Engineers (IEE), United Kingdom.
Indian MEDLARS Centre	: A Centre jointly set-up by NIC and ICMR to cater to the information needs of medical community of India.
Inter-Governmental	: International organisation where the members are the national governments.
UNESCO	: United Nations Educational Scientific and Cultural Organisation.

8.15 REFERENCES AND FURTHER READING

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UNIT 9 NATIONAL AND INTERNATIONAL INFORMATION ORGANISATIONS

Structure

9.0 Objectives

9.1 Introduction

9.2 National Information Organisations

9.2.1 National Institute of Science Communication and Information Resources (NISCAIR)

9.2.2 National Social Science Documentation Centre (NASSDOC)

9.2.3 Defence Scientific Information and Documentation Centre (DESIDOC)

9.3 International Information Organisations

9.3.1 United Nations Educational Scientific and Cultural Organisation (UNESCO)

9.3.2 UNISIST (World Science Information System)

9.3.3 PGI—General Information Programme

9.3.4 International Federation of Library Associations and Institutions (IFLA)

9.3.5 International Federation for Information and Documentation (FID)

9.3.6 International Council for Science (ICSU)

9.3.7 Committee on Data for Science and Technology (CODATA)

9.4 Special Organisations

9.4.1 Institute for Scientific Information (ISI)

9.5 Summary

9.6 Answers to Self Check Exercises

9.7 Keywords

9.8 References and Further Reading

9.0 OBJECTIVES

After reading this Unit, you will be able to:

- elaborate on national organisations engaged in the development of library and information services;
- identify international organisations devoted to collection, processing and dissemination of information;
- recognise organisations engaged in performing information functions in different subject areas;
- explain the programmes and activities that are being undertaken by such organisations in promotion, coordination and development of library and information services; and
- identify and detail specifically the role played by some representative organisations like UNESCO, FID, IFLA, ICSU, ISI, etc.

9.1 INTRODUCTION

While retrieving information for serving users, the library and information professionals have come across several problems during the last few decades. This has been due to the fact that some of the information and documentation services were often found to be inadequate and could not provide scientific researchers with the desired data or information without any time lag and also in a usable form. These problems in the information gap have been identified and discussed several times. Several international and national organisations have contributed towards coordination, promotion and development of library and information services. These organisations include governmental bodies as well as voluntary professional organisations which belong to various categories that include advisory, service-oriented, commercial, grant-giving or catalytic. This also includes some non-governmental organisations, international organisations with international scope, national organisations with international scope and organs of national/international professional societies.

With the advancement of modern technologies especially computer and telecommunication technologies, the role of these organisations has become very useful as presently resource sharing, cooperation, consortium, networking, etc. play a very important role for bringing information closer to users and solve problems of information handling and services.

In this Unit, you will study a descriptive account of some well-established national and international information organisations that include prominent national documentation/information centres, global information systems, professional organisations with international standing, some national systems with international orientation and some special organisations offering information services in various specific subject areas.

9.2 NATIONAL INFORMATION ORGANISATIONS

The role of information organisations in the national development is being increasingly recognised by the scientific and technological information users, planners, policy makers, scholars and administrators. In this section, we will discuss some national level documentation/information centres of India.

9.2.1 National Institute of Science Communication and Information Resources (NISCAIR)

Indian National Scientific Documentation Centre (INSDOC), a constituent laboratory of CSIR, was established in 1952, as a national centre for supplying information in all fields of science and technology to any user in India or abroad. It was established with the support of UNESCO and had the following objectives:

- “To receive and retain all the scientific periodicals which may be of use to the country.
- To answer specific queries of users from the information available in the country and elsewhere.
- To inform scientists, technologist and engineers of articles which may be of value to them by issuing a monthly bulletin of abstracts.
- To supply photocopies of scientific articles required by scientists.
- To supply translations of scientific material available in various foreign languages to individual scientists.

- To act as a repository for, both published and unpublished, reports of the scientific work of the nation.
- 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 past five decades, the activities of the centre have been reoriented and updated to meet the information requirements of the user community. The availability of modern technologies especially the computer technology and telecommunication technology have also enabled the centre to make available required information to the users in a timely and efficient manner.

INSDOC has, since September 2002, been merged with National Institute of Science Communication (NISCOM), another CSIR Laboratory and is presently named as National Institute of Science Communication and Information Resources (NISCAIR).

The main objective of the NISCAIR, formed by merger of INSDOC and NISCOM, is dissemination of scientific and technical information through various information products and services made available by the institution. The *NISCAIR Citizen Charter* incorporates citizen's entitlement to public services, wide publicity of standards of performance, quality of services, access to information, simplified procedures of complaints, time-bound redressal of grievances and provision for independent scrutiny of performance.

Activities of NISCAIR

To meet the above mentioned objectives, the following services/activities are organised by the Institute:

- 1) Publication of 17 primary and 2 secondary scientific/research journals
- 2) Publication of *CSIR News* and *CSIR Samachar*
- 3) Raw Material Herbarium and Museum
- 4) Popular Science Magazines
- 5) Popular Science Books
- 6) Information Services
- 7) Developing and Maintaining Specialised Databases
- 8) Electronic Publishing
- 9) Human Resource Development
- 10) Information Resources
- 11) Sales and Marketing
- 12) Consultancy Services

Let us now know about details of some important activities of NISCAIR.

Journals Published by NISCAIR

NISCAIR is bringing out 17 primary journals in various subject fields related to science and technology. These are:

- 1) *Journal of Scientific and Industrial Research* (monthly)
- 2) *Indian Journal of Chemistry A* (monthly)

- 3) *Indian Journal of Chemistry B* (monthly)
- 4) *Indian Journal of Experimental Biology* (monthly)
- 5) *Indian Journal of Pure & Applied Physics* (monthly)
- 6) *Indian Journal of Biochemistry & Biophysics* (bi-monthly)
- 7) *Indian Journal of Engineering & Material Sciences* (bi-monthly)
- 8) *Indian Journal of Chemical Technology* (bi-monthly)
- 9) *Indian Journal of Radio & Space Physics* (bi-monthly)
- 10) *Journal of Intellectual Property Rights* (bi-monthly)
- 11) *Indian Journal of Marine Sciences* (quarterly)
- 12) *Indian Journal of Fibre & Textile Research* (quarterly)
- 13) *National Product Radiance* (bi-monthly)
- 14) *Indian Journal of Biotechnology* (quarterly)
- 15) *Indian Journal of Traditional Knowledge* (quarterly)
- 16) *Annals of Library and Information Studies* (quarterly)
- 17) *Bhartiya Vaigyanik evam Audyogik Anusandhan Patrika* (Hindi) (half-yearly)

Besides the primary journals, NISCAIR also publishes two abstracting journals, they are:

- 1) *Medicinal and Aromatic Plants Abstracts* (bi-monthly)
- 2) *Indian Science Abstracts* (fortnightly)

CSIR News and CSIR Samachar

NISCAIR publishes *CSIR News* (in English) fortnightly and *CSIR Samachar* (in Hindi) monthly, both of which serve as an effective link between various CSIR Laboratories. Information is also provided to users on various R & D programmes and activities of CSIR, R & D organisations, university departments and industry.

Wealth of India (WOI)

WOI is an encyclopaedia of Indian natural raw materials. A continuous activity of NISCAIR is to publish the supplements of *WOI*, publish books on the natural raw material resources of the country and provide enquiry services to information seekers on natural raw material resources. *Bharat ki Sampada*, the Hindi version of *Wealth of India* is also available.

Raw Material Herbarium and Museum

Raw Material Herbarium and Museum provides consultancy services on identification of plants and crude drugs of plant origin. Photo Library Service is also provided to users where photographs/illustrations are reproduced from a collection of over 3000 photographs/illustrations.

Popular Science Publications

NISCAIR publishes popular science magazines in three languages covering the latest scientific developments for all kind of users especially for users requiring popular kind of scientific information. These are *Science Reporter* (English) and *Vigyan*

Pragati (Hindi) published monthly and *Science Ki Duniya* (Urdu), a quarterly publication.

NISCAIR publishes a large number of popular science books in various areas that include fundamental science, contemporary areas of science and science entertainment.

Information Services

NISCAIR offers a number of information services, some of these have been continuing since the inception of the erstwhile INSDOC.

- Medicinal and Aromatic Plants Information Services (MAPIS) based on the *Wealth of India* and MAPA databases.
- Content Abstract and Photocopy Service, is a highly personalised service. This service provides contents information from journals on a regular basis.
- Literature Search Service is offered by providing access to over 6000 international databases.
- NISCAIR is the National Centre for ISSN International Centre for assigning ISSN number to serials published in India.
- NISCAIR provides S&T translation services from major foreign languages such as Japanese, German, French, Spanish, Chinese and Russian into English.
- Bibliometrics Services: NISCAIR renders bibliometrics services on specialised subjects for studying the growth, development and spread of any area of research.

Electronic Publishing

NISCAIR publishes digitised versions of some of its major publications that include *Indian Science Abstracts*, *Medicinal and Aromatic Plants Abstracts*, the *Wealth of India*, *Raw Materials Series*.

Human Resource Development

Development of human resources in library, documentation and information science has been a major activity of erstwhile INSDOC since 1964. Over the years, the changing dimensions in the areas of information science, technology and computer applications to library activities have been included in the various courses offered by NISCAIR. Besides Associateship in Information Science, the two year full time academic course in information science, NISCAIR offers several short term training courses in computer application to library and information activities, attachment training programmes and even on-site training on request.

NISCAIR also offers short term training programmes in science communication and herbarium techniques.

National Science Library (NSL)

NSL was established in 1964. It aims to acquire all important S&T publications published in the country and strengthening its resource base for foreign periodicals by acquiring the journals on CD-ROM or other electronic form. NSL has a rich collection of over 1,90,000 books including reference books, reports and standards. The library has one of the finest collections in the field of information science and technology, reference material/secondary sources, conference/seminar/symposia proceedings in S&T, foreign language dictionaries and medicinal and aromatic plants. It also subscribes to almost all worthwhile Indian S&T periodical publications and

receives over 5,100 Indian and foreign periodicals. Of these nearly 3500 periodicals are in electronic form including 1,133 full-text journals.

Membership of NSL is open to individuals, institutions and it offers various services that include Reader's Services, Technical Query Service, Copying Service and Inter-Library Loan Service.

Consultancy Services

NISCAIR offers consultancy services in several areas:

- Modernisation, reorganisation and automation of library and information organisations including turnkey projects.
- Design and development of specialised databases for various organisations.
- Editing, designing, production and printing of publications.

Self Check Exercise

- 1) List the information services of NISCAIR.

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

- ii) Check your answer with the answers given at the end of the Unit.

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9.2.2 National Social Science Documentation Centre (NASSDOC)

National Social Science Documentation Centre (NASSDOC), New Delhi was established in 1969 by the Indian Council of Social Science Research (ICSSR). The centre was setup to meet the following objectives in the field of social sciences:

- "To provide library and information support services to the researcher in the field of social sciences.
- To provide support to those working in academic institutions, autonomous research organisations, policy making, planning and research units of government departments, business and industry.
- To disseminate information about developments in social science research.
- To provide guidance to libraries of ICSSR Regional Centres and ICSSR maintained Research Institutions.
- To provide financial assistance for documentation and bibliographic projects.
- To conduct short-term training courses for social scientists, research scholars, librarians and IT professionals.
- To make available study grants to doctoral students for collection of research material from libraries located in various parts of the country.

NASSDOC has a vast collection of unpublished doctoral dissertations, reports of research projects. The centre acquires a wide range of Indian and foreign social science journals including back volumes of all the journals and prepares printed and digital databases. Based on the rich resources and available collection, NASSDOC offers the following library and information services to researchers in social sciences:

- a) Library and reference services.
- b) Literature search service from available databases both printed and digital including online databases.
- c) Bibliography compilation on request.
- d) Document delivery service by procuring books and journals on inter-library loan or by photocopying the documents.
- e) Acquisition of published bibliographies, directories and reference sources in social sciences and distribution to institutions and libraries.

NASSDOC Databases/Publications

One of the major activities of NASSDOC is the creation of databases and locating tools. The products of NASSDOC include Library Databases, Directories, Indian Social Science Periodicals Literature (INSSPEL), Union Catalogues, Bibliographies and Journals. Some of these are:

Database of Research Project Reports

This database covers bibliographic details like author, title, subject, etc. of over 3000 Research Project Reports funded by ICSSR as well as by other organisations. It is available both in print and digital form.

Database of Ph.D. Dissertations

The database covers bibliographic details like name of the researcher, topic of dissertation, year of award of Ph.D. degree, etc. of about 5000 dissertations acquired by NASSDOC. The database is available both in print and digital form.

Directory of Social Science Libraries and Information Centres in India

The Directory gives information of 447 social science and allied disciplines, libraries and information centres attached to government agencies, research and training institutes under various ministries, universities and autonomous bodies, banks, industry and trade, etc. Information about libraries having independent name, is given by references provided by their parent institutions. Each entry contains address of the library, e-mail, strength of the staff, type of collection, budget, subject coverage, computerisation details, facilities and services provided like photocopying, bibliography services, inter-library loan, online databases, literature search, translation, etc. The data given in the directory may enhance cooperation and resource sharing among Indian libraries and information centres.

Directory of Social Science Research and Training Institutions in India

This directory given comprehensive list of about 450 social science institutions engaged in research and training in India. It provides details on areas of research, major achievements, special facilities, current research projects, publications, type of staff, library collection and services, relations with national and international organisations, and complete postal address with telephone, telex, fax and e-mail. The Subject

Index and Location Indexes are appended in the directory to provide multiple access points. The directory was last updated in 1996.

***Directory of Asian Social Science Research and Training Institutes/
Organisations in India***

This directory provides information of about 42 teaching and research institutes on Asian Studies in India. Each entry contains information about the name, address of the institution, type of organisation, type of staff, aims and objectives, activities, parent organisation, publications, name and level of training courses, library collection and services and facilities provided by the institution. Also appended are Subject Index and Location Index.

Union Catalogue of Social Science Periodicals and Serials in India

Since 1970, the compilation of the Union Catalogue of Social Science Periodicals and Serials is being undertaken by NASSDOC. The complete database was published in 32 volumes, having details of 31,125 journals in 550 libraries, in 17 states and two union territories, having a separate volume of the National Library, Kolkata.

Union Catalogue of Periodicals in Chennai, Mumbai and Hyderabad libraries have been updated till the year 2000. The periodical details in Chennai cover location of 867 journals in 12 libraries, Union Catalogue of Periodicals in Hyderabad provides location of 4,455 titles in 25 libraries, whereas, Union Catalogue of Periodicals in Mumbai covers 2,928 journals available in 16 libraries. All the three Union Catalogues are available in machine-readable format also.

Union Catalogue of CD-ROM Databases in Social Science Libraries in India

This catalogue covers information about 132 CD-ROM databases available in 40 major social science libraries and information centres in India. It provides information about the title of CD-ROM database, frequency, brief annotation, information about the producer/vendor and library symbols along with holdings of the respective CD-ROM databases.

Bibliography on India in 2000 A.D.

This bibliography has a record of 647 select books and articles appearing in journals, published and unpublished research reports and seminar papers, etc. on India in English language covering the period up to the first half of 1987. It also includes articles on Asia and the world with some bearing on India.

Self Check Exercise

2) Name some databases of NASSDOC.

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

ii) Check your answer with the answers given at the end of the Unit.

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9.2.3 Defence Scientific Information and Documentation Centre (DESIDOC)

DESIDOC was functional in 1958 as Scientific Information Bureau (SIB), a division of the Defence Science Laboratory (DSL) presently the Defence Science Centre. The Defence Research and Development Organisation (DRDO) library, established in 1948, became a division of SIB in 1959. In the year 1967 SIB was reorganised and renamed Defence Scientific Information and Documentation Centre (DESIDOC). It is still functioning under the administrative control of DSL. During in 1970, DESIDOC became an independent unit and one of the laboratories of DRDO. The Centre initially functioned in the main building of Metcalfe House, a national monument and in 1988 moved to a new building in the same complex. After it became an independent and self-accounting unit, DESIDOC has been functioning as a central information resource for DRDO. It provides S&T information, based on its library and other information resources, to the DRDO headquarters and its various laboratories located all over India.

The objectives of DESIDOC are:

- “To function as a central source for providing scientific information, documentation, library, reprographic, translation services to DRDO headquarters, laboratories, establishments and to coordinate their scientific information programmes,
- To develop an information system for Defence Science and Technology,
- To provide training and user education programmes in the field of scientific information,
- To provide consultancy and referral services, and
- To publish scientific and technical journal, books and monographs of DRDO”.

The various activities of the Centre include the following:

a) Library Services

DESIDOC maintains the Defence Science Library which is the central library of DRDO. It gives access to Online Public Access Catalogue, CD-Rom Search Service, Document Supply Service and Resource Sharing Service.

b) Information Processing and Dissemination

The Library collects scientific and technical information of interest to DRDO and provides current awareness services and selective dissemination of information to users of DRDO.

c) Database Development

It develops and maintains bibliographic databases which includes OPAC, bibliographic database of books, reports, conference proceedings in DSL. The full-text databases, include newspaper clippings, Defence Science Journal, IEE/IEEE contents.

d) DRDO Publications

DESIDOC functions as the publication wing of DRDO and brings out a number of journals, monographs, newsletters, etc.

e) Training

It provides training in information collection, processing and dissemination, library automation, database development, online searching, Internet use, and many areas concerned with IT.

f) Technical Services

It provides reprography (photography, audio, video presentation materials), translation, communication (e-mail, Internet) and printing services.

Functional Areas and Activities

In order to meet various objectives and provide the services, the activities of the centre are organised covering the following functional areas:

a) Internet and e-mail Access

DESIDOC provides e-mail and Internet access to the DRDO Laboratories in the country, through ERNET and NICNET. Communication links have also been established between the Internet gateway of VSNL and DESIDOC and also between VSNL gateway and DRDO Headquarters to provide scientists/managers high speed easy access to Internet and its resources. DESIDOC has established an Internet Lab to cater to the needs of the Internet users.

b) Multimedia Laboratory

This facility has been provided to facilitate multimedia authoring, designing and presentation facilities to the top management and the Scientific Adviser to the Defence Minister. Expertise in the areas of image processing, CD-writing, audio-video designing, desktop CD publishing and multimedia CD-ROM production has been established. In order to establish multimedia laboratories both within and outside DRDO a few multimedia products were published and consultancy was provided.

c) Reprographic Facilities

Reprographic facilities has been set up to help DRDO top management and scientists in their technical presentations. This facility has a computer-based multicolour slide making system, a digital colour copier, high quality colour printers and video recorders, which helps in providing high quality presentation materials.

d) Printing Facility

A full-fledged high quality printing facility has been established which includes designing, layout, typesetting, DTP, processing and printing units for in-house production of DRDO publications. Commercial printing agencies have been given the responsibility for high quality multicolour printing.

Publications

DESIDOC undertakes the following DRDO publications:

- a) Defence Science Journal
- b) Popular Science & Technology
- c) DRDO Newsletter
- d) DRDO Samachar
- e) R&D Digest
- f) Technology Focus
- g) DESIDOC Bulletin of Information Technology

Defence Science Library

The Defence Science Library is the largest Defence Library in the country with a unique collection of publications in various fields of science and technology. The library has, currently, over 3 lakh documents that include books, periodicals, technical

reports, patents and standard specifications. This was one of the first libraries in the country to be computerised.

Self Check Exercise

3) Which are the areas of activity of DESIDOC ?

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

ii) Check your answer with the answers given at the end of the Unit.

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9.3 INTERNATIONAL INFORMATION ORGANISATIONS

In the library and information field, international organisations help in maintaining cooperation and good relations among countries for exchanging and sharing information, ideas, experiences. United Nations is an organisation that provides an appropriate framework which acts as a forum where several problems can be discussed and solved. The role played by professional bodies especially international ones, is manifold as they have facilitated distribution of technological information and promoted technical cooperation among developing countries. The social problems faced by developing countries are priority issues with these organisations and many efforts to find solutions to these problems have been made.

Let us now study some of representative international organisations.

9.3.1 United Nations Educational Scientific and Cultural Organisation (UNESCO)

UNESCO was established in 1946. It is a specialised agency of the United Nations Systems concerned with information matters. The objectives of UNESCO at the time of its inception were: encouraging international intellectual cooperation, speeding up development through operational assistance to Member States, and promoting peace, human rights and international understanding. Article I of its constitution stipulated that the organisation shall:

“maintain, increase and diffuse knowledge by encouraging cooperation among the nations in all branches of intellectual activity, the exchange of publications and other materials of information, and by initiating methods of international cooperation calculated to give the people of all countries access to the printed and published materials by any of them.”

UNESCO's earliest activities include mainly to help Member States rebuild their libraries destroyed during World War II. A careful analysis of UNESCO's efforts to assist its Member States in the development of their documentation, library and archival services initially indicated five trends:

a) *Principles and Structure of Documentation, Library and Archives Services*

UNESCO through its various principles has contributed a lot on documentation, library and archives services. The UNESCO Public Library Manifesto gave a new

image and wide scope to public libraries. UNESCO influenced the development of public libraries in many Member States and underdeveloped countries and recognised the role of libraries in educating the communities.

UNESCO also concerned itself with school libraries and educational documentation services both as an essential aid to education and an ideal means of establishing the reading habit among different groups of people.

Concerning the university and special libraries, UNESCO initiated several activities like seminars, technical assistance missions, grants, publications, etc. to improve the services of libraries in Member States. UNESCO's contribution to the development of scientific and technical documentation centres helped Member Countries to overcome problems of information explosion and paved the way for the increase of S&T research. UNESCO also recommended Member Countries the setting up of a National System (NATIS) which helped to lay the foundation of national, regional and international cooperation in information services.

b) *Internationalisation of Documentation, Library and Archives Services*

UNESCO has contributed to a great extent in the internationalisation of documentation, library and archives services at national, regional and international levels. It helped in the free flow of information and documentation embodying the product of human intellect. Its periodic associations with international non-governmental organisations like FID, IFLA and ICA have enabled it to extend its programme of activities. Many international seminars, workshops, conferences, courses, have been organised throughout the world. UNESCO sponsored and funded many publication programmes.

c) *Professional Training*

Lack of qualified professional staff has been a serious problem in developing and underdeveloped countries. UNESCO gave high priority to this problem and as a result several specialised courses, meeting of experts, courses for teachers in schools of librarianship were organised, scholarships were arranged and regional training centres were set up.

d) *Book Promotion*

A familiar problem in most of the developing countries is lack of books in vernacular languages. UNESCO organised a number of regional meetings to study this problem and as a result regional book promotion centres have come up with the help of Member States.

e) *The Future*

UNESCO efforts have increased international cooperation and on these lines all the future activities have been organised. A lot of stress is being given to communications and computer technologies and their application in development of information systems. Some other steps taken include introduction of UNESCO Book Coupons, securing postal concession for books and development of bibliographic services and tools.

The activities aim at improving national and regional programmes. This includes sending consultants to advise on development of training programmes and to participate in launching seminars and refresher courses, in-service training to managers and training programmes for users.

Numerous publications have been published and widely distributed and utilised on a variety of subjects like policy on education, curriculum development, use of AV materials and education of users.

- 4) State the programmes and activities of UNESCO with reference to developing countries at the time of its inception.

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

ii) Check your answer with the answers given at the end of the Unit.

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UNESCO's Current Library Activities

The changing role of libraries and information centres and the development of modern information technologies, especially the Internet, has created a new environment which has stressed the need to provide new dimensions to the role of traditional libraries. With this in view, UNESCO established the Communication and Information Sector (CI) in 1990.

The chief objectives of the CI Sector's programme are:

- "Promoting the free flow of ideas and universal access to information.
- Promoting the expression of pluralism and cultural diversity in the media and world information networks.
- Promoting access for all to ICTs."

In addition to the Regular Programme, the CI Sector implements various inter-regional, regional and national projects with extra-budgetary funding mainly in Africa, the Arab States, Asia, the Pacific, Latin America and the Caribbean. The Sector collaborates with UN agencies.

UNESCO's Activities by Theme

The various themes under which UNESCO carries out its various activities include:

- Archives
- Community Media
- Community Multimedia Centres
- Creative Content (Radio, TV, etc.)
- Education and Information Communication Technologies
- e-governance
- Ethical Issues Related to Information Society
- Freedom of Expression
- Independent Press
- Information Society

**Information Sources,
Systems and Programmes**

- Information for Community Development
- Information Literacy
- Information Processing Tools
- Legislation in Information Society
- Media Education
- Libraries
- Media Development
- Preservation of Documentary Heritage
- People with Disabilities and ICT
- Public Domain Information
- Public Service Broadcasting
- Recycling IT Equipment
- Communication and Information Training
- Youth and Information Society

UNESCO's Activities by Region/Country

- Africa
- Asia and the Pacific
- Arab States
- Europe and North America
- Latin America/Caribbean
- Other World

Networks of UNESCO

- MEDLIB –Internet-based Virtual Library Network
- APIN – Asia and Pacific Information Network
- RINAF - Regional Information Society Network for Africa
- JOURNET - Global Network for Education in Journalism
- UNAL - UNESCO Network of Associated Libraries
- INFOYOUTH - International Information and Data Exchange Network on Youth
- ACCESS-net - Association of Computer Centres for Exploiting Sustainable Synergy
- HeritageNet - The Electronic Network of Cultural Institutions in Central Asia
- INFORLAC - Information Society Programme for Latin America and the Caribbean
- ORBICOM – International Network that Links Communications Leaders

Details of some of the networks of UNESCO are given below:

ORBICOM is an international network that links communications leaders from academic, media, corporate and government circles for providing for exchange of information and the development of shared projects.

UNAL, established in 1990 to promote co-operation among public libraries to build international understanding and to establish contacts between libraries of the North and of the South. UNAL's principal objective is to encourage libraries that are open to the public to undertake activities in UNESCO's fields viz., the promotion of human rights and peace, cultural dialogue, protection of the environment, fight against illiteracy, etc. Over 500 libraries around the world are members of this Network.

APIN (Asia and Pacific Information Network) merges the Regional Network for the Exchange of Information and Experiences in Science and Technology in Asia and the Pacific (ASTINFO), the Regional Informatics Network for Southeast Asia and the Pacific (RINSEAP) and the Regional Informatics Network for South and Central Asia (RINSCA). APIN also covers all the activities carried out by the UNESCO umbrella project General Information Programme (PGI) in the Asia and Pacific Region.

Intergovernmental Programmes

UNESCO presently has two Intergovernmental Programmes in the field of Communication and Information which replace all the previous programmes carried out by UNESCO till the year 2000. These programmes are:

- Information for All Programme (IFAP)
- International Programme for the Development of Communication (IPDC)

Information for All Programme (IFAP)

UNESCO's Information for All Programme provides a platform for international policy discussions and guidelines for action on:

- preservation of information and universal access to information,
- participation of all in the emerging global information society, and
- ethical, legal and societal consequences of ICT developments.

The *Information for All Programme* promotes a framework for international co-operation and international and regional partnerships. It supports the development of common strategies, methods and tools for building a just and free information society. This programme is for narrowing the gap between the information rich and the information poor.

The IFAP is a the most important element in the fulfillment of UNESCO's goal, i.e., "education for all", "free exchange of ideas and knowledge" and "increase the means of communication between peoples".

International Programme for the Development of Communication (IPDC)

The *International Programme for the Development of Communication (IPDC)* "promotes free and pluralistic media in developing countries and the countries in transition". With the help of media development IPDC strengthen communicative

and analytical skills of the people and increase their participation in democratic governance. IPDC gives priority to the projects promoting press freedom and media pluralism, development of community media, enhancing professional capacity and building partnerships for media improvements.

We all know that the media, newspapers, radio or television, are ways of informing people and prompting them to interact. “Free and pluralistic media results in good and honest governments and make development investments fruitful.” All types of media are essential for the construction of democratic societies as they are crucial for economic growth and nurturing the democratic process. “Media pluralism alone can guarantee every community the opportunity to express its concerns without exclusion or discrimination”.

Some inadequacies of media in many countries put barriers for people to voice their democratic aspirations, from sharing and accessing information, and from making life-saving decisions. “UNESCO created the *International Programme for the Development of Communication (IPDC)* in 1980 to address these needs and to accelerate media development”.

Self Check Exercise

5) State the two Intergovernmental Programmes of UNESCO.

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

ii) Check your answer with the answers given at the end of the Unit.

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9.3.2 UNISIST (World Science Information System)

In 1973 with the launching of UNISIST programme a new phase in UNESCO's work in library, documentation and information field was marked. UNISIST was a conceptual framework with emphasis on scientific and technological information. “UNISIST was planned as a continuing, flexible programme to coordinate existing trends towards cooperation and to act as a catalyst for the necessary development in scientific information”. The main goal was the establishment of a flexible and loosely connected network of information systems and services based on voluntary cooperation.

The working document of the UNISIST Intergovernmental Conference known as the *UNISIST Study Report* (1971) stated the broad principles on which this World Science Information System was to be based. According to this Report, “UNISIST stands for the unimpeded exchange of published scientific information and data among scientists of the world, promotion of compatibility, cooperative agreements, cooperative development and maintenance of technical standards to facilitate the interchange development of trained manpower, reduction of administrative and legal barriers to the flow of scientific information and assistance to countries that seek access to present and future information services.”

Three major inter-governmental conferences, namely, UNISIST I, NATIS and UNISIST II (1971, 1974, 1979) recognised a number of programmes and made several recommendations for their implementation. The actual implementation of these programmes has been carried in 'UNESCO's Medium Term Plans'.

9.3.3 PGI—General Information Programme

The General Information Programme (PGI) was created in 1976 by merging UNISIST with a programme concerned with the development of documentation, libraries and archives. An Intergovernmental Council having 30 Member States replaced the former UNISIST Steering Committee and guided the planning and implementation of PGI. During UNISIST II Conference (1979), it was felt that the creation of PGI had brought a number of benefits, for example, it reduced the number of inconsistencies in UNESCO's dealings with Member States on matters relating to information transfer, infrastructure development, education and training and provided an integrated approach to information systems planning and development. The following are the types of activities undertaken under each of the five sub-programmes that made up PGI:

i) Tool for Processing and Transfer of Information

- ISO Standards Handbook I : Information Transfer, 2nd ed. 1982.
- Reference Manual for Machine-Readable Bibliographic Descriptions, 2nd ed. 1981.
- Reference Manual for Machine-Readable Descriptions of Research Projects and Institutions, 1982.
- Common Communication Format, CCF, 3rd ed. 1993.

ii) Development of Databases

Useful inventories and studies like the International Inventory of Software Packages in the Information Field and the Application of Microcomputers to Information Handling have been published.

A mini/micro version of Computerised Documentation System/Integrated Set of Information Systems (CDS/ISIS) Software has been developed by UNESCO and is provided free of charge to non-profit organisations of developing countries.

Within the PGI framework about 50 projects on creation of databases have also been taken up for which assistance regarding software, consultation, equipment and training has been provided.

iii) Regional and International Cooperative Schemes

In the area of cooperation and resource sharing PGI aims at strengthening the national capitals for information exchange and creating necessary mechanisms for sharing experience and resources and for viewing coordinating regional activities. Examples of such regional schemes are ASTINFO – Regional Network for the Exchange of Information and Experience in S&T in Asia and the Pacific and APINESS – Asia-Pacific Information Network in Social Sciences.

iv) National Information Policies and Infrastructure

UNESCO has advocated that information infrastructure should be developed in each country within the framework of a National Information Policy. One attempt in this regard was in 1974, when the document "Information Policy Objectives: UNISIST Proposals" was brought out. This publication provided 113 possible policy objectives in the field of S&T. Revised guidelines were also provided in "Guidelines on National Information Policy: Scope, Formulation and Implementation".

v) Developing an Information Workforce

Under the PGI Programme priority has been given for training of both information specialist and information users. The objective is to improve national and regional training programmes, preparing teaching materials and providing training for teachers and refresher courses for specialist.

9.3.4 International Federation of Library Associations and Institutions (IFLA)

The International Federation of Library Associations and Institutions (IFLA), founded in 1927 in Edinburgh, Scotland with the goal of promoting international contacts among library associations and librarians. It is a non-governmental professional organisation. It is presently one of the leading international bodies representing the interest of library and information services and their users. It is considered to be the global voice of library and information profession. In the year 1971, the IFLA set up a permanent secretariat in The Hague, Netherlands.

Objectives of IFLA

IFLA aims at international cooperation, discussion and research in all fields of library activities. It offers a professional forum for library associations, libraries and librarians whatever the type of library or the expertise they have. It is concerned with all aspects of library work and tries to expand its membership to all countries. "IFLA aspires to speak with authority as the global voice of the library profession. The aims – universality, comprehensiveness and representative status give direction to IFLA's structure as well its professional programmes."

Structure

IFLA structure is democratically set up with the Council as IFLA's highest organ. The Governing Board is responsible for the managerial and professional direction of IFLA within guidelines approved by Council. The Governing Board consists of the President, the President elect, 10 directly elected members and 9 indirectly elected members of the Professional Committee and up to 3 co-opted members. The Governing Board consists of the Executive Committee and the Professional Committee.

The Executive Committee has executive responsibility delegated by the Governing Board to oversee the directions of IFLA. It consists of the President, the President-elect, the Treasurer, the Chair of the Professional Committee, 2 members of the Governing Board and the IFLA's Secretary General.

The Professional Committee maintains coordination of the activities of various IFLA units which are basically responsible for carrying out professional activities and programmes. The Committee consists of a Chair, an official representing each of IFLA's 8 Divisions and 3 members of the Governing Board.

Membership

IFLA presently has 1700 members from 155 countries. There are two categories of voting members – Association Members and Institutional Members. Besides these, there are two important categories of non-voting members – Personal Affiliates and Institutional Affiliates. IFLA also has honorary members.

Professional Programme

IFLA works through two kinds of units, the Professional Group (47 Sections and 4 Discussion Groups, grouped together in 8 Divisions) and 6 Core Programmes.

The Sections and Discussion Groups are the Basic Professional Units, concerned with particular types of libraries and types of library activities.

The Core Programmes

IFLA has presently six core programmes of major importance to the library and information profession. The programmes are called Core Programmes because they intersect the interests and concerns of all libraries and their users, wherever located. IFLA's 3 Core Programmes, namely, Universal Bibliographic Control and International MARC (UBCIM), Universal Availability of Publications (UAP) and Universal Dataflow and Telecommunications (UDT) had made tremendous contributions to the profession till the end of the 20th century.

Keeping in view the current developments in the library and information profession and the developments in the modern day technologies many new core programmes have been added and the above mentioned three core programme have been merged with other core programmes. These programmes are:

1) Action for Development through Libraries Programme (ALP)

The *Advancement of Librarianship* referred to as ALP Programme was launched in 1984 and the name was changed in 2004 to "*Action for Development through Libraries Programme*", however, the acronym still remains as "ALP". The goal of ALP is to further the library profession, library institutions and library and information services in the developing countries of Africa, Asia and Oceania and Latin America and the Caribbean. Within the special ALP areas the goals are to assist in continuing education and training; to support the development of library associations; to promote the establishment and development of library and information services to the general public, including the promotion of literacy; and to introduce new technology into library services. ALP also functions as a catalyst within IFLA for the organisation's activities in Third World countries.

2) Committee on Copyright and other Legal Matters (CLM)

IFLA's concerns in the area of copyright are taken care by the Committee on Copyright and other Legal Matters (CLM). CLM raises the voice of the international library community in copyright matters. The Committee consists of elected members who represent their own country or wider region, with expert resource persons who have particular knowledge valuable to CLM. While copyright and intellectual property remain the main thrust area of interest for CLM. The Committee is also concerned with other legal matters such as economic and trade barriers for rendering effective library services.

CLM takes account of the activities of the World Trade Organisation, especially GATS. CLM has represented IFLA at key WTO meetings. CLM works closely with other regional library organisations with shared interests and is also concerned with other legal issues, for example, licensing and the relationship between copyright law and contract law, disputed claims of ownership of library material and its repatriation, and the difficult technical area of anti-circumvention technology.

3) Committee on Free Access to Information and Freedom of Expression (FAIFE)

IFLA/FAIFE is a core programme of IFLA to defend and promote the basic human rights as defined in Article 19 of the United Nations Universal Declaration of Human Rights. The IFLA/FAIFE Committee and Office support free access to information and freedom of expression in all aspects, directly or indirectly, related to libraries and librarianship. The programme also monitors the state of intellectual freedom within the

library community world-wide, supports IFLA policy development and co-operation with other international human rights organisations, and responds to violations of free access to information and freedom of expression.

4) IFLA-CDNL Alliance for Bibliographic Standards (ICABS)

The IFLA Universal Bibliographic Control and International MARC (UBCIM) Core Activity which was established thirty years ago came to an end in 2003. The objective of UBCIM was “to coordinate activities aimed at the development of systems and standards for bibliographic control at the national level and the international exchange of bibliographic data, including the support for professional activities of appropriate IFLA Sections and Divisions”. UBCIM coordinated the development of the UNIMARC format and ensured publication of reports on projects related to international bibliographic and format standards and proceedings of relevant meetings and seminars.

The British Library hosted UBCIM from 1973 to 1989 and later Die Deutsche Bibliothek from 1990 to the beginning of 2003. The Biblioteca Nacional de Portugal took over the responsibility for both UNIMARC and *ICBC (International Cataloguing and Bibliographic Control)*, a quarterly journal of IFLA, formerly of UBCIM).

Another component of ICABS is the programme of the former Universal Dataflow and Telecommunications (UDT) Core Activity. UDT supported analysis and promotion of technologies and standards for application to the digital environment in the areas of networked resource discovery, information retrieval, digitisation, and metadata. It was hosted at the National Library of Canada (NLC) from its inception in the late 1980s to 2001. UDT developed and maintained IFLA's primary communications tool, IFLANET, which was hosted for many years at NLC. IFLANET was moved to Institut de l'Information Scientifique et Technique (INIST) in France in 2001 and is no longer a part of the ICABS activity.

Besides this, Conference of Directors of National Libraries (CDNL), has provided support and funding for core activities. It has recently established – the CDNL Committee on Digital Issues (CDI) to monitor digital library developments. The Committee's work on bibliographic standards and digital preservation is being added into the ICABS goal. The National Library of Australia will take care of the committee's work on deposit agreements.

The National Library of Australia, the Library of Congress, the British Library, the Koninklijke Bibliotheek and Die Deutsche Bibliothek have agreed to collaborate in a joint alliance together with the Biblioteca Nacional de Portugal, IFLA and CDNL for ongoing coordination, communication and support for key activities in the areas of bibliographic and resource control for all types of resources and related format and protocol standards. This new alliance is known as “IFLA-CDNL Alliance for Bibliographic Standards (ICABS).”

The main focus of the alliance is to offer a practical way to improve international coordination and to enhance developments in these key areas. The alliance aims to “maintain, promote, and harmonize existing standards and concepts related to bibliographic and resource control, to develop strategies for bibliographic and resource control, and to advance understanding of issues related to long-term archiving of electronic resources, including the promotion of new and recommended conventions for such archiving”.

5) Preservation and Conservation (PAC)

IFLA Core Activity on Preservation and Conservation (PAC) was started in 1984. PAC focuses efforts on issues of preservation and initiates worldwide cooperation for the preservation of library materials. PAC has been conceived in a “decentralized way where a Focal Point implements the global strategy and Regional Centres manage activities in their specific regions”. The Focal Point which is the International Centre has been hosted by the Bibliothèque nationale de France in Paris since 1992 and there are Regional Centres all over the globe.

6) IFLA UNIMARC (UNIMARC)

The IFLA UNIMARC Core Activity succeeds the earlier UBCIM Core Programme in the part related to International MARC. The aim of the UNIMARC Core Activity is to “coordinate activities aimed at the development, maintenance and promotion of the Universal MARC format (UNIMARC), originally created by IFLA to facilitate the international exchange of bibliographic data. Maintenance and update of UNIMARC, now a set of four formats - Bibliographic, Authorities, Classification and Holdings- is the responsibility of the Permanent UNIMARC Committee”.

The UNIMARC Core Activity collaborates with IFLA’s Bibliographic Control Division and with ICABS - IFLA/CNDL Alliance for Bibliographic Standards and also liaise with other international organisations such as ISO TC46, the ISBN and ISSN International Agencies, ICA/CDS - Committee on Descriptive Standards and the Consortium of European Research Libraries (CERL).

Divisions and Sections

IFLA has 8 Divisions which include type of libraries, library activities and regional activities of IFLA. These are:

- 1) General Research Libraries
- 2) Libraries Serving the General Public
- 3) Special Libraries
- 4) Collection and Services
- 5) Bibliographic Control
- 6) Management and Technology
- 7) Education and Research
- 8) Regional Activities

The work of the 8 Sections is carried out through 47 Divisions of IFLA, which are:

- 1) National Libraries
- 2) University Libraries and other General Research Libraries
- 3) Government Libraries
- 4) Library and Research Services for Parliaments
- 5) Social Science Libraries
- 6) Geography and Maps Libraries
- 7) Science and Technology Libraries

- 8) Public Libraries
- 9) Libraries Serving the Disadvantaged Persons
- 10) Libraries for Children and Young Adults
- 11) School Libraries and Resource Centres
- 12) Bibliography
- 13) Cataloguing
- 14) Acquisition and Collection Development
- 15) Document Delivery and Resource Sharing
- 16) Government Information and Official Publications
- 17) Serials and other Continuing Resources
- 18) Rare Books and Manuscripts
- 19) Preservation and Conservation
- 20) Libraries Buildings and Equipment
- 21) Information Technology
- 22) Statistics and Evaluation
- 23) Education and Training
- 24) Library Theory and Research
- 25) Africa
- 26) Asia and Oceania
- 27) Latin America and the Caribbean
- 28) Health and Biosciences Libraries
- 29) Classification and Indexing
- 30) Art Libraries
- 31) Libraries for the Blind
- 32) Library Services to Multicultural Populations
- 33) Reading
- 34) Management and Marketing
- 35) Audiovisual and Multimedia
- 36) Reference and Information Services
- 37) Genealogy and Local History
- 38) Mobile Libraries
- 39) Newspapers
- 40) Management of Library Associations
- 41) Women's Issues
- 42) Information Literacy
- 43) Continuing Professional Development and Workplace Learning
- 44) Library History
- 45) Library and Information Science Journals

- 46) Metropolitan Libraries
- 47) Knowledge Management

In addition to the above, IFLA has also set up 4 Discussion Groups. They are:

- 1) Law Libraries
- 2) New Professionals
- 3) Quality Issues in Libraries
- 4) e-learning

IFLANET

In the year 1993 the Universal Dataflow and Telecommunications (UDT) Core Programme initiated IFLA's network. It was hosted by the National Library of Canada. IFLANET and its services have been developed "for improving communication within IFLA and its various organs and to provide a virtual presence for the organization all the time, that is, all 7 days of the week and 24 hours of the day." IFLANET takes care of general administration, frames policy on centralisation and independent websites, provides procedures and guidelines for preparing documents for submission and assists in creation of IFLA-sponsored mailing lists. Presently IFLANET is administered by the IFLA HQ and hosted by the Institut de l'Information Scientifique et Technique (INIST), France.

Grants and Funds for Developing Regions

Under the auspices of the Executive Board, IFLA offers some grants, scholarships and fellowships to professionals in developing countries.

Publications

IFLA offers several publications free of charge to its members. These publications are: *IFLA Journal* (Quarterly), *IFLA Annual*, *IFLA Trends* (Biennial Report), *IFLA Medium Term Programme*, *IFLA Statutes and Rules of Procedure*, *Divisional and Sectional Newsletters*.

IFLA has regional offices in Africa, Asia and Oceania, and Latin America. IFLA holds the annual General Conference every year in various parts of the World.

Self Check Exercises

- 6) Which are the discussion groups of IFLA ?
- 7) Write a brief note on IFLANET.

Note: i) Write your answers in the space given below.
ii) Check your answers with the answers given at the end of the Unit.

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We will now discuss FID, an international organisation that was founded during the late 19th century and has contributed enormously for the cause of our profession

for over hundred years. The activities of FID, however, have ceased since the year 2002 due to paucity of funds. But the organisation still exists in name. As FID had played a major role in various activities related to libraries and information centres, we are giving below a brief account of how it came into existence and its major activities till the time its offices were shut down. It has to be noted here that although FID is no more functional, its Universal Decimal Classification (UDC) activity is still active as UDC became an independent consortium in 1990s.

9.3.5 International Federation for Information and Documentation (FID)

FID was the international professional association for documentalists, information scientists and other specialists in information management. The International Federation for Information and Documentation (the word information was added to the name in 1986, but the acronym FID continued) was founded in 1895 by Paul Otlet and Henri La Fontaine as the Institut International de Bibliographie (IIB) and was renamed in 1930 as International Federation for Documentation. At the time of its inception, the main aim was the “creation and maintenance of a comprehensive world repertory of knowledge and development of the Universal Decimal Classification (UDC) from the Dewey Decimal Classification for providing order and access to the bibliographic entries in the world repertory”. The Universal Bibliographic Repertory Project had failed, but the IIB left legacies of great value in providing a nucleus for the evolution of FID and in the development of UDC, which is presently a major scheme of classification.

FID became a Federation in the year 1924 and got its legal status in 1959 as an international non-governmental organisation under the Belgian act granting incorporation to international non-profit associations pursuing a scientific, artistic or educational goal. In 1928, its headquarters shifted to The Hague. After World War II, its membership increased and activities expanded.

Objectives

FID's objective had been to “promote, through international cooperation, research and development of documentation, information science and information management in all fields of science, technology, social sciences and the humanities.” At the international level FID has provided a world forum for the exchange of ideas and experiences and the opportunity for organisations and individuals to coordinate their efforts in the field of information science and documentation.

Membership

The members of FID included national members, international members, affiliate members and honorary fellows. The national membership was limited to one designated institution in each Member Country and the erstwhile INSDOC (now NISCAIR) was the national member for India. All the members and affiliates were encouraged to be active in the FID programme and to participate in the work of FID's various committees whose activities were of interest to them.

Operational Units of FID

The FID General Secretariat served as the administrative and organisational headquarters for the Federation including a permanent Secretariat for the UDC. An Executive Director managed the General Secretariat.

The Governing Bodies of the FID were – the General Assembly, the Council and the Executive Committee. The General Assembly was the highest authority. It met

every two years and its sessions were open to national and international members who had full plenary rights with Associates, Institutional and Personal Affiliates and Honorary Fellows participating in the General Assembly but without right to vote.

The Council included the President, three Vice-Presidents, a Treasurer, twelve Councillors and one Executive Director.

Finances

The FID finances came from membership dues, sale of FID publications, royalties, and grants from the Dutch Government and UNESCO.

FID's Professional Activities

The FID's professional programmes at the time of its closure were the following:

a) Target Group

During the 1990s FID's main target group had been identified as the Modern Information Professional and User. "The changes in society and the economy presented an interesting challenge to information professionals, a great variety of roles and new careers have emerged in the past decade". All the FID interest areas, projects and professional groups were, therefore, geared to the development of this interest area.

b) Professional Programme

The FID professional programme was developed to meet the needs of the dynamic profession. The professional activities and functions of FID had been grouped together in six major programme areas as given below:

- i) Business, Finance and Industrial Information
- ii) Information Policy
- iii) Information Science
- iv) Applied Information Technology
- v) Information Processing and Products
- vi) Information Management

c) Activities and Functions

The activities and functions of FID included the following:

- i) Conferences and Seminars
- ii) Publications
- iii) Projects
- iv) Education and Training
- v) Library Networks
- vi) Consultancy

Besides the various professional activities listed above, in order to carry out the various programmes, FID had appointed Council Advisory Groups, Regional Commissions, FID Committees and Special Interest Groups. These were to take care of library, documentation and information activities in various regions of the world, different subject areas and all related subjects/areas of interests to this profession.

It is to be reiterated here that the FID/UDC Committee served for a long time for development of the Universal Decimal Classification and it was later on upgraded as the Universal Decimal Classification Consortium which has been working independently since then. Although FID is no longer operational, the UDC is still active. Information professionals world over are hopeful that FID may become operational in the near future if some sponsor/funding agency comes forward to revive it for the benefit of the information community.

Self Check Exercise

8) List the activities and functions of FID at the time of its closure.

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

ii) Check your answer with the answers given at the end of the Unit.

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9.3.6 International Council for Science (ICSU)

ICSU – International Council for Science is, a non-governmental organisation. It was started in 1931 as International Council of Scientific Union for the benefit of mankind. It was set up to act or exchange of ideas, the communication of scientific information and the development of standards in methodology, nomenclature and units. Another main aim of ICSU was to “encourage international scientific activity for the benefit of mankind”.

In order to strengthen international science for the benefit of society, ICSU “mobilises the knowledge and resources of the international scientific community to identify and address major issues of importance to science and society, facilitates interaction between scientists of all disciplines across the world, encourages participation of scientists in various scientific endeavors and provides advice to encourage scientific community for benefit of the society”.

ICSU has a global membership with 130 members which includes 103 members as national scientific bodies and 27 members as international scientific unions. ICSU provides a forum for discussion of issues relevant to policy for international science and the importance of international science for policy issues. It undertakes the following major activities to fulfill its goal:

- To coordinate interdisciplinary research in issues related to both science and society.
- To act as a focal point for exchange of ideas, communication of scientific information and development of scientific standards.
- To actively advocate for freedom in the conduct of science, promoting equitable access to scientific data and information.
- To facilitate science education and capacity building.

- To help create international and regional networks of scientists having similar scientific interests.
- To support scientific conferences, congresses and symposia every year all around the world.
- To ensure production of a wide range of scientific newsletters, handbooks, learned journal and conference proceedings.

To achieve its goal of encouraging links between science and society, ICSU maintains working partnerships with various international organisations, especially the United Nations Organisations. ICSU also awards annual grants to support projects proposed by its members with the financial support received from UNESCO.

ICSU also publishes *ICSU Yearbook* and a quarterly *ICSU Bulletin*.

ICSTI – International Council for Scientific and Technical Information

The ICSU Abstracting Board (ICSU-AB) was established in the year 1952 as an international forum for the scientific and technical abstracting and indexing services, to improve the flow of information between scientists and technologists of the world. ICSU-AB has been replaced by ICSTI – International Council for Scientific and Technical Information since June 1984 and has approximately 50 organisations as members.

ICSU's ICSTI is a unique forum for interaction between organisations that create, disseminate and use scientific and technical information. ICSTI's mission helps scientific and technical disciplines and gives its member organisations the benefit of a truly global community.

ICSTI objective is to “provide leadership in promoting recognition of the value of scientific and technical information to the world's economic, research, scholarly and social progress, ensures access to and delivery of information for all constituencies in business, industry, academic community, government and the public through the exchange of information and the sharing of experience among international peers, and to be a forum for interaction among all participants in information flow”.

Self Check Exercise

9) Give the chief aim of ICSTI.

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

ii) Check your answer with the answers given at the end of the Unit.

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9.3.7 Committee on Data for Science and Technology (CODATA)

CODATA, the Committee on Data for Science and Technology, is an interdisciplinary Scientific Committee of the International Council for Science (ICSU). It was

established in 1972 as an interdisciplinary Scientific Committee of the International Council for Science (ICSU) with the aim to “promote and encourage, on a world-wide basis, the compilation, evaluation and dissemination of reliable numerical data of importance to science and technology”. The goal of CODATA is to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology. CODATA is, therefore, a resource that provides scientists and engineers with access to international data activities for increased awareness, direct cooperation and new knowledge. Presently, it has 23 countries as members, and 24 national member delegates and committees.

CODATA is basically concerned with all types of data resulting from experimental measurements, observations and calculations in every field of science and technology, including the physical sciences, biology, geology, astronomy, engineering, environmental science, ecology and others. Particular importance is given to data management problems common to different disciplines and to data used outside the field in which they were generated.

Objectives

CODATA was established with the main aim to help foster and advance science and technology through developing and sharing knowledge about data and related activities. Its objectives are:

- “To improve the quality and accessibility of data, as well as the methods by which data are acquired, managed, analysed and evaluated, with particular emphasis on developing countries.
- To facilitate international cooperation among those collecting, organizing and using data.
- To promote an increased awareness in the scientific and technical community of the importance of these activities.
- To consider data access and intellectual property issues”.

Activities

In order to achieve the above listed objectives, CODATA carries out the following four main activities.

- 1) Sponsorship of a Biennial CODATA International Conference on Data, which is attended by data specialists from all over the world.
- 2) Meetings of scientific data experts.
- 3) Publications on data handling, data compilation, surveys of data activities and conference proceedings.
- 4) Sponsorship of Task Groups, Working Groups, Commissions and other groups addressing specific data issues, such as:
 - Coordination of multinational data project.
 - Establishment of format standards to promote data exchange, sharing, and compatibility.
 - Guidelines to presentation of data in the primary literature or archival databanks.

- Supplying information on sources of reliable data.
- Education and training.
- Preparation of key data sets for which consistent international use is desirable.
- Organisation of conferences and workshop.

Functions

In order to share knowledge about data activities in Member Countries, CODATA performs and coordinates the following functions:

- Setting up of Task Groups.
- Working Groups.
- National Member Activities.
- Conferences.
- Workshops.
- Taking up Projects.
- Publications.
- Co-operation with other Organisations on Common Interests.

Publications

CODATA has several publications, which include *CODATA Newsletter*, Conference Proceedings, Books and Monographs, Special Reports on CODATA activities and CODATA Bulletins in various subject areas.

The CODATA secretariat is presently located at 51, Boulevard de Montmorency, 75016 Paris, France.

Self Check Exercise

10) Write the aim of setting up CODATA.

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

ii) Check your answer with the answers given at the end of the Unit.

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9.4 SPECIAL ORGANISATIONS

In the earlier sections you have studied some international organisations. A powerful alternative to the internationally managed systems is the nationally controlled services or systems which extend their services and products internationally. Some of these

information systems/services are brought about by commercial organisations too. Examples of such special organisations include Institute for Scientific Information (ISI), Chemical Abstracts Service (CAS) and MEDLARS. You have already studied CAS and MEDLARS in Unit 8 of this Course. Hence, we will be discussing only ISI in detail. For information on CAS and MEDLARS please refer to sections 8.8 and 8.9 of Unit 8.

Let us know some details concerning ISI whose services are very popular and useful to the S&T users.

9.4.1 Institute for Scientific Information (ISI)

The ISI was set up in 1960. It has been servicing the scientific, academic and business communities as an information provider. It provides direct and easy access to the bibliographic data, cited references and abstracts contained in the world's most important scientific, technical and scholarly publications.

ISI has been taken over by Thompson Scientific, a segment of Thomson Corporation is now referred to as Thompson ISI. The goal of ISI is to "increase the impact of research by providing researchers integrated information solutions delivered by the most innovative technologies".

A recent development of ISI is the *ISI Web of Knowledge* which is the single window from which researchers can access, analyse, and manage information. *ISI Web of Knowledge* enables users to locate high quality information with help from evaluation tools and bibliographic management products. It also provides innovative search tools for cross-content and web document searching. It is equipped with a sophisticated linking gateway as the *ISI Web of Knowledge* content is multidisciplinary, and supports research conducted at academic, corporate, government, and not-for-profit organisations world over.

We all know that ISI has been the only source for cited reference searching and this facility has been enhanced by the *Web of Science*, the main component of *Web of Knowledge*. *Web of Science* is a multidisciplinary collection of bibliographic information from over 8,600 evaluated scholarly journals. The information taken from each article includes the article's cited reference list (bibliography), allowing users to search for articles that cite a known author or work. Cited reference searching is unique to ISI, providing effortless navigation backward, forward, and through literature regardless of publication dates, country of origin, or disciplines.

ISI is also well known for the term 'Impact Factor'. Based upon citation analysis and quantifiable statistical data, it provides a systematic, objective way to determine the relative importance of journals within their subject categories. The impact factor can determine which are the best journals, what journals have the highest impact and what journals are most frequently used or cited.

Users of ISI include librarians, academic researchers, administrators scientists, researchers and analysts working in all kinds of organisations. The following facilities are available from ISI:

- Simultaneous cross-content searching.
- Accessing full-text web content.
- Accessing over 100 years of backfile records and cited references.
- Searching "pre-published" journal articles.

- Conducting cited reference searching.
- Refining and mining useful information from search results.
- Linking directly to the full-text of primary literature, additional databases, a any library's holdings.
- Accessing freely available external collections.
- Alerting, including Personal Citation Alerts.

Citation Indexes

ISI also facilitates access to multidisciplinary research information from nearly 8,500 authoritative, high-impact journals covered by its citation indexes:

- 1) Arts and Humanities Citation Index
- 2) Science Citation Index Expanded
- 3) Social Science Citation Index

Current Awareness

ISI Current Contents Connect enables efficient current awareness service from bales of contents of over 7,600 journals, 2,000 books and conference proceedings and also provides links to over 3,600 ISI-evaluated websites.

ISI Links

Web of Science also offers fast, extensive linking facility as well as access to additional research contents by web-accessible resources and the ISI Web of Knowledge enables users to search them through a single interface. The types of links provided by ISI are: Intra-content links, Inter-content links, Customer holdings, SFX context-sensitive links and Publishers' full-text. For further details on ISI Links, ISI website can be searched.

Self Check Exercise

- 11) What is ISI Web of Knowledge ?

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

- ii) Check your answer with the answers given at the end of the Unit.

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9.5 SUMMARY

Information is a vital resource for users and for information specialists. The national organisations, international organisations and professional bodies are engaged in providing services and products which help in closing the information gap. Another problem is that the Western nations have always been information rich and the developing countries are information poor. The modern technologies, especially the

computer and the telecommunication technologies have bridges to a great extent the information gap within the framework of international organisations that have come forward to help close this wide gap by their programmes and activities.

United Nations agencies, professional organisations like FID, IFLA, ICSU, etc. have helped a lot in this regard. They are professional bodies that provide a forum for exchange of ideas and experiences. Specialised global information systems provide computerised products, services and activities that ensure taking care of the information needs of the user community.

The growing demand for information and increasing use of present facilities and services indicates the need and importance of such national, international and special information organisations within our information infrastructure.

9.6 ANSWERS TO SELF CHECK EXERCISES

1) NISCAIR offers a number of information services, some of these are:

- Medicinal and Aromatic Plants Information Services (MAPIS) based on the Wealth of India and MAPA databases.
- Content Abstract and Photocopy Service, a highly personalised service, this service provides contents information from journals on a regular basis.
- Literature Search Service is offered by providing access to over 6000 international databases.
- NISCAIR is the National Centre for ISSN International Centre for assigning ISSN number to serials published in India.
- NISCAIR provides S&T translation services from major foreign languages such as Japanese, German, French, Spanish, Chinese and Russian into English.
- Bibliometrics Services: NISCAIR renders bibliometrics services on specialised subjects for studying the growth, development and spread of any area of research.

2) Some databases of NASSDOC are:

- Database of Research Project Reports
- Database of Ph.D. Dissertations
- Directory of Social Science Libraries and Information Centres in India
- Directory of Social Science Research and Training Institutions in India

3) The various activities of the DESIDOC include:

- a) Library Services
- b) Information Processing and Dissemination
- c) Database Development
- d) DRDO Publications
- e) Training
- f) Technical Services

- 4) The programmes and activities of UNESCO for developing countries at the time of its inception were:
 - Establishment of Documentation Centres
 - Development of Public Libraries
 - Book Promotion
 - Support of Computer Applications
 - Introduction of UNESCO Book Coupons
- 5) The Intergovernmental Programmes of UNESCO are:
 - Information for All Programme (IFAP)
 - International Programme for the Development of Communication (IPDC)
- 6) IFLA has set up 4 Discussion Groups:
 - Law Libraries
 - New Professionals
 - Quality Issues in Libraries
 - e-Learning
- 7) IFLANET and its services have been designed for improving communication within IFLA and its various organs and to provide a virtual presence for the organisation all the time, that is, all 7 days of the week and 24 hours of the day. This is required as the organisation, on the whole, meets only once an year at its General Conference. IFLANET handles general administration, frames policy on centralisation and independent websites, provides procedures and guidelines for preparing document for submission and assists in creation of IFLA-sponsored mailing lists. Currently, IFLANET is administered by the IFLA HQ and hosted by the Institut de l'Information Scientifique et Technique (INIST), France.
- 8) The activities and functions of FID at the commencement of this century till its closure included:
 - a) Conferences and Seminars
 - b) Publications
 - c) Projects
 - d) Education and Training
 - e) Library Networks
 - f) Consultancy
- 9) ICSTI aims to “provide leadership in promoting recognition of the value of scientific and technical information to the world’s economic, research, scholarly and social progress, ensures access to and delivery of information for all constituencies in business, industry, academic community, government and the public through the exchange of information and the sharing of experience among international peers, and to be a forum for interaction among all participants in information flow.”

- 10) The aim of CODATA is to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology. CODATA is, therefore, a resource that provides scientists and engineers with access to international data activities for increased awareness, direct cooperation and new knowledge.
- 11) ISI Web of Knowledge is a dynamic, integrated web-based environment providing a single source for high quality content and the tools to access, analyse and manage research information.

9.7 KEYWORDS

ASTINFO	: Regional Network for Exchange of Information and Experience in Science and Technology in Asia and the Pacific – a UNESCO sponsored regional programme.
Global Information Systems	: An international venture in terms of coverage of documents, variety of services and products to users for achieving economy in time, efforts and monetary terms.
ICSSR	: Indian Council of Social Science Research.
Infrastructure	: All institutional bodies holding information resources and facilities.
Inter-Governmental	: International organisation in which the members are national governments.
Promotion	: Advancement or encouragement on behalf of some cause, product, service or organisation.

9.8 REFERENCES AND FURTHER READING

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