

**Study Points:**

- 13.1 Introduction to information technology
- 13.2 Major modes of communication
- 13.3 Artificial satellite and communication
- 13.4 Computer
- 13.5 Internet
- 13.6 Cyber security.

**13.1 Introduction to information technology**

Next century will be without words and books, it will be century of internal intrigue of eyes, ears and mind, when a person will not read himself by his mind but through the screen. Thinker Sarasota might have told these words full of imagination on the basis of changes taking place in the century.

How do we get information about the events occur around city, state, country and



**Fig 13.1 knowledge of words in your hand**

**Let us know it also-**

**Fig 13.2 Teleprinter** After telegraph, the teleprinter and telex came into use to propagate the information. Due to more and more use of computer and internet, the use of old communication means are being limited and replaced by modern means of communication.



abroad. What are the means to know about the events? Do we get quick information about the events which happen in remote areas or does it take more time. Hundreds of years ago were we getting information as easier as today?

Let us try to find out answers of these question.

Extension of information about the events, that occur at different places in the world is information extension. The information extension or in other words speedy information is due to science, technology and inventions of different public media is known as "information technology".

### What is Information Technology?

"Branch of technology in which information is sent or received through telecommunication medium by using computer is called information technology.

Can you tell the name of means of communication under information technology? Let us prepare a list of these means.

**Table 13.1**

Sr. No.	Modes of communication	Uses
1.	Radio	
2.	Telephone	
3.		To send information, graph, chart, hand written or typed documents through telephone net work and receive photo copy of original documents from other place
4.		To prepare document in word processor and sending on computer screen for another person through telephone network
5.	Television	

Above modes of communication are widely used in information technology these days. It is not hyperbole to say that we cannot imagine a human life without these modes of communication.

Do you know the different modes of communication under information technology?

Let us, find out-

Messages from different modes of communication like - television, fax, telephone etc. are sent from one place to another by means of communication satellites.



## 13.2 Major modes of communication

### Radio

Radio is the powerful and effective means of communication. This is a mode of communication in which messages are sent from one place to another by invisible electromagnetic waves. This is a major mode of entertainment, live commentary of games, news, music, programs etc. police vehicles, fire brigade, aero plane pilot, astronauts, ship commander remain in contact with geo-centers through radio. Radio broad casting was started in 1927 A.D. in India. It was named as "All India Radio" in 1937 later on in 1957 it was named as "Akashvani". Radio waves are like light waves the difference in only of frequency. The meaning of frequency is number of vibrations per second. It is measured in hertz. For radio transmission radio waves are divided in three types - medium wave, short wave and ultra - short wave.

### Telephone

Telephone is a word of Greek language. Tele means 'far' and phone means 'sound' means to send sound at far place. Graham bell discovered it first of all. In our country telephone started in 1982 with establishment of telephone exchange at Kolkata, Mumbai and Chennai. With time working process of telephone developed. At the time of independence there were 8200 telephone connection in India, later on in 2015 this number reached to 970 million.

In 1960 electronic exchange established. Therefore, first time subscriber trunk dialing (STD) services started between Luckhnow and Kanpur in 1960.

The part of telephone which we keep in front of mouth is known as mouthpiece and the part which we keep near ear is called ear piece, mouthpiece works as transmitter and earpiece works as receiver.

Can you tell which type of telephones we are using in modern era? Let us try to know about it-

Modern telephone improved a lot. Many people can talk at the same time with new type of electronic phone. With the help of this type telephone a meeting can be arranged without leaving home or office. This system is known as Audio conferencing. Newly developed telephones which are in use mainly these days are as follows.

- 1) Photo phone
- 2) Cordless phone
- 3) Cellular phone

Satellite phones are those which look like normal mobile phone (smart phone). These phones can be connected to geo-satellites which are revolving in geo-stationary orbit. We can not do this by simple mobile phones. Satellite phone can be utilized in those remote areas where there is no net work coverage of any network service provider. These phones are used in remote areas for different expeditions or for natural disaster when all other modes of communication fail.



The mobile phones which we are using presently are of cellular type based on four techniques GSM, CDMA, D-AMP3S and PDCS.

Do you know the means of communication hundreds of year ago? What problems people were facing in sending their message and how much time it take?

Let us try to find out.

### Fax

Fax is an important achievement of information technology. It can send graph, chart, hand written or printed documents through telephone net work from one place to another. We obtain a photo copy of original document at receiving end.

The word fax is originated from English word "fascimile". The fascimile word is a Latin word in which 'fas' means 'to make' and 'cimile' means 'similar to'.



Fig 13.3 Fax Machine

Fax system was invented in 1843 by Scottish Alexander Bell.

Operating uses of Fax machine are increasing day by day. Some services which use fax are as follows.

- 1) In the field of advertisement, exchange of graphics between agencies & consumer.
- 2) Share market and scientific services.
- 3) Transmission of messages and directions of administrative services.
- 4) Administrative engineering data.
- 5) Transmission of different types of documents in energy industry

### Television

Television is a mode of communication in which we receive both audio and video image. With the help of this we receive direct telecast of events occurring in the world. On 26 January 1926, John.L.Bair successfully introduced television transmission. In India service of T.V. was started on 15 September 1959 in Delhi.

There are two types of television colored and black & white. Audio and video signals are converted into electromagnetic waves for transmission from program transmission center. These waves spread all around the antenna and reaches to our television antenna. Television antenna is connected to television and it converts electromagnetic waves again into audio video signals.

Tuner circuit, amplifier, detector circuit, power supply, picture tube and loud speaker etc. are elements of television set. In general picture tube is known as screen. There are two lakh points of light sensitive substance on the



screen. Colored Televisions have three electron tubes. Inside these electron tubes there are mirrors, which divide light, obtained through camera, into three parts. T.V. can be controlled manually or by remote control device. Remote control is a small rectangular box having buttons. By pressing these buttons infrared ray are emitted which are received by television.

Many advanced television like, flat T.V., L.C.D. T.V.(liquid crystal display T.V.), LED T.V. (Light Emitting Diode T.V.), Curved T.V. are in use these days. In advanced technique of transmission cable T.V. and D.T.H. (Direct to home) services are more prevalent. In DTH system a small dish antenna is used, no cable operator is required. Dish of antenna directly received signals from satellite. DTH transmission uses high technique to get multichannel programs. The size of dish antenna is 50 to 75 cm in diameter.



Fig 13.4 DTH Transmission Service

### Electronic mail or E-mail

As we send letter by post from one place to another, in the same way, now we can send letter by computer. This system is called as electronic mail or E-mail. The matter of the letter which is to be sent is prepared in word processor. After that this letter is sent via telephone network to destine. The whole matter of letter is displayed on computer or mobile screen of receiver. The receiver can get the print out of the document.



Fig 13.5 E-mail

Electronic mail is very fast system. It saves time and paper both and it is cheaper also. The research and development work on E-mail in India is continuously going on at C-DOT telecommunication department in Delhi, five centers of Indian Institute of technology and Indian Institute of science (Bangalore) etc.

### 13.3 Artificial Satellite and Communication

You have studied in previous article about how we hear and see the events happening in remote areas by the mode of television. The faxed letter can be received at for places with the help of artificial satellite, by telephone we talk to a person situated at remote place.



### 13.4 Computer

Computer is a machine, which can send thousands of word from our place to another in a second. Just by speaking it is impossible to send message with such a high speed. Any message converted into computer language can be transmitted in the form of micro pulses.

Integrated service Digital Network (ISDN) is an ultra modern technique in the field of telecommunication which is possible due to computer. This technique transmits voice, written material, data and figures on a single wire. Among four any two can be transmit simultaneously by ISDN.

### 13.5 Internet

Internet is an international information path. It is formed by computer networks established at different places of world. These computer networks are connected by telephone lines. Through this path information reaches instantly from one place to another.

Word 'Internet' is combination of two English words 'International' and 'Net work', which means - worldwide system. It is a wireless system.

### Major Services Based On Internet

#### E-Commerce

E-commerce converted entire world in a market (Mandi) where you can purchase small to big items. Only by opening the website related to E-commerce and by giving your order you can receive your favorite items.

Credit card is the easiest made for shopping on internet. Sell or purchase of products and services providing information of products to customer through advertisement on internet is known as E-commerce.

For completion of commercial activities, E-commerce plays an important role. It includes many useful techniques like computer net work, internet, worldwide web, electronic data interchange (EDT), e-mail electronic file transfer etc.



**Fig 13.6 Business through information technology**



### Telemedicine

Telemedicine is basically a health service providing system. In this system doctor examine and give treatment to a patient far away, using telecommunication and information technology. In this system doctor and patient can see and talk to each other also the pictures of ECG, X-Ray, CAT-SCAN, M.R.I. etc. can be examined by opening the computer video file.



**Fig 13.7 Telemedicine service**

### Broad band

A modern technique of transmission of information in which many channels can be transmitted simultaneously through a single cable or wire called as Broad band.



**Fig 13.8 Broad Band Service**

### Social Media

Writing blog, business network, enterprise social network, forum, micro blog, photo sharing, product and service review, social bookmarking, social gaming, social network, video sharing and virtual world etc. are different modes of social media.

Face book, twitter, blogger, pinto rest, tumblers etc. are famous social media sites. People share their ideas and matter with each other on social media.

Whatsapp, Hike etc. are mobile social media applications.

### E-mitra

E-mitra service is Rajasthan government's ambitions E-Governance facility. It is available in all the 33 districts on public private partnership model for people facility with transparency. Many government and private service related works are being conduct under one roof by e-plate form. These services are available on line in rural areas by common service centre (CSC) Kiosk and in urban area by e-mitra Kiosk. This project is running since 2005. People with this service can pay electric, water and telephone bills also they can get bonafied certificate, ration card, swarn jayanti gram swarojgar yojna loan facility, learner driving license, bus pass of Rajasthan road ways etc. with ease.

### Information Technology and comfort society

Extreme capabilities of information technology and internet produce a new hope to hypothesis of corruption free society. To remove corruption form the society the information technology can be use as follows



- By computerization of public distribution system and make available the information related to supply distribution on web for public.
- By doing computerization and net working of public dealing offices.
- The other reasons of corruption - deficient in transparency in work culture, the government has agreed to give/share the information to the common man under fundamental right of freedom. To implement this rapid exchange of information through computerization of information system, intranet, internet and extranet can be done.
- Our government is planning to deliver clean and transparent system to control tendency of corruption by the optimize use of information technology.
- In banking system, introduction of information technology created a reform in customer service. It also controls financial scams and corruption in effective way.
- With the help of this technology public dealing offices like, income tax, central excise, border tax, water, electricity, municipal system, driving license, ration etc. can be converted into paperless offices. It is also useful in making these offices clean, transparent and of low cost.

### 13.6 Cyber security

Cyber security is also called "security of information technology". It stops unauthorized access into various computers, important networks and confidential programs and data.

The Government, military, corporate sectors, financial institutes, hospitals, and other important institutes are collecting confidential information and processing and sending to another computer. It becomes almost necessity to ensure the security of important information and confidential data for public and national security. That is why there is need in cyber era to secure the cyber security.

This cyber security is carried out by securing these activities using different software and technology.

#### What have you learnt

- Information technology is a branch of engineering in which information are collected and transmitted through the mean of telecommunication using computers.
- Hundreds of year ago the various means of communication were – pigeon, horse riders, Dhole, Bugle etc.
- Radio is a very powerful and effective means of communication which send the messages from one place to another place by invisible electromagnetic waves.



- Satellite phones are very useful in establishing the contacts in remote areas through satellites which revolve in geo-stationary orbits of earth.
- Television is a important and powerful means of communication and entertainment in which we receive audio and video both.
- Computer is an important device by which many communication means operated. It can send thousands of words from one place to another place in a second.
- Internet is an international information path which is formed by joining different telephone networks at different location of world.
- A person can create and share the information with others by the use of social media technique. Information may be regarded with carrier related, hobbies, images, video etc.
- E-commerce, E-mitra, telemedicine, broadband, etc internet based services have made human life simple and easy.
- Telecommunication and information technology have made the life fast, easy and simple but cyber is crime has spread its legs in human life. So, utmost need to adopt the cyber security means.

## Exercises

Choose the correct answer.

1. In which year the radio broadcasting had started in India?  
(A) In 1926 A.D. (B) In 1927 A.D.  
(C) In 1928 A.D. (D) In 1925 A.D. ( )
2. At which place our countries first telephone exchange was established?  
(A) In Delhi (B) In Mumbai  
(C) In Pune (D) In Bangalore ( )



3. The part of telephone instrument which is placed in front of mouth and collect sound and propagates the information in the form of electromagnetic waves is called -
- (A) Mouth piece (B) Receiver  
(C) Cable wire (D) None of the above ( )

**Fill in the blanks with suitable words.**

1. The device based on information technology which send the graphs, charts, etc. through telephone network from one location to another location is called .....
2. .... is system which provides mainly health services. The doctors diagnose and cure the disease of patient at for places through use of telecommunication and information technology.
3. Telephone is word of "Greek" language in which 'tele' means far and 'phone' means .....
4. The multichannel T.V. programs can be seen directly at home through satellite by using dish antenna without any cable operator. It is possible only due to .....

**Short answer type questions**

1. Define the information technology.
2. Tell any three names of telecommunication medium of information technology based on internet.

**Long answer type questions:**

1. What do you mean by word television. Explain the working system of television. Write the names of latest technology and advanced quality television of present era.
2. What is internet? Write the main names of communication means based on internet and describe any two in detail.
3. Describe the utility of information technology. Make a list of possible cyber crimes by taking into consideration of human future and tell its safety measures.

**Activity work:**

1. Search and prepare a list of websites related to educational sector.
2. Make a list of educational programs which are broadcasting through radio or television. Arrange a program to discuss utility of these programs.
3. Observe E-mitra centre and write note on it.

