UNIT 17
INFORMATION AND COMMUNICATION TECHNOLOGY

After studying this unit, the students will be able to:

- a. Describe the components of information technology.
- b. explain briefly the transmission of
  - 1) Electric signals through wires.
  - 2) radio waves through air.
  - 3) Light signals through optical fibres.
- c. Describe function and use of fax machine, cell phone, photo phone and computer.
- d. Make a list of the use of E-mail and internet.
- e. Describe the use of information storage devices such as audio cassettes, video cassettes, hard discs. floppy, compact discs and flash drive.
- f. Identify the functions of word processing, data managing, monitoring and controlling.

Q.1 What do you understand by information and communication technology?

Answer

Information and communication technology (ICT)

For your information
All modern telecommunications use some form of electromagnetic radiation. Radiowaves carry information to local radio and TV. Microwaves are used for mobile phones, radar and transmission to satellites in space. Infrared rays are used to send digital information along fibre optic cables.

"Information and communication technology (ICT) is defined as the scientific methods to store, process and transmit vast amounts of information in seconds with the help of electronic equipments."

In computer terminology, processed data is, called information. Computer processes the Microwaves are used for mobile data and converts it imp useful information. This information is

transmitted to distant places satellites m Space Infrared rays are in the form of sound, picture and computerized used to semi digital information data.

Information and communication technology (ICT) is basically an electronic based system of information transmission, reception, processing and retrieval.

ICT is blend of two fields: information technology and communication. The two term are defined as follows:

1) Information technology:

The scientific method used to store information to arrange It for proper use and to communicate it to others is called Information technology.

2) Telecommunication:

The method that is used to communicate information to far off places Instantly IS called telecommunication.

Q.2 What are the components of computer-based information system?

Answer

Computer based information system (CBIS):

There are five parts that must come together in order to produce a computer-based information system (CBIS) as shown in the fig 17.1. These are called the components of information technology, discussed below.

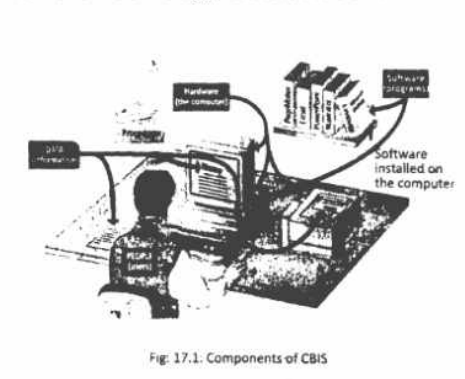

Hardware
Software
Software installed on the computer

Fig: 17.1. Components of CBIS

1) Hardware

The term hardware refers to machinery. This includes the central processing unit (CPU) and all of its support equipments. Among the support equipments are input and output devices storage devices and communication devices.

2) Software

The term software refers to computer programmes and the manuals that support them. Computer programs are machine readable instructions that direct the circuitry within the hardware pans of the CBIS to produce useful information from data. Programmes are generally stored on some input/output medium, after a disk or tape.

3) Data

Data are facts that are used by programmes to produce useful information. it may be in the form of text, graphic or figure that can be recorded and that have specific meaning.

Like programs, data are generally stored in machine-readable form on disk or tape until the computer needs them.

4) Procedures

These are set of instructions and rules to design and use information system. These are written in manuals and documents for use. These rules or methods may change from time to time. The information system must be flexible to incorporate these changes.

5) People

Every CBIS needs people if it is to be useful, who influence the success or failure of information systems.

People design and operate the software, they feed input data, build the hardware for the smooth running of any CBIS. People write the procedures and it is ultimately people who determine the success or failure of a CBIS.

Q.3 What do you mean by the process of flow of information?

Answer

Flow of information

Flow, of information means the transfer of information from one place to another through different electronic and optical equipments.

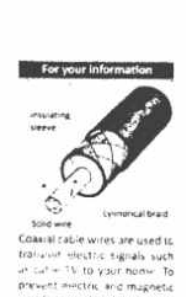
In telephone, information is sent through wires in the form of electrical signals.

In radio, television and cell phone information is sent either, through space in the form of electromagnetic waves, or through optical fibres in the form of light.

Radio waves are refracted by different layers in the earth atmosphere. This leads to weaken the Signal, making difficult to be received over long distances. Unlike radio waves, microwaves are not refracted. They are used for satellite communications.

Fig. 17.2 shows the elements of a communication system. There are three essential parts of any communication system, transmitter, transmission channel and receiver.

For your information



Coaxial cable wires are used to transmit electric signals such as cable TV to your home. To prevent electric and magnetic interference from outside a covering of conducting material surrounds the coaxial wires.

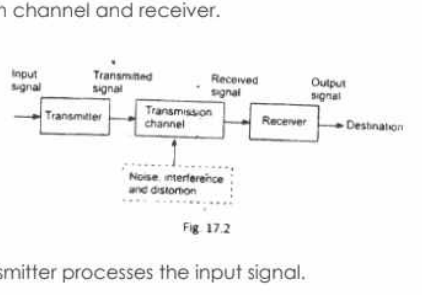


Fig. 17.2

1) The transmitter processes the input signal.

2) The transmission channel is the medium which sends the signal from source to destination. It may be a pair of wires, a coaxial cable, a radio wave or optical fibre cable. 30, the signal power progressively decreases with increasing distance.

3) The receiver takes the output signal from the transmission channel and delivers it to the transducer after processing it.

The receiver may amplify the input signal to compensate for transmission loss.

Q.4 Write about the transmission of electrical signal through wires? How radio waves are waves are transmitted through space?

Answer

Transmission of electrical signal through wires

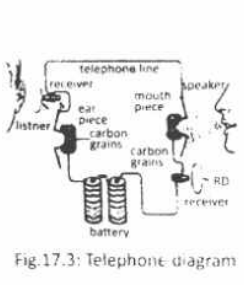


Fig.17.3: Telephone diagram

Alexander Graham Bell in 1876 made a simple telephone model to send voice in the form of electrical signal from one place to another. It consists of a metal reed, an electric coil and a vibrating diaphragm.

Modern telephone also uses diaphragms to turn voices into electrical signal that are transmitted over phone lines. Telephone system has two parts: mouth piece and the ear piece.

Do you know?
Radiowaves are electromagnetic waves and they travel with the speed of light. Marconi has the distinction that he transmitted the first radio signal through the space.

The mouth piece and receiver contain carbon granules and a thin metal diaphragm. When we speak into the earpiece the sound vibrations also vibrate the diaphragm. A slight vibration of the diaphragm compresses the carbon and thus an electrical current can flow through the wire. The process is reversed at the other end of the line by the receiver. The electrical current the receiver may amplify the input signal to compensate for transmission loss, flowing through an electromagnet in the receiver produces a varying magnetic field. This magnetic field attracts the thin metal diaphragm in the receiver, causing it to Vibrate. This vibration of the diaphragm produces sound-waves.

Transmission of radio waves through space

Interesting information
The speed of sound in air is just 1246 km per hour and it cannot go far away from its source. Therefore, it is converted into electromagnetic waves so that they can be sent to far off areas with the speed of light.

Electrical signals representing information from a microphone, a TV camera, or a computer can be sent from one place to another place using either cables or radio waves.

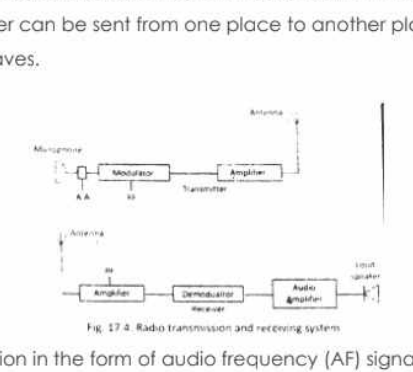


Fig. 17.4. Radio transmission and receiving system

For your information
Radio tuning circuit consists of coils of fine wire wounded on a rod which is connected to the antenna. The coils are connected to variable capacitors. The tuned circuit selects signals of only particular frequency. It does not amplify the signals from transmitter with slightly lower or higher frequencies. The voltage rises and falls as the frequency of the received signal increases or decreases relative to the constant frequency of the oscillator.

Information in the form of audio frequency (AF) signals may be transmitted directly by cable.

However, in order to send information over a long distance it has to be super imposed on electromagnetic waves.

Sound waves produced at the radio station are changed into electrical signals through microphone. These electrical signals are then introduced into the transmission antenna which consists of two metal rods. Signals falling on the transmission antenna oscillate the charges which then emit these electrical signals in the form of electromagnetic radiowaves.

At the receiving end, the receiver selects and amplifies the modulated signal. The demodulator then extracts the information signal and delivers it to the receptor. Radio transmission and receiving system is shown in the fig. l7.4.

Q5 What is the process of transmission of signals in the following devices?

a) Fax Machine b) Cellphone c) Photo phone

Answer

a) Fax Machine:

Fig. 17.5 Fax machine

Telefacsimile's or Fax machines are must for many businesses around the world. A fax machine basically scans a page to convert its text and graphic into electronics signals and transmits it to another fax machine through telephone line. The receiving machine converts the signal and 'uses a printer to create the copy of the message that was sent.

Fig. 17.6 Cell phone

b) Cell phone:

Radio technology is applied in mobile phone. It is a type of radio having two-way communications. A cell phone carries a radio transmitter and a receiver inside it, it sends and receives the message in the form of radio waves.

Cell phone network system consists of cells and Base stations (835) and mobile Switching centre (MSC).

Do you know?
A mobile phone sends text messages and takes and transmits images. The new 3G technology will make video phones common place.

l) A base station is a wireless communications station set up at a particular geographical location. The geographical area, covered by a single base station is known as cell.

The group of cells form a cluster.

2) All 835 within a cluster are connected to a MSC using land lines. The MSC stores information about the subscribers located within the cluster and is responsible for directing calls to them.

Do you know?

Cell phone transmissions are made with microwaves.

3) When a caller calls another cell phone, sound waves of the caller are converted into radio waves signal. This radio signal of particular frequency is sent to the local base station of the caller where the signal is assigned a specific radio frequency. This signal is then sent to the base station of the receiver through MSC. Then the call is transferred to the cell phone of the receiver. Mobile receiver again changes the radio waves into sound.

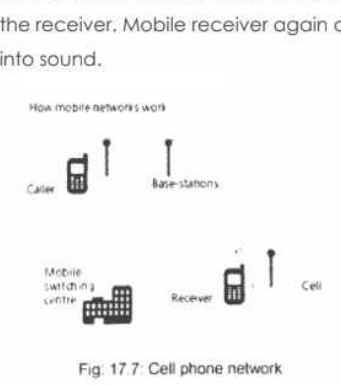


Fig: 17.7: Cell phone network

c) Photo phone:

Modern version of photo phone or video phone is shown in the figure 17.8. Contrary to a common telephone, speakers can see the pictures of each other.

By using the photo and phone numbers of our friends or family members on this telephone you can call them by pressing the pad with their photos. Thus, we

can communicate with our relatives or friends on photo phone with the physical appearance of each other.

Q.6 Write about the transmission of light signals through optical fibres?

For your information
Microwave, digital and optical fibre technologies are combined to give us today's telecommunications systems. Microwaves travel in straight lines through the space and give a very strong signal. We can connect to the other side of the world in milliseconds. Communication satellites including INTELSAT and SATCOM are geostationary satellites that stay over the same position above and receive and transmit digital signals across

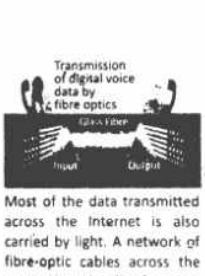
Answer

Optical fibre: -

An optical fibre with a coating of lower refractive index is a thin strand of high quality glass that absorbs very little light. An optical fibre cable is a bundle of glass fibres with thickness of human hair. Signals are transmitted through optical fibres with the speed of light, ie 3 x 10^8 ms^{-1}.

Waves of visible light have a much higher frequency tha.. that of radio waves. This means, rate of sending information with light beams is larger than that with radio waves or microwaves. An optical fibre has been used as equipment for this purpose.

Signal transmission through optical fibres:


Transmission of digital voice data by fibre optics
Glass fiber
Input
Output

Most of the data transmitted across the internet is also carried by light. A network of fibre-optic cables across the country carrying data from one computer to another

Light that enters the core at one end of the optical fibre goes straight and hits the inner wall (the cladding) of fibre optics. If the angle of incidence transmits digital Signals across with cladding is less than the critical angle, some of the light will escape the fibre optics and is lost as shown in the figure 17.9.

However, if the angle of incidence is greater than the critical angle light is totally reflected into the fibre optics.

Then the totally reflected beam of light travels in a straight line, until it hits the inner wall again and so on. 'The advantage of optical fibre is "that it can be used for sending very high data rates over long distances.

When electrical signal, are transmitted through wires, the signal loss increases with increasing data rate. This decreases the range of the signal.

Each optical fibre in a multimode cable is about 10 times bigger than fibre optics used in a signal mode cable.

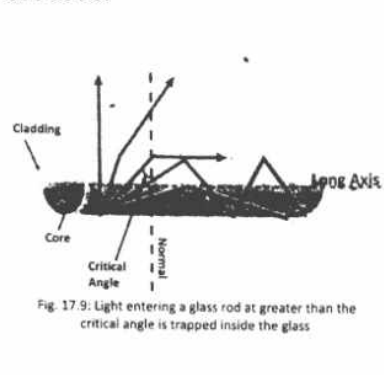


Fig. 17.9: Light entering a glass rod at greater than the critical angle is trapped inside the glass

Q7 What is a computer? Write its uses?

Answer

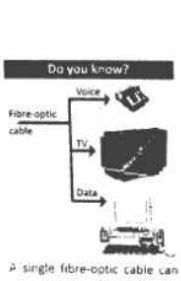
Computer

Interesting information
The most powerful and swift computer which can sent an information in one thousand billionth part of a second is called super computer. It contains many processors.

Computer, as shown in the figure 17 10, is an electrical computing machine used for adding, subtracting or multiplying. Computers work though an interaction of hardware and software.

Parts of computer

Do you know?

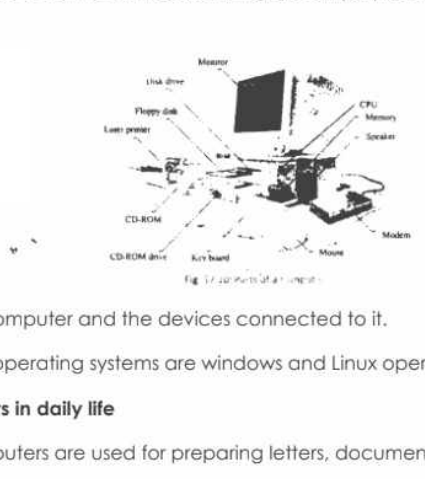


A single fibre-optic cable can carry more than enough information to support television, telephone, and

Hardware refers to the parts of a computer that you can see and touch. These include CPU, monitor, keyboard, mouse, monitor, printer etc. The most important piece of hardware is the central processing unit (CPU) that contains a tiny rectangular chip called microprocessor.

It is the "brain" of computer the part that translates instructions and performs calculations.

Software refers to the instructions, or programs, that tell the hardware what to do. A word processing program that ' it you can use to write letters on your computer is a type of software. The operating system (OS) is software that



manages your computer and the devices connected to it.

Two well-known operating systems are windows and Linux operating system.

Uses of computers in daily life

l) In offices, computers are used for preparing letters, documents and reports.

2) In hotels, computers are used for advance booking of rooms, preparing bills and providing enquiry services.

3) In railways, computers are used for rail reservation, printing of tickets and preparation of reservation charts.

4) Doctors use computer for diagnosing illness and treatment of diseases.

5) Architects use them for building, designing and city planning.

6) In meteorology department, computers are used for weather forecasting.

Q.8 Differentiate between the primary memory and the secondary memory? How data is sorted & used in audio/video cassettes?

Answer

For your information
Computers use data in binary from i.e. in the form of 0's and 1's. A bit is a single numeric value, either '1' or '0', that encodes a single unit of digital information. A byte is equal to eight bits. Larger units of digital data are kilobytes (kB), megabyte (MB) and gigabyte (GB). These are defined as below:
1kB = 1024 bytes
1MB = 1024 kilobytes
1GB = 1024 megabyte

Information storage devices

A Storage device is a device designed to store information in computer. Storage devices work on different principles using electronics, magnetism and laser technology.

Fig. 17.11 Laptop

1) Primary memory

It is based on electronics and consists of integrated circuits (ICs). It is a random-access memory (RAM). It vanishes when the computer is switched off.

2) Secondary memory

The data storage devices are generally the secondary memory of the computer. It is used to store the data permanently in the computer. When we open a program, data is moved from the secondary storage into the primary storage.

The secondary storage devices are audio-video cassettes and hard disk.

Audio and video cassettes

These devices are based on magnetism. Audio cassettes consists of a tape of magnetic material on which sound is recorded in a particular form of a magnetic field. For this purpose, microphone change sound waves into electric pulses which are made by an amplifier. Magnetic tape is moved across the head of audio cassette recorder which is in fact an electromagnet. Change of current in the electromagnet causes a change in the linked magnetic field.

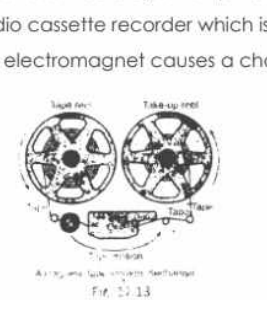


Fig. 17.13

Thus magnetic tape is magnetized in a particular form according to rise and fall of current. In this way sound is stored in a specific magnetic pattern on this tape. To produce the sound again, the tape is moved past the play back head.

Changes in the magnetic field on the tape induce alternating current signals in the coil wound on the head. These signals are amplified and sent to the loud speakers which reproduce sound. In video tape/cassettes pictures are recorded along with sound.

Q.9 What are magnetic disks? Why hard disk is preferred more for data storage than floppies?

Answer

Magnetic

There are different types of magnetic disks coated with a layer of some magnetic material. The read/write head of disks "are similar to the record play head on a tape recorder it magnetizes parts of the surface to record information.

Fig. 17.15. Floppy disk

The difference is that a disk is a digital medium. Binary numbers are written and read.

Floppy disk

A floppy disk is a small magnetically sensitive flexible, plastic wafer housed in plastic case. It is coated with a magnetic oxide similar to the material used to coat cassettes and video tapes. Most personal computers, include at least one disk drive that allows the computer to write it and read from floppy disk.

1) Floppies are inexpensive, convenient and reliable, but they lack the storage capacity and drive speed for many large jobs.

For your information

A computer hard drive. Each platter has a magnetizable coating on each side. The spindle motor turns the platters at several thousand resolution per minute (rpm). There is one read-write head on each surface of each platter.

2) Data stored on floppy disks is also subject to loss as a result of stray magnetic fields.

3) As for as floppy disks are concerned, they are reliable only for short term storage and cannot be used longer and no attempts should be made to save the data for a longer time.

Hard disk

Hard disks are considered more reliable as primary storage devices. A hard disk is a rigid. Magnetically sensitive disk that spins rapidly and continuously inside the computer chasis or in a separate box connected to the computer housing. This type of hard disk is never removed by the user. A typical hard disk consists of several platters, each accessed via a read/write head on a moveable arm. While a typical floppy has a storage

capacity of between 1 and 3MB, a hard disk might hold hundreds or thousands of megabytes of information.

Information can be transferred quickly to and from a hard disk much faster than with a floppy.

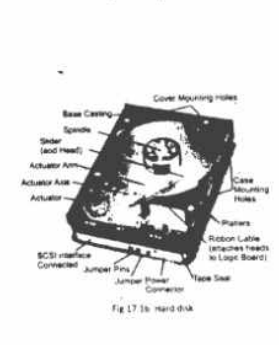


Fig 17.16. Hard disk

Q.10 Distinguish between compact disc and flash drive?

Answer

Compact disc

Fig. 17.17 Compact disk (CD)

This is based on laser technology. It is a molded plastic disc on which digital data is stored in the form of microscopic reflecting and non reflecting spots which are called "pits" and "lands" respectively.

Pits are the spiral tracks encoded on the top surface of CD and lands are the areas between pits as shown in the diagram 17.18.

A fine laser beam scans the surface of the rotating disk to read the data. Pits and lands reflect different amount of the laser light falling on the surface of CD This pattern of different amount of the light reflected by the pits and the lands is converted into binary data.

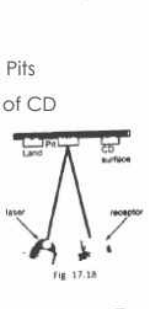


Fig. 17.18

The presence of pit indicates 'l' and absence of pit indicates '0'. Because data stored on CD can only be read but cannot be altered or erased therefore, CD memory is called read only memory (ROM). A CD can store 680 megabytes of computer data.

Flash drive

Fig. 17.19. Flashdrive

It is also an electronic based device and consists of data storage le. A flash drive is a small storage device that can be used to transport files from one computer to another. They are slightly larger than a stick of gum. yet many of these devices can carry all your home work for an entire year.

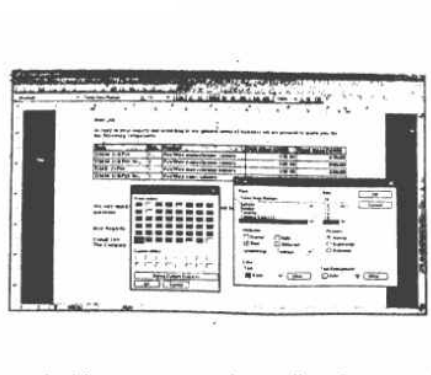
A flash drive is easy to use. Once we have created a paper or other works, we can simply plug our flash drive into a USB port.

Q.11 What do you understand by the term word processing and data management?

Answer

Word processing

Word processing is such a use of computer through which we can write a letter, article, book or prepare a report. Word processing is a computer program. Using this program, we can develop any document, see it on the screen after typing. 'We can edit the document, add some new text or delete the previous text or make amendments in it.



We can move test from one page to another. Document can be stored in memory and its print can also be taken. By means of modern word processing, we can write it in different styles and in different colours. We can also use graphics. Some other features of word processing are shown in the diagram in the icon of word processing.

Data Management- (Monitoring and control)

To collect all information regarding a subject for any purpose and to store them in the computer in more than one inter linked files which may help when needed is called "data managing. "

Fig. 17.20. Bar code scanning

The educational institutions, libraries, hospitals and industries store the concerned information by data management.

Additions and deletions are made in the data according, to the requirement. Which help in the improvement of the management of the institutions.

In big departmental stores and super markets optical scanners are used to read with the help of a laser beam, the barcodes of a product which indicates the number at which this product is recorded in the register.

In this way the detail about its price is obtained. The central computer monitors the bills and the related record of the sold goods. [l also help placing the order of goods being sold in a large quantity and to decide about fewer selling goods.

Q.12 What is "Internet"? Discuss in detail.

Answer

Fig. 17.21: Schematic diagram of internet

When many computer networks of the world were connected together, with the objective of communicating with each other, internet was formed. In other words, we can say that internet is a network of computer networks, which spreads all across the globe. Initially the size of internet was small. Soon, people became aware of its utility and advantages and within short span of time, numerous computers and networks got themselves connected to internet. Its size increased multifolds with in few years.

Today internet comprises of several million computers. There is hardly any country of the world and important city of the country, where internet is not available.

A conceptual diagram of internet is illustrated fig. 17.21. Internet is basically a large computer network, which extends all across the globe.

In, internet, millions of computers remain connected together through well-laid communication system. Recall that telephone communication system is well defined, time proven system. Internet makes use of this system and many other systems to connect all the computer. Thus like a telephone connection, any computer of any city can establish a connection with any other computer of any other city and exchange data or messages with it.

Q.13 What do you know about "Web browsing" and "E—mail"?

Answer

Web browsing

A browsing is an application which provides a window to the web. All browsers are designed to display the pages of information located at Web sites around the world:

The most popular browsers on the market today include,

"Internet explorer, The world, Opera, Safari. Mozilla firefox, chrome etc."

How to search the web

We can search anything through search engine like google chrome, internet—explorer, Mozilla firefox etc..

For your information
Access of internet to people is increasing day by day. Internet is a useful source of information and knowledge. With broadband you can download information in seconds. E-mail transmits and receives your messages almost instantaneously. You can talk to your friends and relatives across the continents. A web-cam enables us to hear and see the person you are speaking to.

The procedure of searching the web in google chrome is as under:

Electronic Mail

One of the most widely used application of internet is electronic mail (or e-mail), which provides very fast delivery of messages to any enabled site on the

internet. Communication through e-mail is quicker and more reliable.

Through our e-mail, we can communicate with our friends and institution with more ease and pace. Some advantages of e-mail are as follows:

1) Fast communication

We can send messages anywhere in the world instantly.

2) Cost free service

If we have an internet access, then we can avail e-mail service free of cost.

3) Simple to use

After initial set up of e-mail account, it is easy to use.

4) More efficient

We can send our messages to many friends or people only in one action.

5) Versatile

ıctures or other files can also be sent through e-mail.

Q.14 Write a few uses of internet? What are the risks of ICT to society and the environment?

Answer

Uses of internet:

i) Faster communication.

ii) Big source of information.

iii) Source of entertainment.

iv) Access to social media.

v) Access to online services.

vi) E—commerce.

vii) E-learning.

Risks of ICT to society and the environment

1) Over use of computer is dangerous for our health.

For your information
E-commerce is the way of doing business on the web. You can order your favourite book or any other items on line. For instance, Amazon.com has been selling books, music and video successfully for years. As time passes on, supermarkets and trading companies will be selling more of their goods on line.

2) Computer crimes are also very common these days. Computer crime is defined as any crime accomplished through knowledge or use of computer technology.

3) There is also a world theft. Theft is the most common form of crime. Computers are used to steal money, goods, information's and computer resources.

4) Piracy is another issue of importance which is common on computer. It is the illegal duplication of copy write material like books, papers and software etc..

5) Hacking is still another illegal activity which is committed on computers. It is an unauthorized access to computer systems of other persons.

Computer hackers can damage some organization 'by stealing their credit cards and valuable information.

How these risks can be reduced

One way to reduce the risk of security breaches is to make sure that only authorized person has access to computer equipment. We may be granted access to computer based on 'some passwords as described below:

We can use a key, an ID card with photo, an ID number, a lock combination, our voice print or finger print as password to secure our computer.

MULTIPLE CHOICE QUESTIONS

Choose the correct answer from the following choices:

i) **In computer terminology information means:**
a) any data
b) raw data
c) processed data
d) large data

ii) **Which is the most suitable means of reliable continuous communication between an orbiting satellite and Earth?**
a) microwaves
b) radio waves
c) sound waves
d) any light wave

iii) **The basic operations performed by a computer are:**
a) arithmetic operations
b) non-arithmetic operations
c) logical operations
d) both (a) and (c)

iv) **The brain of any computer system is:**
a) monitor
b) memory
c) CPU
d) control unit

v) **Which of the following is not processing?**
a) arranging
b) manipulating
c) calculating
d) gathering

vi) **From which of the following you can get information almost about everything?**
a) book
b) teacher
c) computer
d) internet

vii) **What does the term e-mail stand for?**
a) emergency mail
b) electronic mail
c) extra mail
d) external mail

Answers

i) c) processed data
ii) b) radio waves
iii) c) logical operations
iv) c) CPU
v) b) manipulating
vi) d) Internet
vii) b) electronic mail

CONCEPTUAL QUESTIONS

17.1 Why optical fibre is more useful tool for the communication process?

Answer

In optical fibre, the signals are transmitted in the form of light pulses with a speed of light. So very fast communication is possible through optical fibre which is not possible in copper wires.

17.2 Which is more reliable floppy disk or a hard disk?

Answer

Hard disk is more reliable than floppy. (For detail, please see the topic).

17.3 What is the difference between RAM and ROM memories?

Answer

RAM (Random access memory) is an integrated circuit which vanishes when computer is switched off.

ROM (Read only memory) is also an integrated circuit which does not vanish when computer is switched off.

OBJECTIVE TYPE QUESTIONS & ANSWERS

Q2. Give Short Answers.

1.Define information technology.

Answer

The scientific method of storing, arranging information's for proper use and to communicate them to others is called the information technology (IT).

2. What is telecommunication?

Answer

The 'method that is used to communicate information to far off places instantly is called Telecommunication.

3. Name some important means of telecommunication.

Answer

Some important means of telecommunication are:

- Telegraph • Telephone• Mobile phone • Telex, machine
- Fax machine • Television

4. Who transmitted the first signal through air?

Answer

Marconi has the distinction that he transmitted the first radio signal in the air.

5.What is the telegraph?

Answer

Telegraph was the early form of telecommunication through which a transmitter converted messages of information into electric pulses.

6. What is the working principle of a telephone?

Answer

The working principle of a telephone is similar to telegraph. Direct conversation can be processed by the telephone.

7. What is the main function of a microphone?

Answer

The microphone is fitted in telephone handset. It changes vibrations produced by conversation into electric signal, which are transmitted along a wire to the receiver.

8. What is mobile phone?

Answer

Radio technology is used in a mobile phone. It is type of radio, which has two ways communication.

9. What is the nature of radio waves?

Answer

Radio waves are electromagnetic in nature.

10. How sound waves are sent to a far away distance?

Answer

The speed of sound in air is just 1246km per hour and it cannot go far away from its source. Therefore, it is converted into electromagnetic waves so that they can be sent to far off areas with the speed of light.

11. What is main difference between telephone and cellular phone?

Answer

In case of a telephone, sound is converted to electric signals that travel via wires to the other telephone where an electromagnet and a diaphragm convert these signals to sound. On the other hand, a cellular phone has a radio transmitter and receiver in it. Sound is converted to the radio waves and sent to the nearby telephone network by the radio transmitter. These radio waves are then converted to sound by the receiver in the receiving phone. Thus, a telephone communicates through electric signals and a cellular phone communicates through radio waves.

12. What is a videophone?

Answer

Videophone is the latest form of the telephone. It is also called photo-phone. In this type of telephone, speakers can see the pictures of each other. It is really the height of electronic telecommunication that the distant speakers feel acquainted with the physical existence of each other.

13. Write some characteristics of radio waves.

Answer

- Radio waves are electromagnetic waves.
- They travel with the speed of

14. What is telex machine?

Answer

Tele printer and exchange machine send the documents through telephone cables by electrical signals to the other telex machine where original print is received.

15. What is a fax machine?

Answer

Documents of considerable importance are sent from one place to the other through the fax machine using telephone line.

16. Now fax machine works?

Answer

The fax machine first gets the reflection of the documents like Photostat machine, which changes it into electronic signal and then transmits it via telephone line. The message when reaches the receiving fax machine, it reproduces the signal in an image print on a paper again.

17. What is the function of tuning circuit in a radio?

Answer

Tuning circuit fitted in the radio selects the station waves of the choice and strengthens them.

18. What is television?

Answer

Picture and sound reach us via radio waves or cable on a television.

19. Why cable TV is preferred?

Answer

The TV signals received with the help of cable are digital. They are received by using optical fibres. That is why they give better results.

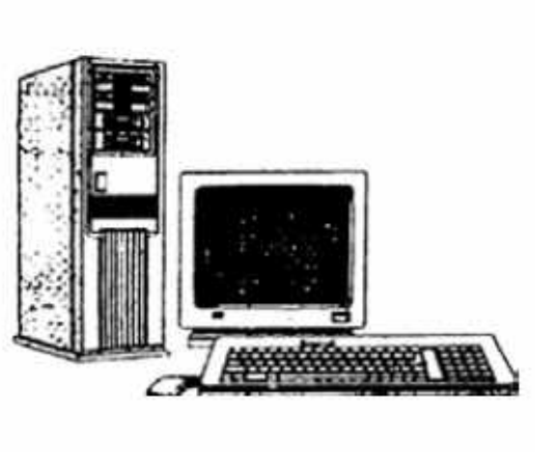
20. What is a computer?

Answer

Computer is an electronic machine, which after analyzing and arranging the given information, present it in a very short interval of time.

21. Name three important parts of a computer. Answer

- Input devices
- Central processing unit
- Output devices



22. How colour pictures are obtained in colour TV set? Answer

There are three tubes or electron guns in the colour television set. One of them makes red, second makes green and the third makes the blue picture. These are three primary colours of light. All other colours are obtained by mixing these colours and the complete picture is formed on the screen.

23. Differentiate between input and out devices. Answer

- The devices used to feed information and algorithms into computer are called input devices.
- Devices, which enable a computer to transfer information to humans or other machines, are called output devices.

24. Name some input devices. Answer

Some input devices are keyboard, mouse, joystick, scanner, trackball and digital camera.

25. Name some output devices. Answer

Some output devices are monitor and printer.

26. What is super computer?

Answer

The most powerful and swift computer, which can send information in one thousand billionth part of a second, is called super computer. It contains many processors.

27. Give some main features of computer. Answer

Some main features of computer are:

- Fast working
- Accurate solution of the given information
- Large memory
- Capability of deriving results

28. What is the main function of CPU in the computer?

Answer

It is a type of a brain of the computer, which performs the whole job. This part comprises of a control unit and a memory unit.

29. What is Internet?

Answer

The system through which we can know the global conditions within no time is called Internet.

30. Name such inventions, which have evolved the concept of portable work place for business.

Answer

Computer, fax machine, mobile phone networks and E-mail are such inventions, which have evolved the concept of portable work place for business.

31. What is the role of protocol in Internet?

Answer

Internet is actually a process using which people can contact each other through computer. This contact is made via telephone line or cable. All computers linked with Internet use uniform communication' process and same code. In the internet terminology, it is called protocol whose name is TCP / IP (transmission control protocol / internet protocol).

32. Which type of language is used in Internet?

Answer

The language is used in the Internet web is understood well by all the computer linked with it and this language is called HTML (Hypertext Markup Language).

33. In Internet terminology, what is meant by protocol?

Answer

All computers linked with Internet use uniform communication process and same code. In the Internet terminology, it is called protocol.

34. Write some applications of Internet?

Answer

- Internet is an important and fastest medium of information.
- Students and teachers having contact with the Internet can get information.
- Businessmen can advertise their products by it.
- Doctors can exchange latest information about medical problems.
- Important messages are sent through E-mail.

35. What is the main function of the remote control system?

Answers

It is an instrument through which the television and some other electronic machines can be controlled from a large distance without any cable connection.

36. Name some information storage devices.

Answer

The following are some of the information storage devices:

1) Audio-Video tapes
2) Compact discs (CD's)

3) Laser discs
4) Floppy discs
5) Hard discs

37. On what principle the storage devices work?

Answer

The storage devices can store a huge amount of informations in a very small space. Usually the storage devices work on the principle of magnetism whereas laser technology is used in CD's.

38. How sound is stored in magnetic tapes?

Answer

Microphone changes sound waves into electric pulses, which are made by an amplifier. For recording the sound, magnetic tape of the cassette is moved through the head of an electromagnetic audiocassette recorder.

39. How sound is reproduced in magnetic tapes?

Answer

To produce the sound win the tape is moved in front of the play produces alternating current signal in the coil wrapped on the head. These signals are then amplified and sent to the loudspeakers, which reproduce the recorded sound.

40. Can the sound recorded on the tape be wiped out?

Answer

Yes, the sound recorded on the tape can be wiped out by demagnetization and the same tape can be used over and over again.

41. Differentiate between audio and videotape.

Answer

- In audiotape only the sound can be recorded.
- In videotape the pictures are recorded along with the sound.

Fig 17.17 Compact disk (CD)

42. What is CD?

Answer

Compact disc commonly known as CD is an information storage device.

It is digital disc. Instead of wavy grooves, a pit pattern is formed on it. This pattern comprises of billions of pits of varying lengths and spaces.

43. What is meant by flat in CD?

Answer

The shiny area between two pits is called a flat. A laser beam can use this pattern.

44. Give some advantages of CD.

Answer

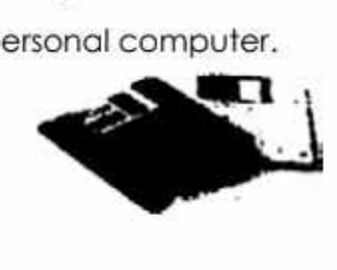
- Computer data is also stored in the CD's.
- Its storage capacity is many times greater than the floppy disc.
- CD is packed in a box so that environmental pollution may not affect it.

- Movies can also be stored in CD's.

45. What is floppy disc?

Answer

The floppy disc is only one disc. It is an extremely popular storage medium, particularly when used in conjunction with microcomputer system such as personal computer.



46. How we can protect a floppy disc from damage?

Answer

It is essential to save floppy disc from heat, magnet and water otherwise the stored data on it can be damaged.

47. Write some important factures of hard disc.

Answer

- Hard disc is installed inside the system unit.
- It is made of Aluminium.
- It is not flexible.
- It has higher speed and larger capacity.
- , It is also called the storage disc.

48. Differentiate between floppy disc and hard disc.

Answer

Difference between Hard disc and Floppy disc:

Hard Disc		Floppy Disc	
1.	The most important difference is that the storage medium is the aluminium plates coated with a particular material.	1.	In case of a floppy disc, it is a flexible plastic coated with a ferromagnetic compound that stores data.
2.	It has several aluminum plates	2.	It has only one plastic surface for stage.
3.	The aluminium plates are not flexible	3.	The storage medium is flexible.
4.	It capacity is very large	4.	It can store data up to 1.44MB.
6.	It is installed inside the system unit.	6.	It is removable storage device.

49. Differentiate between hard disc and floppy disc on the basic of CD. Answer

- If the CD is made of metal, then it is called hard disc.
- If the CD is made of soft elastic material then it is called floppy disc.

50. Why compact disc and hard disc are housed in jacket? Answer

The compact disc and hard disc are housed in a jacket to save them from exterior pollution.

Objective Type Questions

QI. Each question is followed by four options encircle the correct option.

1) Who transmitted the first radio signal in the air?
a. Addison
b. Graham Bell
c. Marconi
d. Lavoiser

2) Which of the following is the earlier device for telecommunication?
a. Telegraph
b. Internet
c. Telephone
d. Fax machine

3) Which of the following converts electric signals to sound?
a. Microphone
b. Electromagnet + diaphragm
c. Telegraph
d. Fax Machine.

4) What is the speed of sound in air?
a. 5000 m/sec
b. 3000 km/hr
c. 1246 km/hr
d. None of these

5) What happens when electromagnetic waves carrying radio transmission strike the aerial of a radio?
a. Sound waves are produced
b. A weak alternating current with a different frequency is generated
c. A weak alternating current with the same frequency as that of the waves is generated
d. None of these

6) Which of the following circuits sets the frequency of our choice in a radio?
a. Tuning circuit
b. Amplifying circuit
c. Integrated circuit.
d. None of these

7) Which of the following are the primary colours of light?
a. Red
b. Yellow
c. Green
d. Blue
e. All except 'b'

8) A computer works on a set of instructions called a:
a. Memory
b. Programme
c. Central Processing Unit
d. None of these

9} Which of the following (are) input devices?
a. Mouse
b. Printer
c. Joy stick
d. Monitor

10) The number of people using the facility of internet worldwide is approximately:
a. One million
b. 10 million
c. 50 million
d. 200 million

11) The language of the internet is:
a. HTML
b. C++
c. FORTRAN
d. None of these

12) Which oxide is coated on ferric tapes?
a. Iron oxide
b. Chromium oxide
c. Nickel oxide
d. Aluminium oxide

13) Floppy disks, hard disks, compact disks and RAM are all devices.
a. Input
b. Output
c. Processing
d. Storage devices

14) A compact disk is formed of:
a. Wavy grooves
b. Pits
c. Flats
d. Both '13" and 'c'

15) How much is the capacity of compact disk?
a. 1.4 MB
b. 128 MB
. 650 MB
d. 20 GB

16) Which of the following is different from others?
a. Floppy disc
b. Compact disc
c. Audio cassette
d. Video cassette

17) Identify the one that is different from others.
a. Monitor
b. Keyboard
c. Printer
d. Speaker

18) Which of the following has the highest capacity to store data?
a. Compact disk
b. Floppy disc
c. Hard disc
d. Videotape

19) The process of drawing pictures on the computer screen using mouse or keyboard is called:
a. Graphic designing
b. Word processing
c. Data managing
d. None of these

20) Which type of technology is used in mobile phone?

a. Laser
b. Radio
c. Modern
d. None

21) The working principle of a telephone is similar to:
a. Radio
b. Internet
c: Telex machine
d. Telegraph

22) Important documents can be sent from one place to the other through using telephone line?
a. Telex
b. Fax machine
c. Telegraph
d. None

23) Radio is source of telecommunication in which message is transmitted by:
a. Mechanical waves
b. Electromagnetic
c. Electrical pulses
d. waves
e. None

24) Which one is mean of telecommunication?
a. Telegraph
b. Television
c. Telephone
d. All of these

25) Which one is the earliest form of telecommunication?
a. Telegraph
b. Television
c. Telephone
d. None of these

26) Which one is the part of a computer?
a. Input devices
b. Output devices
c. CPU
d. All of these

27) The different functions of the are controlled by a special instrument called
a. Printer
b. Monitor
c. keyboard
d. None of these

28) What are the methods to feed information into the computer?
a. Floppy disks
b. CD
c. Both a & b
d. None

29) Which one is brain of computer?
a. Keyboard
b. Monitor
c. CPU
d. None

30) Which one is not an input device?
a. Mouse
b. Joystick

c. Scanner
d. Monitor

31) Which one is not a storage device?
a. Monitor
b. CD's
c. Hard disk
d. Floppy discs

32) If the CD is made of soft elastic material then it is called?
a. Monitor
b. CD's
c. Hard disk
d. Floppy discs

33) In the internet terminology, it is called protocol whose name is:
a. PTCL
b. TCP
c. IT
d. TCP/IP

34) Information technology is changing:
a. Slowly
b. Silently
c. Speedily
d. Sharply

35) What is fitted in the telephone hand set?
a. Magnet
b. Micrometer
c. Microphone
d. Transmitter

36) Latest form of the telephone is:
a. Video phone
b. Mobile phone
c. Microphone
d. None

37) EM waves are sent to a TV set via special wire called:
a. Television cable
b. Cable
c. Picture cable
d. None

38) All the work is done by the computer in the light of those instructions which are called a:
a. Monitor
b. Programme
c. CPU
d. Mouse

39) What is the system in which we can know the global conditions within no time?
a. Internet
b. Floppy
c. Television
d. Mobile phone

40) Which one is primary colour in the formation of TV, picture?
a. Red
b. Green
c. Blue
d. All of these

41) Radio waves are
a. X-rays
b. Electromagnetic
c. Transverse
d. None

42) A computer has made our work:
a. Very fast
b. Very accurate
c. Large memory
d. All of these

43) All computers linked with internet use uniform communication process and some code-which in the internet terminology is called.
a. Protocol
b. E-mail
c. Programme
d. SMS

44) Which type of radiations is used to operate the remote control system?
a. Ultrasonic
b. Infrared
c. Alpha
d. Gamma

45) The storage capacity of floppy disc is about:
a. 1.44 MB
b. 14.4 MB
c. 144 MB
d. 0.14 MB

46) Floppy disc is made of flexible plastic, which is coated with..... compound.
a. Diamagnetic
b. Paramagnetic
c. Ferromagnetic
d. Real and inverted

47) If the CD is made of metal, then it is called:
a. Hard disc
b. Laser disc
c. Floppy disc
d. None of these

48) The shiny area between two pits is called a:
a. Pattern
b. Laser
c. Flat
d. Hole

49) Which is an important and fastest medium of information.
a. Mobile
b. Radio
c. Internet
d. All of these

50) The devices used to feed information and algorithms into computer are called:
a. Input devices
b. Output devices
c. Protocol
d. Hardware

51) Which circuit fitted in the radio selects the station waves of the, choice and strengthens them?
a. Internal
b. External
c. Tuning
d. None

52) It is type of radio, which has _____ ways communication.
a. Two
b. Two or more
c. Three
d. None

53) Hard disc is made of:
a. Carbon
b. Silver
c. Semiconductor
d. Aluminium

54) By the help of machine, we draw money at any time we want.
a. Fax
b. ATM
c. Telex
d. None

55) CD is _____ disc:
a. Laser
b. Analogue
c. Digital
d. None

56) The signal received by the decoder from a flat on a CD is:
a. 1
b. 0
c. 2
d. 8

57) The means of transmission of information to far off places is called:
a. Telecommunication
b. Radio
c. IT
d. None

58) The device with the help of which we can control an appliance from a distance without any wire is called a:
a. Radio
b. Internet
c. Remote control
d. Telegraph

59) In telegraph, the messages or informations are converted into by a transmitter.
a. Electrical pulses
b. Digital signal
c. Analogue signal
d. All of these

60) Which includes all the operations that can be carried out on a document.
a. Remote control
b. Fax
c. Video Phone
d. Word processing

ANSWERS

No.	Ans.	No.	Ans.	No.	Ans.	No.	Ans.
1	c	2	a	3	b	4	c
5	c	6	a	7	e	8	b
9	a, c	10	d	11	a	12	a
13	d	14	d	15	c	16	b
17	b	18	c	19	a	20	b
21	d	22	b	23	b	24	d
25	a	26	d	27	c	28	c
29	c	30	d	31	a	32	d
33	d	34	c	35	c	36	a
37	c	38	c	39	a	40	d
41	b	42	d	43	a	44	b
45	a	46	c	47	a	48	c
49	c	50	a	51	c	52	a
53	d	54	b	55	c	56	a
57	a	58	c	59	a	60	d