Communication Technology

Very Short Answer Type Questions

Question 1.
Name the term defined by given below statement:
"A group of computers connected to each other by a link."

Answer:
Computer network is defined as a group of computers connected to each other by a link.

Question 2.
Two people, one knowing only English and other knowing only Chinese are talking to each other. Can we call it a communication?

Answer:
No, because only a meaningful exchange of information between two living beings is called communication.

Question 3.
Give few examples of communication technology.

Answer:
Telephones, mobiles, fax, Internet etc., are some examples of communication technology.

Question 4.
Write down the components of a computer network established between the two offices of a company across the cities.

Answer:
The five components will be involved in this computer network, since telephone lines will be used as communication channel.

- Sender
- Data communication device at sender's end
- Communication channel
- Data communication device at receiver's end
- Receiver

Question 5.
What is the importance of communication channel?

Answer:
Communication channel is responsible for carrying data in the form of signals from sender to receiver.

Question 6.
List down the types of computer networks.

Answer:
Following are the three main types of computer networks, based upon the geographical area as follows:

- Local Area Network (LAN)
- Metropolitan Area Network (MAN)
- Wide Area Network (WAN)

Question 7.
Which cable networks are used for LAN connections?

Answer:
Twisted pair and fibre optic cables are used for LAN connection.

Question 8.
Why Internet is called a network of networks?

Answer:
Internet is called a network of networks because it connects several large and all heterogeneous networks together into a bigger network.

Question 9.
Give one basic difference between guided and unguided transmission channels.

Answer:
In guided transmission media, cables (or wires) are used for communicating data while in unguided transmission, in place of cables, signals travel through air.

Question 10.
Why wires in twisted pair cable are twisted around each other?

Answer:
Wires are twisted to provide protection against crosstalk and noise.

Question 11.
When we transmit signal over a long distance, the intensity of the signal is reduced. What could be the solution for this problem?

Answer:
We can use a networking device called repeater, regenerates the feeble signal and transmit it.

Question 12.
Write down the name of communication channel used for telephone line and TV

Answer:
Communication channel for telephone line is twisted pair cable and for TV is co-axial cable.

Question 13.
Which guided media provide secure transmission amongst all of them?

Answer:
Optical fibre provides secure transmission as compared to twisted pair and co-axial cable. As, it is more immune to tapping than copper cables.

Question 14.
How is crossover Ethernet cable different from rest of the Ethernet cables?

Answer:
A crossover cable is a special type of Ethernet cable specially designed for connecting two computers, whereas most Ethernet cables are designed to connect one computer to a router or a switch.

Question 15.
Which wireless technology is commonly used in mobile phones?

Answer:
Bluetooth is commonly used as a wireless technology in mobile phones and laptops.

Question 16.
Give one major disadvantage of bluetooth.

Answer:
Only short range communication is possible using bluetooth.

Question 17.
Ramya wants to connect all the computers of her office wirelessly in order to avoid

clumsy cables. Which wireless technology would be best suitable for her office?

Answer:
Wi-Fi technology would be best suitable for her office to avoid cabling.

Question 18.
Define the term Wi-Fi hotspot.

Answer:
A hotspot is a site that offers Internet access over a WLAN via a router connected to a link from an Internet Service Provider (ISP).

Short Answer Type Questions

Question 1.
Write down any two points of differences between LAN, MAN and WAN.

Answer:
Two major points of differences among LAN, MAN and WAN are as follows:

- Distance Covered LAN can cover an area upto 5 km. More than 5 km and upto 100 km comes under MAN. Beyond 100 km, the area can be covered by WAN only.
- Cost LAN has lower cost as compared to MAN and WAN.

Question 2.
Write short notes on LAN and WAN.

Answer:
LAN
A Local Area Network (LAN) is a computer network covering a small geographical area like a home, office or small group of buildings such as buildings in a school. Computers connected to a LAN can share information and share peripheral equipments.

WAN
A Wide Area Network (WAN) is used to connect LANs and other types of network together, so that users and computers in one location can communicate with users and computers in other locations.

Question 3.
Write any two uses of Internet

Answer:
TWO uses of Internet are as follows:

- Internet is used for communication and information sharing.
- Businesses use the Internet to provide access to complex databases.

Question 4.
Differentiate between the terms Internet and Intranet.

Answer:
Internet
Access by any individual with dial-up access.
Information on Internet could be general, public and advertisement.

Intranet
Access by only authorised employees.
Information on Intranet could be specific, corporate and proprietary.

Question 5.
In twisted pair cable, two insulated wires are twisted around each other which provides protection against noise. Explain.

Answer:
Twisting the cables keep them close together so that, any external magnetic fields must cross both cable at the same time, so the interference created in one cable is cancelled by the almost exact opposite amount of interference in the other.

Question 6.
Explain two problems that can occur during transmission of data.

Answer:
TWO problems that can occur during transmission of data are as follows:

- Crosstalk Disturbance caused by the electric or magnetic fields of one signal in an adjacent signal.
- Attenuation During transmission, the signal strength is reduced this phenomenon is called attenuation.

Question 7.
Explain the three main parts of optical fibre cable.

Answer:
The three main parts of optical fibre cable are as follows:

- Core It is the section through which the data travel in the form of light.
- Cladding The cladding is the covering part of core. Its function is to reflect back the light into the core, as it is a denser medium.

- Protective Coating It is the outer cover of cladding for the protection of optical fibre from damage and moisture.

Question 8.
Compare and contrast the two wireless transmission media; bluetooth and infrared.

Answer:
Bluetooth and Infrared both are short range wireless transmission media. This is the only point at which both these data transmission technologies look similar but there is a lot of difference between the two. Infrared is mostly used in TV remotes and there must be a direct line-of-sight between the transmitter and the receiver while on the other hand bluetooth uses a radio frequency which allows transmission through walls and other objects.

Question 9.
Explain the term:

- Bandwidth
- Broadband

Answer:

- Bandwidth It is the Communication capacity of a network. It refers to the data carrying capacity of a channel or medium.
- Broadband is a wide bandwidth data transmission with an ability to simultaneously transport multiple signals and traffic types.

Question 10.
Elucidate the following terms:

- PAN
- WiMAX

Answer:

- **PAN** It stands for Personal Area Network. It is a computer network used for communication among computer and different technological devices close to it. Technologies such as bluetooth and infrared communication form a wireless PAN around the device.
- **WiMAX** It stands for Worldwide Interoperability for Microwave Access. It is a wireless transmission of data using a variety of transmission modes.

Question 11.
Differentiate between long distance wireless media and short distance wireless media.

Answer:
Differences between long distance and short distance wireless media are as follows:

Long distance wireless media	Short distance wireless media
It supports communication over a long distance, i.e. upto thousands of kilometres.	It supports communication over a short distance, i.e. upto few kilometres
Microwave, radio wave and satellite communication are long distance wireless media.	Bluetooth, infrared, Wi-Fi, WiMAX are short distance wireless media.

Question 12.
When the computer network uses telephone lines as communication channel then MODEM is used as a data communication device. Now, explain the working of MODEM.

Answer:
MODEM performs the task of Modulation at sender's site and Demodulation at the receiver's end. Basically, our computer generates data in the form of digital signals which needs to be forwarded to the receiver through telephone lines. Since, telephone lines can carry only analog signals. So digital signals need to be converted to analog signals at sender's site this is called modulation. At receiver's end again analog signals should be converted back to the original digital signals, then this is called demodulation.

Long Answer Type Questions

Question 1.
Today, computers are. Being used very widely for communication. Write down some benefits offered by computers when used for communication.

Answer:
File and Data Sharing

At a time, file-sharing consisted mostly of saving documents to floppy disks that could be physically transferred to other computers by hand. With networking, files can be shared instantaneously across the network, whether with one user or with hundreds users

Resource Sharing
Computer networking also allows the sharing of network resources, such as printers, scanners, dedicated servers, backup systems, input devices and Internet connections.

Data Protection and Redundancy
Computer networking allows users to distribute copies of important information across multiple locations, ensuring essential information is not lost with the failure of any one computer in the network.

Ease of Administration
Instead of individually upgrading each computer in an organisation, a network administrator can initiate an upgrade from a server and automatically duplicate the upgrade throughout the network

User Communications
Computer networking also allows organisations to maintain complex communication systems. It also allow users to communicate using E-mail, newsgroups, video conferencing etc.

Distributed Computing Power
In computer networks, we can distribute tasks across multiple computers throughout the network, by breaking complex problems into hundreds or thousands of smaller operations, which are then parceled out to individual computers.

Network Gaming
A lot of network games are available, which allow multi-users to play from different locations. It is a type of online game, i.e. played through social networks.

Question 2.
Write down the advantages of networking for an office.

Answer:
Various advantages of networking for an office are as follows:

- Using network we can store our files in many places or computers for data recovery purpose from a disk crash.
- It provides sharing of various resources over the network, within the office.
- Since, resources are sharable so they can be accessed on any computer by any employee.
- Networking supports the very fast transmission of data from one system to another.

- All the application softwares need not be installed on individual system, i.e. they can be centralised and can be accessed by anyone from the central system itself.

Question 3.
Explain the given terms with respect to computer networks:

1. File and Data Sharing
2. Distributing Computing Power
3. Ease of Administration
4. Networking
5. Server

Answer:

1. **File and Data Sharing**
   At a time, file-sharing consisted mostly of saving documents to floppy disks that could be physically transferred to other computers by hand. With networking, files can be shared instantaneously across the network, whether with one user or with hundreds users, e.g. employees across departments can collaborate on documents, exchange background material etc.

2. **Distributed Computing Power**
   In computer networks, we can distribute tasks across multiple computers throughout the network, by breaking complex problems into hundreds or thousands of smaller operations, which are then parceled out to individual computers.
   Each computer in the network performs its operations on its own portion of the larger problem and return its result. Then, all these results are gathered in such a form that impact as the solution of the complex problem and finally are used for the further task.

3. **Ease of Administration**
   Instead of individually upgrading each computer in an organisation, a network administrator can initiate an upgrade from a server and automatically duplicate the upgrade throughout the network. Simultaneously, allowing everyone in the company to maintain uniform software, resources and procedures.

4. **Networking**
   Networking is a process of exchanging the information and ideas among individuals or groups that share a common interest, i.e. the process of creating a network is called networking.
   The need for networking is mainly to break the barriers of distance, time and cost. Similarly, interconnecting computers, results in a form of networks of computers.

5. **Server**
   A server is a main computer that manages resources connected to a network. Any user on the network can access the resources stored on the server.

Question 4.
Differentiate LAN, MAN and WAN on the basis of following characteristic:

- Geographical Area
- Example
- Distance
- Cost
- Ownership

Answer:
Differences between LAN, MAN and WAN

Basis	LAN	MAN	WAN
Geographical Area	Generally within a building	Within a city	Across the continents
Distance	Upto 5 km	Upto 160 km	Unlimited
Cost	Less expensive	More than LAN but less than WAN	More than MAN
Ownership	Private	Private or Public	Shared across the world
Example	Network within your school	Cable TV network within a city	Internet

Question 5.
When we connect computers in a network using cables then it is called guided media.

What are the various types of guided media available? Explain each.

Answer:
Three types of cables are used for connecting computers in a network are as follows:

1. **Twisted Pair Cable** It consists of two insulated wires twisted around each other and uses copper as the conducting material.
   This property of twisted pair cable provides protection against crosstalk and noise.

2. **Co-axial Cable** It contains two conductors, the inner conductor made of solid copper and the outer conductor that serves as a shield against noise. An insulating plastic is placed between the two conductors and this whole set-up is covered with a plastic jacket. For cable TV network co-axial cable is used.

3. **Optical Fibre** It consists of thin strands of glass or glass like material, which are capable of carrying light signals from a source at one end to another end.

Question 6.
What are the differences between wired and wireless communication channels?

Answer:

Wired Communication Channel	Wireless Communication Channel
It is more secure.	More security measures need to be considered for providing security.
It is faster than wireless communication.	It is slower than wired communication.
Technically less difficult to set-up.	Technically more difficult to set-up.

More expensive for longer distances.	For long distances, it is less expensive,
User device cannot be moved.	User device can be moved easily within the wireless range.

Application Oriented Questions

Question 1.
The following paragraph describes the term computer network.
A computer network is a group of (i) ……. that are (ii) …… to each other for the purpose of (iii) ……. A computer (IV) …….. Allows computers to communicate with many other computers and to (v) ……. resources and information.
Fill in the blanks with words from the list below:
Connected, Computers, Sending, Communication, Network, Share.

Answer:
(i) computers
(ii) connected
(iii) communication
(iv) network
(v) share

Question 2.
Ram and Sita, two persons talking to one another.

1. What are the components of the network?
2. What is the communication channel?

Answer:

1. Components of network are as follows:
   - Sender
   - Communication channel
   - Receiver
2. Communication channel is the channel in which two computers can communicate with each other by sending data or sharing information between them.

Question 3.
Manoj has to set-up a network between his devices at home which included a smartphone, a laptop and a personal computer. What type of network he would be setting up for the same?

- PAN
- MAN
- WAN

Answer:
Manoj would be setting up a PAN (Personal Area Network) which is best suited for setups involving a computer, a cell phone and/or a handheld computing device such as a PDA.

Question 4.
Mr. Singh and Mr. Tyagi want to send a song from each other. Both having a mobile phone. Both want to send a song through mobile phones. What networking technology is needed to share a song through mobile phone? Describe it.

Answer:
Bluetooth technology is used for sharing the data like audio, video etc. Using this technology, users of cellular phones, initiate the sending or receiving data.
In general, having all mobiles and fixed computer devices can be totally coordinated. Thus, Mr. Singh and Mr. Tyagi can send a song to each other by using a bluetooth technology easily within short time.

Question 5.
Ravi has to transfer a photo on his mobile phone to his friend's phone in the same room. Which of the following technologies would let him to do this quickly?

- Bluetooth
- Infrared
- Either of the two

Answer:
Ravi could either of the two technologies Bluetooth or Infrared which is supported by both the devices involved. Infrared though slightly faster than Bluetooth has a limitation that it needs a clear line-of-sight between the devices for it to work.

Question 6.
Carefully read the following descriptions and identify what is being talked about.

1. It consists of two insulated wires twisted around each other, which provides protection against noise and crosstalk.

2. Disturbance caused due to interference of one signal's electric or magnetic field into other signals.

3. It is an Omni-directional wireless transmission media. Its range lies between 300 KHz to 10 GHz.

4. Communication channel that is more secure, faster, easier to set-up but expensive Tor longer distances and devices once configured cannot be moved.

5. Unique equipments like printers and scanners are available to all the workstations simultaneously.

Answer:

1. Twisted pair cable
2. Crosstalk
3. Radio wave
4. Wired communication channel
5. Resource sharing

Multiple Choice Questions

Question 1.
Computer connected with LAN
(a) work fast
(b) go online
(c) can E-mail
(d) can share information or peripheral devices

Answer:
(d) Computer connected with LAN can share information or peripheral devices.

Question 2.
A group of computers connected together with the help of cables within an office building is called
(a) PAN
(b) WAN
(c) MAN
(d) LAN

Answer:
(d) Using LAN, we can connect computers within a building only.

Question 3.
Which of the following statement is not true about LAN?

(a) LAN is designed for a small geographical area
(b) LANs operate at higher speed than WANs
(c) LANs are privately owned networks
(d) LANs can share data across the world

Answer:
(d) LANs are not public network and hence data can be shared among the computers of the organisation owning that LAN cannot share data across the world.

Question 4.
Network formed between computers which is spread across the continents is called
(a) LAN
(b) WAN
(c) MAN
(d) WLAN

Answer:
(b) Across the continents, computers can be connected using WAN only.

Question 5.
Which of the following uses cables to connect two or more computers?
(a) Transmission
(b) Unguided
(c) Guided
(d) Radio waves

Answer:
(c) In guided media, signals are guided through cables.

Question 6.
The …… consists of two conductors, where one is the inner conductor of solid copper (also called the core conductor) and the other is the outer conductor.
(a) Twisted pair cable
(b) Optical fibre
(c) Co-axial cable
(d) Ethernet cable

Answer:
(c) Co-axial cable consists of two conductors which are parallel to each other, i.e. inner and outer conductor.

Question 7.
Identify the odd term amongst the following.
(a) Microwave
(b) Radio wave

(c) Bluetooth
(d) Optical fibre

Answer:
(d) Except optical fibre, all are wireless transmission media.

Question 8.
Optical fibres are made up of thin strands of
(a) copper material
(b) silver material
(c) glass like material
(d) brass material

Answer:
(c) Optical fibres are made up of thin strands of glass like material.

Question 9.
Which type of connector does a Ethernet cable use?
(a) BNC
(b) RJ-45
(c) RJ-11
(d) MSAU

Answer:
(b) RJ-45 most commonly used to connect computers onto Ethernet-based local area network.

Question 10.
For using Wi-Fi, which of the following is not required?
(a) An Internet connection
(b) Wireless Internet card
(c) Wireless router
(d) Bluetooth

Answer:
(d) Bluetooth is not required for Wi-Fi connection.

Question 11.
Modulation and demodulation is performed by
(a) Microwave
(b) Satellite
(c) Modem
(d) Fibre optic

Answer:

(c) Modem converts digital signals to analog signals or analog signals to digital signals for the purpose of transmitting data over telephone lines or vice-versa.

Question 12.
A modem is connected in between a telephone line and a
(a) computer
(b) serial port
(c) network
(d) communication adapter

Answer:
(a) Modem is a device that enables computers and other equipment to communicate with each other using telephone lines.

Question 13.
Which of the following is not a transmission medium?
(a) Telephone lines
(b) Co-axial cable
(c) Modem
(d) Microwave system

Answer:
(c) All are communication channel but modem is a dev that convert analog signals to digital signals or vice-versa

Question 14.
What is the unit used to measure the data wf is transmitted through modem?
(a) Bytes per second
(b) Band
(c) Bits per second
(d) None of these

Answer:
(c) Bits per second is the unit used to measure the data through modem.

Fill in the Blanks

Question 1.
……. is the formation of networks.

Answer:
Networking

Question 2.
…….. is a computer which provides sharing the resources of other computers connected in a network.

Answer:
Server

Question 3.
…….. is called network of networks.

Answer:
Internet

Question 4.
……. consists of electrical waves

Answer:
Signal

Question 5.
Bluetooth is a ……. wireless connection.

Answer:
short range

Question 6.
The small area network created around a bluetooth device is called ……..

Answer:
PAN (Personal Area Network)

Question 7.
The digital signals to analog signals are carried out by ……., so that data can travel over telephone lines.

Answer:
MODEM

True or False

Question 1.
A computer connected to a network is known as stand-alone computer.

Answer:

False
A computer connected to a network is known as host or node.

Question 2.
The most powerful computer in a typical network is network server.

Answer:
True
A server is a main computer that manages resources to other computers connected to a network.

Question 3.
A separate printer will be needed in a network for all connected computers.

Answer:
False
Computers connected to a LAN can share information and through a common printer.

Question 4.
MAN's are the computer networks confined to a localised area such as an office.

Answer:
False
LAN's are the computer networks confined to a localised area such as an office.

Question 5.
MAN provides communication services upto 5 km.

Answer:
False
MAN provides communication services upto 100 km.

Question 6.
Twisted pair cable is suitable for broadband application.

Answer:
False
Twisted pair cable has low bandwidth capabilities and broadband application requires high bandwidth.

Question 7.
Reduction of signal strength during transmission is called attenuation.

Answer:

True
During transmission, the signal strength is reduced, this phenomenon is called attenuation.

Question 8.
Microwave transmits signals through open space like radio signal.

Answer:
True
It supports long distance communication through space like radio signal

Question 9.
Microwave transmission is an example of line-of-sight transmission.

Answer:
True
Microwave are the radio wave which supports line-of-sight transmission.

Question 10.
Most common example of infrared medium is TV remote.

Answer:
True
TV remote is an example of infrared light for transmission use.

Question 11.
Bluetooth is commonly used in mobile phones, laptops etc.

Answer:
True
It is a short-range wireless connection. With the help of bluetooth, we can transfer the data from one device to another device.