Class –X
Subject : IT (Vocational)
Chapter -1
Ouestion / Answer

Q1 What is a computer network?
A computer network, often simply referred to as a network, is a collection of computers and other hardware components interconnected by communication channels that allow sharing of resources and information

Q2. What are the types of network?

Network consists of one or more computers or devices connected in order to provide and access resources. Resources include a range of devices (example, Printer, CDROM, Hard Drives, etc.) and services (example, web service, mail service, etc.). Networks based on size are classified into LAN & WAN.
LAN: Local Area Network refers to group of computers networked within a limited geographical area such as schools, colleges, offices, etc.
WAN: Wide Area Network refers to computers networked across geographical areas, in other words they connect LAN's between different locations. For example, computers or devices in a branch office could connect to the computer networks at the head office through telephone lines or satellites.

Q3. What are different ways to form a computer Network?

There are several ways to form a network as listed below:
1. Use a cross-over cable (also referred to as Peer-to-peer cable)
2. Use Serial and Parallel ports
3. Use Bluetooth
4. Use Wi-Fi (for more than two computers)
5. Use Hub or Network Switch (for more than two computers)
6. SOHO Router or Wi-Fi Router (Commonly found in home & small business networks)

Q4. What are Networks designed using the following architecture?
Networks in which all computers have an equal status are called peer to peer networks. Generally in such a network each terminal has an equally competent CPU.

Peer-to-Peer Network
Networks in which certain computers have special dedicated tasks, providing services to other computers (in the network) are called client server networks. The computer(s) which provide services are called servers and the ones that use these services are called clients.
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Q5. What is Internet?

The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks.

Q6. What is Intranet?

Intranet refers to private computer network used by organizations for sharing resources; Intranets can be simple within a building or very large spread across the globe connected through various networking technologies

Q7. What is Extranet?

Extranet is a computer network used outside the Intranet. For example, an organization may allow a vendor to view or access their resources such as their internal website for updating a product catalog or training material. However, this is highly restricted to Internet users (public).

Q8 What is World Wide Web?

World Wide Web (*abbreviated as WWW or W3*, *commonly known as the Web*), is a system of interlinked hypertext documents accessed via the Internet. With a web browser, one can view web pages that may contain text, images, videos, and other multimedia, and navigate between them via hyperlinks.

Q9. What are the advantages of network?

Some of the advantages associated with networking are:

Data Sharing: One of the most important uses of networking is to allow the sharing of data. Users can send text files, spread sheets, documents, presentations, audio files, video files, etc. to other users.

Hardware Sharing: Hardware components such as printers, scanners, etc. can also be shared. For example, instead of purchasing 10 printers for each user, one printer can be purchased and shared among multiple users thus saving cost.

Internet Access Sharing: You can purchase a single Internet connection and share it among other computers in a network instead of purchasing multiple Internet connection for each computer. This is very commonly found in Internet café (browsing centres), schools, colleges, companies, etc.

Usage of network based applications such as web browsers, email clients, chat application, audio & video calling, etc is another advantage.

Q10 What are the various data transmission method?

Data can be transferred over a network using the following techniques:

Circuit Switching: In this method, a dedicated path is established between the

endpoints before the data is transferred. Once a dedicated path is established, no other devices can use the circuit. Example: Dial-Up, ISDN.
Packet Switching: In this method, data is divided into blocks referred to as packets. Multiple packets can be sent via different paths allowing more than two devices to communicate at the same time. Modes of operation can be connectionless or connection-oriented.

Cell Switching: Cell switching method is similar to that of packet switching but has a fixed size for the cells transmitting data. Cell switching is efficient when large amounts of data need to transferred. Example: ATM.

Q11. Define the various network communication terminologies and technologies.

Baseband: Data is sent as digital signals by using entire bandwidth of the media (Single Channel), supporting single communication at a time. Signals are sent over co-axial, twisted pair or fiber optic cables. Baseband supports higher transfer rates as compared to broadband; however, baseband is limited with distance. Baseband uses TDM (Time Division Multiplexing) to send multiple signals over a single cable. Example: Ethernet, Token Ring & FDDI.

Broadband: Data is send as analog signals by using portion of a bandwidth. Broadband supports use of multiple signals at different frequencies (multiple channels). Signals are split into channels by using FDM (Frequency Division Multiplexing). Example: xDSL, where telephone lines are used for both voice (telephone) calls and data (Internet connectivity).

Channel operation

Channel operation refers to the mode of communication between connected devices or computers. Channel operation can be *simplex*, *half-duplex or fullduplex*.

Simplex is a one way communication, similar to that of a radio.

Halfduplex is a two way communication but only one way at a time, similar to that of a walkie-talkie.
Fullduplex is two way simultaneous communication (data can be received and sent at the same time), similar to that of a telephone.

Internet

An Internet service provider (ISP) is an organization which provides you with access to the Internet via a dial-up (using modem) or direct (hard wired) or wireless connection.

Modem

Á modem is a device that converts digital computer signals into a form (analog signals) that can travel over phone lines. It also re-converts the analog signals back into digital signals. The word modem is derived from its function **MO**dulator/

DEModulator

Ethernet

Ethernet is a family of computer networking technologies for local area networks (LANs) and has largely replaced competing wired LAN technologies.

Q12. What are the different types of Common Internet Connectivity?

There are different types of Internet Connectivity available today; it can be widely categorized into wired and wireless access. Following table is a summary of different types of Internet connectivity categorized into wired and wireless:

- Dial-Up -Wired
- DSL- Wired
- Cable Internet Access- Wired
- 3G -Wireless
- WiMAX -Wireless
- Wi-Fi -Wireless

Q13. Define the types of cables for Internet/ Network.

Twisted-pair Ethernet cables can be wired "straight-through" or "Crossover".
To connect a network interface card to a switch, hub or router, *straight-through* or patch cables are used.

To connect similar devices (network interface card on computer to another network interface on another computer, hub to hub or switch to switch), crossover cables are used.
Fiber Optic: A fiber optic cable is a cable containing one or more optical fibers. Fiber-Optic cables are ideal for transmitting data over very long distances at great speeds as light is used for the medium for transmission. Fiber optic cables are not susceptible to any EMI, Near-end Crosstalk (NEXT), or Far-end Crosstalk (FEXT).
Fiber-Optic cables consist of a high quality glass or plastic strands and a plastic jacket made of Teflon or PVC that protects the cable.
Two types of Fiber-Optic cable exist: *Single-Mode Fiber (SMF)* used for longer distances and *Multi-Mode Fiber (MMF)* used for shorter distances.

Q14. Define the types of network hardware?

Network cards are devices that connect computers to the network. Network cards are both Layer 1 (Physical) & 2 (Data Link) devices as they provide physical access to the medium and also provide physical addressing through the MAC Address.

Lab

View Network Interface card installed on a computer

A hub is a device that connects multiple computers using a twisted-pair cable. Hubs operate at Layer 1 (Physical). The number of computers that can be connected to a hub depends on the number of ports available (typically 4 to 8).

Bridge is a device that can connect network segments and separate network traffic based on broadcasts. Bridges examine the frames and selectively transfer frames according to their MAC address. Bridges operate at Layer 2 of the OSI Model

Switch is a device that allows multiple computers to be connected using twisted pair cable. Switches (operating at Level 2 - OSI) manage traffic based on MAC (Media Access Control) addresses and are efficient in large networks.

Routers are Layer 3 devices that allow packets to be routed to different *logical networks*. Routers can discover and transfer packets based on routing table that are pre-determined or self-discovered.

Q15. Define the Types of wireless networks.

Wireless personal area network (WPANs) interconnect devices within a relatively small area usually within a person's reach. For example, usage of Bluetooth to connect a mobile phone to a laptop.
Wireless metropolitan area network (WMANs) is a wireless network that connects several wireless LANs. WiMAX is a type of Wireless MAN and is described by the IEEE 802.16 standard.
Wireless wide area network (WWANs) is a wireless network that covers large areas, such as one between neighboring towns and cities, or city and its suburbs. This network can connect branch offices of business or function as a public internet access system.

Q16 Define Instant Messaging.

Instant messaging (IM) is a form of communication over the Internet that offers an instantaneous transmission of text-based messages from sender to receiver. Most instant messaging software include the option for performing file transfers, audio chat, video calling and conferencing, sharing desktops, etc. apart from standard text chat. Instant

Q17. What are the Key features of an instant messaging?

Ans-
Key features of an instant messaging are as follows:

- Text Messages can be sent to one or more person (Similar to SMS)
- Audio calling and conferencing.
- Video calling and conferencing.
- File transfers (Not limited to documents, spread sheets, audio files, video files, etc.)
- Message history (Save messages for future reference).

Q18. Define the kinds of instant messaging software. Give examples also.

There are two kinds of instant messaging software –

- 1 application based

1. 2 Web Based.

Application based instant messaging software is downloaded and installed on user's computer. Some of the popular instant messaging software are:

- Google Talk
- Yahoo! Messenger
- Skype
- Windows Live Messenger
- Rediff Bol, etc.

Web based instant messaging software is accessed using browsers such as Internet Explorer, Mozilla Firefox, Google Chrome, etc. Some of the popular web based instant messaging software are:

- Meebo
- Yahoo! Messenger for the Web
- MSN Web Messenger
- IMO, etc.