Summer-15

1. **Compare human network and computer network.**
   (Each point- 1 Mark, any two points)

Human Network	Computer Network
1. Human Network is a network of human beings.	1.Computer network is a interconnections of two or more computers
2.It consist of individuals ,organizations, schools, hospitals, work places, etc.	2.It consist of computers & connecting devices like as Hub or printer, etc.
3.Example: 1.Family network, Peer Network, Restaurant Network, Contact Network	3.Example : Internet

2. **Give advantages and disadvantages of computer network.**
   (Any 2 advantages- 2 Marks, Any 2 disadvantages- 2 Marks)
   Answer:

Advantages:

1. **File sharing:** The major advantage of computer network is that it allows file sharing and remote file access. A person sitting at one workstation that is connected to a network can easily see files present on another workstation, provided he/she is authorized to do so.
2. **Resource Sharing:** A computer network provides a cheaper alternative by the provision of resource sharing. All the computers can be interconnected using a network and just one modem & printer can efficiently provide the services to all users.
3. **Inexpensive set-up:** Shared resources means reduction in hardware costs. Shared files means reduction in memory requirement, which indirectly means reduction in file storage expenses.
4. **Flexible Handling:** A user can log on to a computer anywhere on the network and access his/her files. This offers flexibility to the user as to where he/she should be during the course of his/her routine.

Disadvantages:

1. Security concerns: One of the major drawback of computer network is the security issues that are involved.

2. Virus and malware: Viruses can spread on a network easily because of the interconnectivity of workstations.

3. Lack of robustness: If the main file server of a computer network breaks down, the entire system becomes useless.

4. Needs an efficient handler: The technical skills and knowledge required to operate and administer a computer network.

3. **Describe classification of computer networks.**

(Classification – 2 Marks, Explanation of any one network -2 Marks)
Answer:
Networks are classified depending on the geography & their components.

1. **Classification of network by their geography**:

1. PAN	**4. MAN**
2. CAN	**5. WAN**
3. LAN	

2. **Classification of network by their components by their component role:**

   1. Peer-to- Peer Network
   2. Client-server network

PAN:

A PAN is personal area network is used for communication among computer devices close to one's person. Wireless networking or Bluetooth technologies are the some examples of PAN. The communication network established for the purpose of connecting computer devices of personal use is known as the PAN.
CAN:

CAN is a Campus Area Network is used to connect buildings across campuses of colleges or Universities. A CAN is actually a type of LAN. It is larger than a LAN but smaller than MAN. CAN is a network that connects two or more LANs but that is limited to a specific and contiguous geographical area such as a college campus, industrial complex or military base.
Advantages:
1. CAN is economical.
2. CAN is simple and easy to implement.
3. Helpful for universities & corporate organization to work from any block and receive the same speed of data together.
LAN:
- LAN is local area network.
- LAN is privately-owned networks covering a small geographic area(less than 1 km), like a home, office, building or group of buildings.
- LAN transmits data with a speed of several megabits per second.
Advantages:
     1. The reliability of network is high because the failure of the computer in the network does not affect the functioning for other computers.
     2. Addition of new computer to network is easy.
     3. High rate of data transmission is possible.
     4. Loss expensive to install.

MAN:
A Metropolitan Area Network (MAN) is a large computer network that spans a metropolitan area or campus. A MAN typically covers an area up to 10 kms (city). The best example of MAN is the cable Television network, available in many cities. For an organization, the common use of a MAN is to extend their LAN connectivity between buildings/offices that are within the same city or urban area (hence the name Metropolitan Area Network). The organization can pass their Ethernet frames to the service provider MAN; the service provider will carry their frames across the MAN; and then deliver the frames to the destination site. From the customer's point of view, the MAN looks like one big (long) Ethernet link between their offices. The different sites could belong to the same IP subnet, and from the customer's viewpoint, no routing is required between their sites.

Advantages:
1. MAN spans large geographical area than LAN.
2. MAN falls in between the LAN and WAN therefore, increases the efficiency at handling data.

WAN:
WAN is wide area network. WAN is a long-distance communication network that covers a wide geographic area, such as state or country. The most common example is internet. A WAN provides long-distance transmission of data, voice, image and video information over larger geographical areas that may comprise a country or even whole world.

Advantages:
1. WAN can connect the computer to a wider area geographically.
2. WAN shares software & resources with connecting workstations.

Classification of network by their component role:
1. **Peer-to-Peer Network**:
   - Peer networks are defined by lack of central control over network.
   - There are no fixed division into client & server. In this individual who forms a loose group can communicate with other in the group as shown in fig.
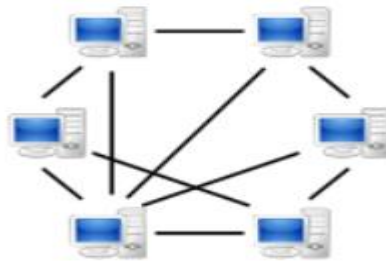
   - Each computer is responsible for accessing & maintaining its own security & resources.

- In Peer-to- Peer network every computer can function both as client & server.
- In this type of network user simply share disk space & resources.

Advantages:

1. No extra investment in server hardware & software is required.
2. Easy setup.
3. No network administrator required.

Disadvantages:

1. Additional load due to sharing of resources.
2. Lack of central organization, which can make data hard to find.
3. Weak security.

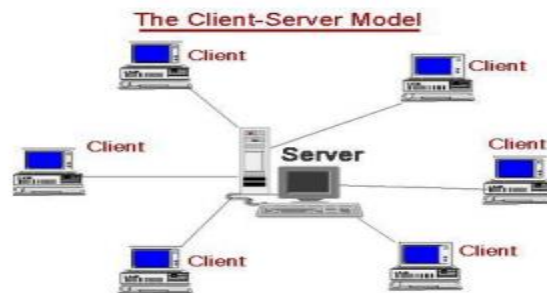**Client -Server network (Server-based network)**

Fig. shows server- based network. Server based networks are defined by presence of servers on a network that provides security & administration of network. Server-based network divide processing takes between client & servers. Client request service such as file printing & servers deliver them. Servers are more powerful than client computers.

Advantages:

1. Strong central security
2. Ability to share expensive equipment's such as printer.
3. Ability of server to pull available hardware & software.
4. Easy manageability of large user.

Disadvantages:

1. Expensive dedicated hardware.
2. Expensive network operating system software & client license.
3. A dedicated network administrator.

[Any suitable advantages & disadvantages shall be considered]

4. **State any four advantages of server based network over peer to peer network.**
   (Each advantage -1 Mark, any four advantages)

Answer:

1. Server based network has Strong central security over peer to peer network.
2. Sever based network has better performance for large number of users than Peer-to –Peer network.
3. Centralized backup can be taken in server based network.
4. Easy manageability for large number of users.
5. Very reliable dedicated Network operating system (NOS) required.
6. In server based network server is more powerful than client.

5. **List four types of servers. Describe them in brief.**
   (Listing of servers 1 mark, description 3 marks)
   Answer:

Types:

1. Application Server
2. Message Server
3. Database Server
4. Web server

DESCRIPTION:
Application Servers:

The application server often serves to connect database servers with the end-user, thus acting as a kind of "middleware" that releases stored information requested by said user. The server is usually responsible for properly decoding and recoding data and providing security over connections.

Message Servers:

These servers provide instant, real-time communication between users, regardless of where a user may be. Message servers allow a wide variety of communication methods, from simple forms such as text to more complex forms such as video, audio and graphics.

Database Servers:

These servers manage the database that is stored in that server using the SQL database management system. A client request is sent in the form of an SQL query to the server. That server in turn searches through the database for the requested information and sends the results to the client.

Web Servers:

Web servers provide access to the Internet through the Hyper Text Transfer Protocol (HTTP). Files in a web server use Hyper Text Markup Language (HTML)to display content on web browsers. A web server usually receives requests from a web browser and sends back the requested HTML file and related graphic files.

6. **Compare LAN, MAN and WAN.**
   (1 mark for each point, any four comparison points)

LAN	MAN	WAN
1. Area – Network within a single building or campus of up to a few kilometres in size. 10 ... 1 Km campus.	1.Area-Network within over an entire city. Up to 10km	1.Area – Network spans a large geographical area after a country or continent 100 km ...1000km country ....continent
2. LAN network has very high speed mainly due to proximity of computer and network devices.	2.MAN network has lower speed compared to LAN.	2.WAN speed varies based on geographical location of the servers. WAN connects several LANs
3. Bandwidth is low.	3. Bandwidth is moderate.	3 Bandwidth is high.
4. Transmission media – coaxial cable.	4.Transmission media- cables, PSTN, optical fiber cables, wireless	4 Transmission media – PSTN or Satellite links.
5. Data rate is high.	5. Data rate is moderate.	5. Data rate is low.

7. **Describe the function of repeater. In which situation the repeater is used in the network? (Any 2 functions – 1M; Situation: 2M)**

Answer:

- Repeaters are used to take the distorted, weak and corrupt input signal and regenerate this signal at its output.
- It ensures that the signals are not distorted or weak before it reaches the destination.
- It recreates the bit pattern of the signal, and puts this regenerated signal back on to the transmission medium.
- It works in the physical layer with no intelligent function.
- In any computer network, when the data bit pattern is sent from a computer A to Computer B, if Computer B is not able to receive the exact data bit pattern, a repeater is connected in between.
- This will regenerate the weak signal so that the exact replica of the original input signal is sent forward.
- A repeater can be used at as many points in the network as required.

Winter-14

1. Define Server. Give the name of any two types of Server.
(Definition -1 mark, any two types -1 mark)
Answer:
Definition of server: The central computer which is more powerful than the clients & which allows the clients to access its software & database is called as the server.

Types of server:

1. File server
2. Print Sever
3. Application server
4. Message server
5. Database server

2. Define LAN. Write any two disadvantages of LAN.
(Definition 1 mark, any 2 disadvantage -1 mark)

Answer:
Definition of LAN:
LAN is a network which is designed to operate over a small physical area such as an office, factory or a group of buildings.

Disadvantages:

1. Power - a good LAN is required to be on all the times.
2. Security - each computer and device become another point of entry for undesirables.
3. Investment in Higher Costs due to server systems.
4. Frustration if having a problem setting up.
5. A lot of times a network shares one Internet connection - if all computers running at once, can reduce speed for each.
6. Area covered is limited.

3. Compare Server based network and peer-to-peer network. (Any four points)
(Each difference 1 mark, any four points)

Server based network	Peer to Peer
1. It is much like company uses centralized management.	1. It is much like company uses decentralized management.
2.In this server has more power & client has less power.	2.In this each machine has same power
3. It is hardware intensive.	3. Uses less expensive computer hardware.
4. Complex to setup & require professional administrator.	4. Easy to setup & administrator.
5.Very secure	5.Less secure
6.Network O.S required	6.Network O.S not required
7.It support large Network	7.It support small Network
8.Better performance	8.Might hurt user's performance

4. **Enlist eight applications of computer network.**
   (½ marks for each application, any eight applications)

Applications of Compute Network:

1) Banking   5) Radio

2) Video conferencing   6) Television

3) Marketing   7) E-mail

4) School   8) Companies

OR

1. Sharing the resources such as printers among all the users.
2. Sharing of expensive software & hardware.
3. Communication from one computer to other.
4. Exchange of data & information amongst the users, via the network.
5. Sharing of information over the geographically wide areas.
6. For connecting the computers between various buildings of an organization.
7. For educational purposes. 8. Maintenance is limited to the servers & clients.

5. **Discuss any four network features. (1 mark for each feature, any four features)**

Answer:

1) **File sharing:** File sharing is the primary feature of network. Due to use of networks, the sharing of files becomes easier. File sharing requires a shared directory or disk drive to which many users can access over the network. When many users are accessing the same file on the network, more than one person can make changes to a file at the same time. They might both making conflicting changes simultaneously.

2) **Printer sharing:** Printer sharing is beneficial to many users as they can share costly & higher quality printers. Printer sharing can be done in several different ways on network. The most common way is to use printer queues on server. The printer queue holds print job until any currently running print jobs are finished & then automatically send the waiting jobs to the printer i.e. printer connected to server. Another way to share printer on a network is that each workstations accesses the printer directly.

3) **Application services:** You can also share application on a network. For example you can have a shared copy of Microsoft office or some other application & keep it on the network server. Another application services you can have on the network is shared installation i.e. contents of CD-ROM copy to the server, then run the installation the installing application mush faster & more convenient.

4) **E- mail services :**E-mail is extremely valuable & important feature for communication within organization or outside the people in world. E-mail service can

be used by user in two different ways : 1. File based 2.Client File based e-mail system requires gateway server for connecting or handling the e-mail interface between the two systems using gateway software that is part of the file-based e-mail system. A client-server e-mail system is one where an e-mail server containing the messages & handles all incoming & outgoing mail. It is more secure & powerful than file based e-mail system.

5) **Remote access:** Using this feature user can access their file & e-mail, when they are travelling or working on remote location. It enables users to access to centralized application, stored private or shared files on LAN.

6) **Internet & Intranet:** Internet: It is public network. This consists of thousands of individual networks & millions of computers located around the world. Internets have many different types of services available such as e-mail, the web & Usenet newsgroups. Intranet: It is private network or it is company"s own network. Company use this feature for internal use. For example: company establish its own web server, for placing documents such as employee handbooks, purchases form or other information that company publishes for internal use. It also has internet services such as FTP servers or Usenet servers.

7) **Network security:** Internal & External

6. **Explain PAN with suitable diagram. Differentiate between PAN and CAN. (Two points only) (diagram- 1 mark,Explanation-1 mark, differentiation-any 2 points-1 mark each)**

- A personal area network (PAN) is a network organized around an individual person.
- A PAN can also be used for communication among personal devices themselves (interpersonal communication).
- PAN network can be constructed using cables or it can be wireless.
- A personal area network (PAN) is the interconnection of information technology devices within the range of an individual person, typically within a range of 10 meters.
- For example, a person traveling with a laptop, a personal digital assistant (PDA), and a portable printer could interconnect them without having to plug anything in, using some form of wireless technology.
- Typically, this kind of personal area network could also be interconnected without wires to the Internet or other networks.

PAN	CAN
1. PAN is definitively the smallest type of network you can currently use and the name comes from Personal Area Network	1. This is a network spanning multiple LANs within a limited geographical area.
2. PAN is the interconnected network of technologic devices within the reach of an individual person.	2.It can connect different buildings in its campus such as various departments, library etc.
3. Range of maximum 10 meters.	3. The range of CAN is 1KM to 5KM
4. PAN is mainly used for personal communication.	4. CAN is mainly used for corporate campuses.

Summer- 14

1. **List any two applications of computer network.** *(Listing of any 2 applications- 1 Mark each)*

Ans: Applications of Computer Network 1) Banking 2) Video conferencing 3) Marketing 4) School 5) Radio 6) Television 7) E-mail

2. **List any four types of computer network by considering geography.** *(Listing of any 4 networks - ½ Mark each)*

Ans: LAN - Local Area Network
MAN - Metropolitan Area Network
WAN - Wide Area Network
CAN - Campus Area Network
PAN - Personal Area Network

3. **Describe four advantages of computer network.** *(Any 4 advantages – 1 Mark each)*

Ans: Advantages of computer network:
1. Access to remote information: Access to remote information comes in many forms. It can be surfing the World Wide Web for information or just for fun. Information available includes the arts, business, cooking, government, health, history, hobbies, recreation, science, sports, travel, and many others.
2. Resource Sharing: Programs, data equipment are made available to every node on the network. **Example:** Printer sharing, LAN
3. Saving Money: Reducing equipment cost by sharing data resources, software's etc.
4. High Reliability: All files are copied on no of computers, if one of the computer becomes unavailable then the file can be read from other available system
5. Providing powerful communication Medium: Using network it is easy for two or more people, who live far apart can write report together.
6. Person-to-person communication: Email, chats is already widely used by millions of people to routinely share audio, video and text documents.
**7. Interactive entertainment:** Real-time streaming is possible because of network

8. Electronic commerce: E-commerce is trading in products or services conducted via computer networks such as the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange.

4. **Describe the concept of peer-to-peer network. Where it is used?**
   (Peer to peer concept explanation-2 Marks, Diagram - 1 Marks, Use - 1 Mark)

Ans: Peer to peer (P2P) is an alternative network model to that provided by traditional client-server architecture. P2P networks use a decentralised model in which each machine, referred to as a peer, functions as a client with its own layer of server functionality. A peer plays the role of a client and a server at the same time. That is, the peer can initiate requests to other peers, and at the same time respond to incoming requests from other peers on the network. It differs from the traditional client-server model where a client can only send requests to a server and then wait for the server's response.
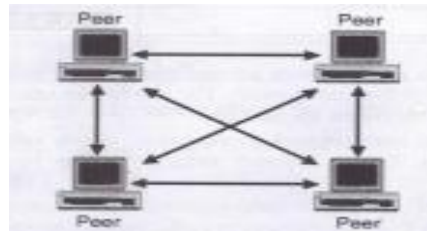
1. Peer to Peer networks do not have a central control system. There are no servers in peer networks.
2. In this type of network users simply share disk space and resources, such as printers and faxes.
3. 3. Peer networks are organised into workgroups. Workgroup have very little security. There is no central login process.
4. If the user has logged into one peer on the network he can use any resources on the network that are not controlled by a specific password.
5. Access to individual resource can be controlled if the user who shared the resources requires a password to access it.
6. Since there is on central security, the user will have to know individual password for each secured shared resources he wishes to access.

The peer to peer networks are suitable/used for the following working conditions.

   1. If security is not important.
   2. If the number of users is less than 10.
   3. If all the users are situated in the same area.
    4. If the possibility of future expansion is less.

5. **Describe in brief:**
   i) Backing up data ii) File sharing.

Ans:

i)   **Backing up data** *(Explanation - 2 Marks)*

The process of data backup, data from computer system is copied from the disk to some other medium for keeping it safe. Such backups are important because it protects the data against any unpredictable, Accidental loss of data due to system failure, computer viruses, or human error. But taking a backup of individual user's data separately is a time consuming and unorganized. Hence in a network, the users first save their important data on the central server and then the backup can be taken from the server itself.

This reduces the time and stores the backup data at a signal place only. This makes the data retrieval easy. We can have two or three sets of the entire backup data. This help in the event of one or two sets getting corrupt. The Duplication of backup data becomes easily possible due to centralization storage. The centralization back up procedures have become easy now a day due to the advanced technology.

There are two basic network backup strategies:
        1. Isolated 2. Centralized
The operating system will provide tools required for data backups. For example windows NT proves a tape backup program called as **backup.** Some backup Policies are as follows:

   1. Full Backup.
   2. Incremental Backup.
   3. Differential Backup.

ii) File sharing: *(Explanation -2 Marks)*
        File sharing is the primary feature of network. Due to use of networks the sharing of files becomes easier. File sharing requires a shared director or disk drive to which many users can access over the network; more than one person can make changes to a file at the same time. They might both making conflicting change simultaneously. Hence most of software programs don't have ability to allow multiple changes to a single file at the same time to resolve this type of problem that might arise. Network operating systems that perform file sharing also administer the security of these shared files and what kind of access they have. For example: Some user might have permission to view only certain shared files, while other have permission to edit or even delete certain shared files.
Advantages:
   1. Easily share information on networking.
   2. User needs regular access of word processing files. Spreadsheets so they access easily.

Disadvantages:
   1. Conflicting problem arises.
   2. Less secure if permission not set proper.

Winter-15

1. **List advantages of Computer Network.**
   (Any two Advantages - 1 Mark each)

Ans: 1) Resource Sharing 2) Reducing cost 3) High Reliability 4) Improved security 5) Centralized management. 6) E-mail 7) Flexible access.

2. **State the reason for implementing a network these key resources often shared on a network** *(Reason -1 Mark, Any 3 key Resources - 1 Mark each)*

Ans: A primary reason for implementing a network is to share resources.
Resources: There are many resources to be shared on a network, they are as listed below. 1. Printers 2. Scanners 3. Applications 4. Files 5. Network access to the World Wide Web.

3. **Differentiate LAN and WAN by considering following points:**

   i. Physical area   **iii. Bandwidth**
   ii. Installation cost   **iv. Transmission med**

Answer: As given above.

4. In a small agency, there are five PCs in the network. Cost is an issue and the company would prefer not to dedicate an individual's time to maintain a network. However the agency is also concerned about keeping its data safe and the users are not sophisticated computer users. In what ways is a peer to peer network appropriate for the company? In what ways it is inappropriate?
(Reasons for appropriate - 2 Marks & Reasons for Inappropriate - 2 Marks)
Ans:

A peer to peer to peer network appropriate due to following reasons:

1. P2P is more reliable as central dependency is eliminated. Failure of one peer doesn't affect the functioning of other peers.
2. There is no need for full-time System Administrator. Every user is the administrator of his machine. User can control their shared resources.
3. The overall cost of building and maintaining this network is comparatively very less.
4. It does not run efficient if you have many computers, it is best to used two to eight computers.

A peer to peer to peer network appropriate due to following reasons:

i) Security in this system is very less viruses, spywares, Trojans, etc malwares can easily transmitted over this P-2-P architecture.
ii) In this network, the whole system is decentralized thus it is difficult to administer. That is one person cannot determine the whole accessibility setting of whole network.

5. **For following situations, state which type of network architecture is appropriate?**
   (i) Number of users 50
   (ii) Data and resources need to be restricted.
   (iii) No network administrator required.
   (iv) All users with equal priority
   (1 Marks for each type)
   Ans:
   i) Number of users 50: Client-Server Network
   ii) Data and resources need to be restricted : Client-Server Network

   iii) No network administrator required: Peer to peer Network
   iv) All users with equal priority: Peer to peer Network

6. **What is meant by file sharing and printer sharing? How this can be achieved?**
   (Explanation - 2Marks Each)
   Ans:

File sharing: File sharing is the primary feature of network. Due to use of networks, the sharing of files becomes easier. File sharing requires a shared directory or disk drive to which many users can access over the network. When many users are accessing the same file on the network, more than one person can make changes to a file at the same time. They might both making conflicting changes simultaneously.

Printer sharing: Printer sharing can share costly & higher quality printers. Printer sharing can be done in several different ways on network. The most common way is to use printer queues on server. The printer queue holds print job until any currently running print jobs are finished & then automatically send the waiting jobs to the printer i.e. printer connected to server. Another way to share printer on a network is that each workstations accesses the printer directly.

Note: Repeated Questions are taken once.