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Ans. to the Q. No - 01

(a) Network :- A network is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected to allow data sharing.

In information technology, a network is defined as the connection of at least two computer systems, either by a cable or wireless connection.

An example of a network is the Internet, which connects millions of people all over the world.

The list of network devices :

- Desktop computers, laptops, mainframes and servers.
- Consoles and thin clients.
- Firewalls

- Bridges
- Repeaters
- Network Interface cards
- Switches, hubs, modems, and routers
- Smartphones and tablets.
- Webcams

### (b) Peer to Peer (P2P) network :-

A peer to peer network is a group of computers, each of which acts as a node for sharing files within the group. Instead of having a central server to act as a shared drive, each computer acts as the server for the files stored upon it.

When a P2P network is established over the internet, a central server can be used to index files, or a distributed network can be established where the sharing of files is split between all the users in the network that are storing a given file.

In the most basic sense, a peer-to-peer network is a simple network where each computer doubles as a node and a server for the files it exclusively holds.

These are the same as a home network or office network. However, when P2P networks are established over the internet, the size of the network and the files available allow huge amounts of data to be shared.

Peer-to-peer networks are usually associated with internet piracy and illegal file sharing.

Ans. to the Q. No-03

(a) Basic Difference between coaxial cable and Fiber optic given below :-

Coaxial cable	Fiber optic
1. Coaxial cable is used to transmit the signal/data is in electrical form.	1. Optical Fiber is used to transmit the signal/data is in light form.
2. Coaxial cable are made of plastic, copper wires etc.	2. Optical fiber is made of plastic and glass.
3. The cost of coaxial cable is less.	3. The cost of fiber optic is high.

## Coaxial Cable

## Fiber Optic

- |  |   |
|--|---|
| 4. While coaxial cable is low efficient.   | 4. Optical fiber is high efficient.   |
| 5. Coaxial cable is heavier than optical fiber in weight.  | 5. Optical cable is lighter in weights.   |
| 6. Coaxial cables diameter is larger than optical fiber.   | 6. Optical fibers diameter is small.  |
| 7. Installation and implementation of coaxial cable is easy.   | 7. Installation and implementation of optical fiber is difficult.   |
| 8. Loss of power in coaxial cables is due to conduction only.  | 8. Power loss happens in optical fiber is caused by the absorption, scattering, dispersion and bending.   |
| 9. It uses 10 Base 2 and 10 Base 5 ethernet variants.  | 9. It uses 10 Base F, 100 Base Fx, 1000 Base Fx, and some other ethernet variants.  |
| 10. It's maximum transmission speed is up to 10 Mbps.  | 10. It's maximum transmission speed is up to 10 Gbps.   |
| 11. It provides comparatively low bandwidth and data rates.  | 11. It offers high bandwidth and data rates in comparison to coaxial cable.   |
| 12. Uses - <ul style="list-style-type: none"><li>→ HDTV's Cable TV</li><li>→ Aircraft Signals</li><li>→ Medical Internet</li><li>→ Telephone connections</li></ul> | 12. Uses - <ul style="list-style-type: none"><li>→ HDTV's</li><li>→ Aircraft</li><li>→ Medical field</li><li>→ Telephone connections.</li></ul> |

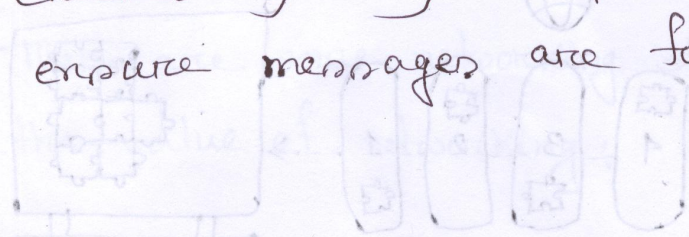
## 2) TCP/IP Protocol :-

TCP/IP (Transmission Control Protocol / Internet Protocol) also referred to as the internet protocol suite, is the world wide web's core communication system that enables every internet-connected device to communicate with every other such device simultaneously.

It is in essence, a computerized syntax that is installed on every computer, both of public and private networks. The development of the protocol has enabled the internet — and as a result, online commerce — to grow quickly.

### How it works :-

TCP/IP is a two layered program: the higher layer (TCP) disassembles message content into small "data packets" that are then transmitted over the internet to be re-assembled by the receiving computer's TCP back into the message's original form. The lower layer (IP) plays the role of "address manager" and gets each data packet to the correct destination. IP addresses are checked by every computer in a network to ensure messages are forwarded as needed.



TCP/IP runs on the client server communication model, meaning that the user of a first computer makes a service request, such as forwarding a Web page, to a second network computer or web hosting provider. TCP/IP also relies on point-to-point communication, meaning that communications move from one host computer to another within a pre-defined network boundary.

Finally TCP/IP is said to be stateless because each request is new and unrelated to all previous requests, making network pathways free to be continuously used by all.

TCP/IP related protocols used in the exchange of router data include:

- ICMP (Internet Control Message Protocol)
- IGP (Interior Gateway Protocol)
- EGP (Exterior Gateway Protocol)
- BGP (Border Gateway Protocol)

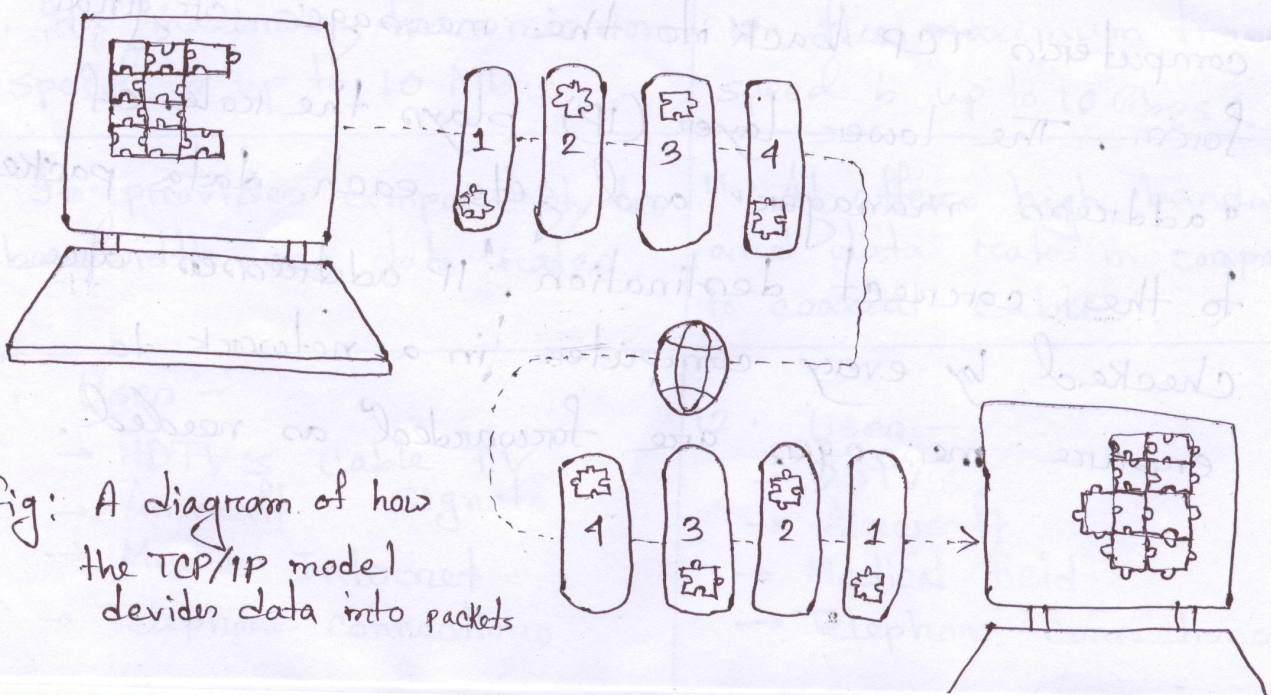


Fig: A diagram of how the TCP/IP model divides data into packets

The TCP/IP model works because the whole process is standardized. Without standardization, communication would go haywire and slow things down — and fast internet service relies on efficiency. As the global standard, the TCP/IP model is one of the most efficient ways to transfer data over the internet.

### Ans. to the Q. No-04

(a)

Networking is usually involves meeting new people, who share a profession, industry or interests.

Networking involves exchanging ideas and information between these individuals.

Using your network is one of the best ways to find a new job or even a new role at your current company. It often comes down to one keyword: referrals.

There are some networking statistics that prove the value of networking:

- ⇒ Networking is responsible for filling in 85% of job vacancies.
- ⇒ 7 out of 10 job openings aren't publicly advertised.
- ⇒ 70% of people report that networking helped them to find their current job.
- ⇒ 35% of people discover career opportunities through their friends.
- ⇒ Nearly every second freelancer finds job opportunities through their family and friends.
- ⇒ One of the main reasons why networking is important is because it helps you build a reputation.
- ⇒ Networking can help you establish yourself as a reliable, supportive, considerate and knowledgeable industry professional.
- ⇒ Regularly attending networking events helps to make your face known to hundreds of people.
- ⇒ A reliable network can speed up your growth on the professional ladder.
- ⇒ An influential and expansive network gives you insights into the industry and awareness about the global trends.
- ⇒ Network opens up avenues of new opportunities.



### (b)(i) Network Security :-

Network security protects your network and data from breaches, intrusions and other threats. This is a vast and overarching term that describes hardware and software solutions as well as processes or rules and configurations relating to network use, accessibility, and overall threat protection.

Network security involves access control, viruses and antivirus software, application security, network analytics, types of network-related security, firewalls, VPN encryption and more.

### (ii) Domain :-

A domain is a network of computers and devices that are controlled by one set authority and have specific guidelines. More specifically, a domain is controlled by one particular company that has its own internet presence and IP address.

The domain is labeled by its domain name, such as networkworld. or networkworld.com, or daraz or daraz.com.

Domain name system servers translate a domain name request from an internet user into an IP address the computer can read,

The DNS server then connects the user to the website for the IP address it finds within server records.

(iii) IP :-

IP stands for "Internet Protocol", which is the set of rules governing the format of data sent via the internet or local network.

In essence, IP addresses are the identifier that allows information to be sent between devices on a network: they contain location information and make devices accessible for communication.

An Internet Protocol address is a numerical label such as 192.0.2.1 that is connected to a computer network that uses the internet protocol for communication. An IP address serves two main functions: network interface identification and location addressing.