



# Victoria University of Bangladesh

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### Ans to the Que No 1(A)

**Network:** A Network is a group of two or more computers or others electronic devices that are interconnected for the purpose of exchanging data and sharing resource.

The network devices:

- ❖ Hub.
- ❖ Switch.
- ❖ Router.
- ❖ Bridge.
- ❖ Gateway.
- ❖ Modem.
- ❖ Access Point.

### Ans to the Que No 1(B)

**Peer-to-Peer (P2P) network:** a peer-to-peer (P2P) network is created when two or more PCs are connected and share resources without going through a separate server computer. A P2P network can be an ad hoc connection—a couple of computers connected via a Universal Serial Bus to transfer files. A P2P network also can be a permanent infrastructure that links a half-dozen computers in a small office over copper wires. Or a P2P network can be a network on a much grander scale in which special protocols and applications set up direct relationships among users over the Internet.

### Ans to the Que No 3(A)

Difference between Coaxial cable and Fiber optic:

<b>Optical Fiber</b>	<b>Coaxial Cable</b>
Optical Fiber is used to transmit the signal/data is in light form.	Coaxial Cable is used to transmit the signal/data is in electrical form.
Optical Fiber is made of plastics and glasses.	Coaxial Cable is made of Plastics, copper wires etc.
Optical Fiber is high efficient.	While Coaxial Cable is low efficient.

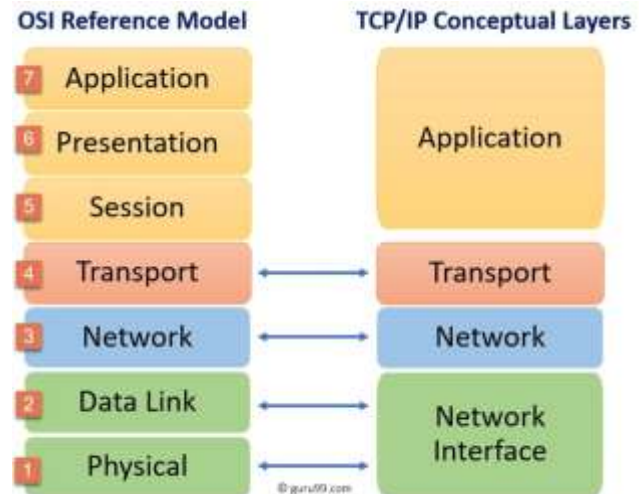
The cost of optical fiber is high.	The cost of coaxial cable is less.
Optical cable is lighter in weights.	Coaxial cable is heavier than optical fiber in weight.
Optical fiber's diameter is small.	Coaxial cable's diameter is larger than optical fiber.
Installation and implementation of optical fiber is difficult.	Installation and implementation of coaxial cable is easy.
In the optical fiber, there is highest noise immunity as they are unaffected by the electrical noise.	Coaxial cable has finest noise immunity due to the shield provided.
These cables are not affected due to external magnetic field.	Coaxial cables are less affected by the external magnetic field.
Power loss happens in optical fiber is caused by the absorption, scattering, dispersion and bending.	Loss of power in coaxial cables is due to conduction only.
It uses 10BaseF, 100BaseFX, 1000BaseFx, and some other ethernet variants.	It uses 10Base2 and 10Base5 ethernet variants.
Its maximum transmission speed is up to 10 Gbps.	Its maximum transmission speed is up to 10 Mbps.
It offers high bandwidth and data rates in comparison to coaxial cable.	It provides comparatively low bandwidth and data rates.
Uses- <ul style="list-style-type: none"> <li>• HDTV's</li> <li>• Aircraft</li> <li>• Medical field</li> <li>• Telephone connections</li> </ul>	Uses- <ul style="list-style-type: none"> <li>• Cable TV signals</li> <li>• Internet</li> <li>• Telephone connections</li> </ul>

**Ans to the Que No 3(B)**

**TCP/IP Protocol:** The TCP/IP model is an open standard networking model similar to the OSI model. The TCP/IP protocol is the protocol suite for Internet use. TCP stands for Transmission Control Protocol and IP stands for Internet Protocol. TCP is used for connection-oriented reliable transmission services, while IP is used to assign addresses to each host on the network. Like the OSI model, the TCP/IP model is divided into several layers. The TCP/IP model consists of 4 layers.

TCP/IP Layers:

1. Application Layer
2. Transport Layer
3. Network Layer
4. Network Interface Layer



**Application Layer:** In the TCP/IP model, the Application Layer contains various protocols that perform all the functions of the Application, Presentation, Session layers of the OSI model.

**Transport Layer:** The Transport layer works like the Transport layer of the OSI model. The function of the transport layer is to deliver data packets correctly. Apart from this, proper order of data packets, presence of data, prevention of duplicate data are done by this layer. If the data is larger than the allowed packet, then the transport layer breaks the packet into smaller packets and reassembles the data. This breaking and joining of data is called fragmentation and defragmentation. This layer also controls the speed of data packet flow.

**Network Layer:** Network layer works like network layer of OSI model. This layer establishes the logical relationship between sender and receiver in the network. This layer divides the data received from the transport layer into packets. This layer is responsible for data routing and dealing with IP addresses. The format of data at the network layer is called a packet. This packet contains the source IP address, destination IP address, and segments received from the transport layer. Devices such as routers, browsers, gateways etc. are used in this layer.

**Network Interface Layer:** The Network Interface layer performs the functions of the Physical and Data link layers of the OSI model. This layer defines the protocols and hardware required to directly connect a host to a network and deliver data.

### Ans to the Que No 4(A)

**Network:** A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

- Easily share files and data
- Share resources such as printers and Internet connections
- Communicate with other network users (e-mail, instant messaging, video-conferencing, etc.)
- Store data centrally (using a file server) for ease of access and back-up
- Keep all of our settings centrally so we can use any workstation

#### **Basic Component of Network:**

**Hardware Components Servers** – Servers are high-configuration computers that manage the resources of the network. The network operating system is typically installed in the server and so they give user accesses to the network resources. Servers can be of various kinds: file servers, database servers, print servers etc.

**Clients** – Clients are computers that request and receive service from the servers to access and use the network resources.

**Peers** – Peers are computers that provide as well as receive services from other peers in a workgroup network.

**Transmission Media** – Transmission media are the channels through which data is transferred from one device to another in a network. Transmission media may be guided media like coaxial cable, fiber optic cables etc; or maybe unguided media like microwaves, infrared waves etc.

**Connecting Devices** – Connecting devices act as middleware between networks or computers, by binding the network media together. Some of the common connecting devices are:

- a) Routers
- b) Bridges
- c) Hubs
- d) Repeaters
- e) Gateways
- f) Switches

## **Software Components**

**Networking Operating System** – Network Operating Systems is typically installed in the server and facilitate workstations in a network to share files, database, applications, printers etc.

**Protocol Suite** – A protocol is a rule or guideline followed by each computer for data communication. Protocol suite is a set of related protocols that are laid down for computer networks. The two popular protocol suites are –

- a) OSI Model (Open System Interconnections)
- b) TCP / IP Model

### **Ans to the Que No 4(B)**

#### **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, virus and antivirus software, application security, network analytics, types of network-related security (endpoint, web, wireless), firewalls, VPN encryption and more.

#### **IP:**

An IP address is a unique address that identifies a device on the internet or a local network. 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. The internet needs a way to differentiate between different computers, routers, and websites. IP addresses provide a way of doing so and form an essential part of how the internet works.

#### **HTTP:**

The Hypertext Transfer Protocol (HTTP) is the foundation of the World Wide Web, and is used to load webpages using hypertext links. HTTP is an application layer protocol designed to transfer information between networked devices and runs on top of other layers of the network protocol stack. A typical flow over HTTP involves a client machine making a request to a server, which then sends a response message.