

Question:

1

- a) Explain the TCP/IP model layers 5
- b) How TCP / IP works ? 4
- c) Write down the importance of TCP/IP. 5

2

- a) Define transport layer and its function. 4
- b) Explain End-to-End Communication in transport layer. 5
- c) How Crash recovery forms in TCP? 5

3)

- a) What are routing algorithms ? 3
- b) what is unicast routing ? Explain. 6
- c) what is broadcast routing ? 5

4)

- a) what is tunneling ? 3
- b) Explain packet fragmentation. 6
- c) what does Internet Protocol version 4 (IPV4) mean ? Explain . 5

5]

- a) Define network routing. 3
- b) Explain different types of routing. 6
- c) Explain different routing protocols. 5

6]

- a) Define Networking and give examples of network devices. 4
- b) Explain Network topologies and types of network. 5
- c) What are the requirements and features of UDP? 5

- a) Define OSI model. Is OSI and ISO comparable? 4
- b) What are network and transport layer. 5
- c) List the network layer functionalities. 5

- 8
- a) Define network layer and its features. 5
- b) Define network addressing. Explain. 5
- c) How many different types of network addresses in existence? 4

Ans To The Question NO - 1 (a)

TCP / IP functionality devideed into four layers , each of which included protocols :

- * The application layer: It provides applications with standardized data exchange . Its protocols include the HTTP , FTP , POP3 .
- * The transport layer: is responsible for maintaining End-to-End communications across the network .
- * The network layer: deals with packets and connects independent networks across packets .
- * The physical layer: consists of protocols that operate only on a link of LANs and ARP .

Ans: To The Question No- 1 (b)

TCP / IP uses the client - server model of communication in which a user on machine is provided a service by another computer in the network.

Collectively, the TCP/IP suite of protocols is classified as stateless, which means each client request is considered new because it is unrelated to previous requests.

The TCP/IP model differs slightly from the seven-layer Open systems Interconnection networking model designed after it.

Ans: To The Question NO- 1(c)

Importance of TCP / IP:

TCP / IP is nonproprietary , as a result ,
is not controlled by any single company .

Therefore the internet protocol suite
can be modified easily . - It is compatible
with all operating systems , so it can
communicate with any other system . The
internet Protocol suite is also compatible
with all types of computer hardware and
networks .

TCP / IP is highly scalable and can
determine the most efficient path .

Ans: To The Question NO - 2(a)

Transport layer offers peer-to-peer and end-to-end connection between two processes on remote hosts.

Functions:

- 1) This layer is the first one which breaks the information data.
- 2) This layer ensures that data must be received in the same sequence.
- 3) This layer provides end-to-end delivery of data between hosts.
- 4) All server processes intend to communicate over the network are equipped with well-known Transport.

Ans: To The Question NO - 2(b)

A process on one host identifies its peer host on remote network by means of TSAPs, also known as Port Numbers.

TSAPs are very well defined a process which is trying to communicate with its peer knows this in advance.

The two main Transport layer protocols are:

- 1) Transmission Control Protocol
- 2) User Datagram protocol

When a DNS client wants to communicate with remote DNS server, It always request to give the best.

Ans: To The Question NO- 2(c)

The Transmission Protocol (TCP) is one of the most important protocols of internet protocols suite.

Features of TCP:

- 1) TCP provides error-checking and recovery mechanism.
- 2) It provides end-to-end communication.
- 3) It provides flow control and service quality.
- 4) Operates in client/server point-to-point mode.
- 5) It can perform both receiver and sender.
- 6) It provides full duplex server.

Ans: To The Question NO - 43(a)

The routing algorithms are:

Flooding: Flooding is a simplest method packet forwarding. When a packet received, the routers send it to all the interfaces except the one which it was received. TTL can be used to avoid infinite looping of packets.

shortest Path: Routing decision in networks, are mostly taken on the basis of cost between source and destination.

Common shortest path algorithms are

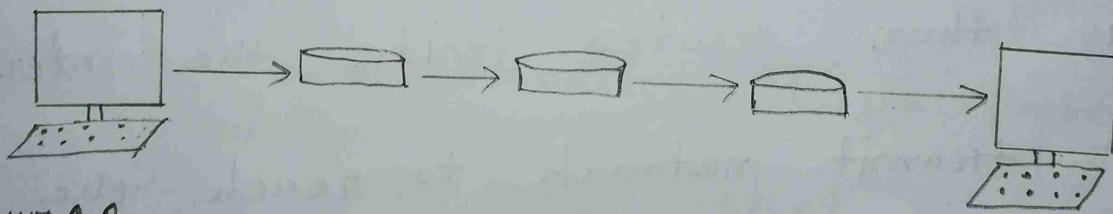
- 1) Dijkstra's algorithm
- 2) Bellman Ford algorithm

Ans To The Question NO - 34 (b)

Most of the traffic on the internet and intranets known as unicast data or unicast traffic is sent with specified destination. Routing unicast data over the internet is called unicast routing. It is the simplest form of routing because the destination is already known. Hence the router just has to look up the routing table and forward the packet to next hop.

Ava: To The Question NO - 3(c)

By default the broadcast packets are not routed and forwarded by the routers on any network. Routers create broadcast domains. But it can be configured to forward broadcast in some special cases.



A broadcast message is defined to all network devices.

Ans: To The Question NO: 4 (a)

Tunneling is a mechanism by which two or more same networks communicate with each other , by passing intermediate networking complexities . Tunneling is configured at both ends .

When the data enters from one end of Tunnel , it is tagged . This tagged data is then routed inside the intermediate or transit network to reach the other end of Tunnel . When data exists the Tunnel its tag is removed and delivered to the other part of the network ,

Ans: To The Question NO - 4(b)

Most Ethernet segments have their maximum transmission unit (MTU) fixed to 1500 bytes. A data packet can have more or less packet length depending upon the application. Devices in the transit handle and what size of packet it can process. If the data packet size is less than or equal to the size of packet the transit network can handle, it is processed neutrally. If the packet is larger, it is broken into smaller pieces then forwarded. This is called packet fragmentation.

Ans : To The Question NO- 4(c)

Internet Protocol version 4 (IPV4) is the fourth revision of the Internet Protocol and widely used Protocol in data communication over different kinds of networks. IPV4 is a connectionless protocols used in packet-switched layer networks, such as Ethernet. It provides the logical connection between network devices - including manual and automatic configurations - depending on the network type.

IP addresses are divided into many categories :

Class A: It uses first octet for network addresses and last three octets for host addressing.

Class B: It uses two octets for networking addresses and last two for host addressing.

Class C: It uses first three octets for network addresses and last one for host.

Class D: It provides flat IP addressing scheme in contrast to hierarchical structure for above three.

Class E: It provides "Best-Effort - Delivery" mechanism.

Ans! To The Question NO - 5(a)

When a device has multiple paths to reach a destination, it always selects one path by preferring it over others. This selection process is termed as Routing. Routing is done by special network devices called routers or it can be done by means of software process.

A router is always configured with some default route. A default route tells the router where to forward a packet if there is no route found for specific destination.

Ans: To The Question NO- 5(b)

Different types of routing is given below:

Unicast routing: Most of the traffic on the internet and intranets known as unicast data or unicast traffic is sent with destination.

Broadcast routing: Routers create broadcast domains. A broadcast message is destined to all network devices.

Multicast routing: Multicast routing is special case of broadcast routing with significance difference and challenge.

Anycast routing: Anycast packet forwarding is a mechanism where multiple hosts can have same logical address. DNS provide the IP address which is the nearest IP configured on it.

Ans: To The Question NO - 5(c)

Unicast routing protocols:

Distance vector Routing protocol Distance vector is simple routing protocol which takes routing decision. Link state routing protocol is slightly complicated protocol than Distance vector.

Multicast Routing Protocols:

Multicast routing protocols use trees, i.e. spanning tree to avoid loops. The optimal tree is called shortest path spanning tree.

DVMRP, MOSPF, CBT, PIM, PIM Dense Mode and PIM Sparse Mode this all are also works in Multicast Routing protocols.

Ans: To The Question NO- 6(a)

A network is a collection of computers, servers, mainframes, network devices or other devices connected to one another to allow the sharing of data. Internet is now available by the help of network clone.

Examples of network devices:

Desktop, computers, laptops, mainframes, Firewalls, Bridges, Repeaters, switches, hubs, modems, webcams etc.

Ans: To The Question No - 6(b)

The term network topology describes the relationship of connected devices in terms of a geometric graph. Devices are represented as vertices, and their connections are represented as edges on the graph. It describes how many connections each device has, in what order, and in what sort of hierarchy.

Typical network configurations include the bus topology, mesh topology, ring topology, star topology and hybrid topology.

Ans! To The Question NO - 6(c)

We deploy UDP where the acknowledgement packets share significant amount of bandwidth along with the actual data.

Features:

- 1) UDP is good protocol for data flowing.
- 2) It is simple and suitable for query.
- 3) It is not connection oriented.
- 4) It is stateless.
- 5) It is suitable protocol for streaming.
- 6) It is used when data doesn't hold any significance.

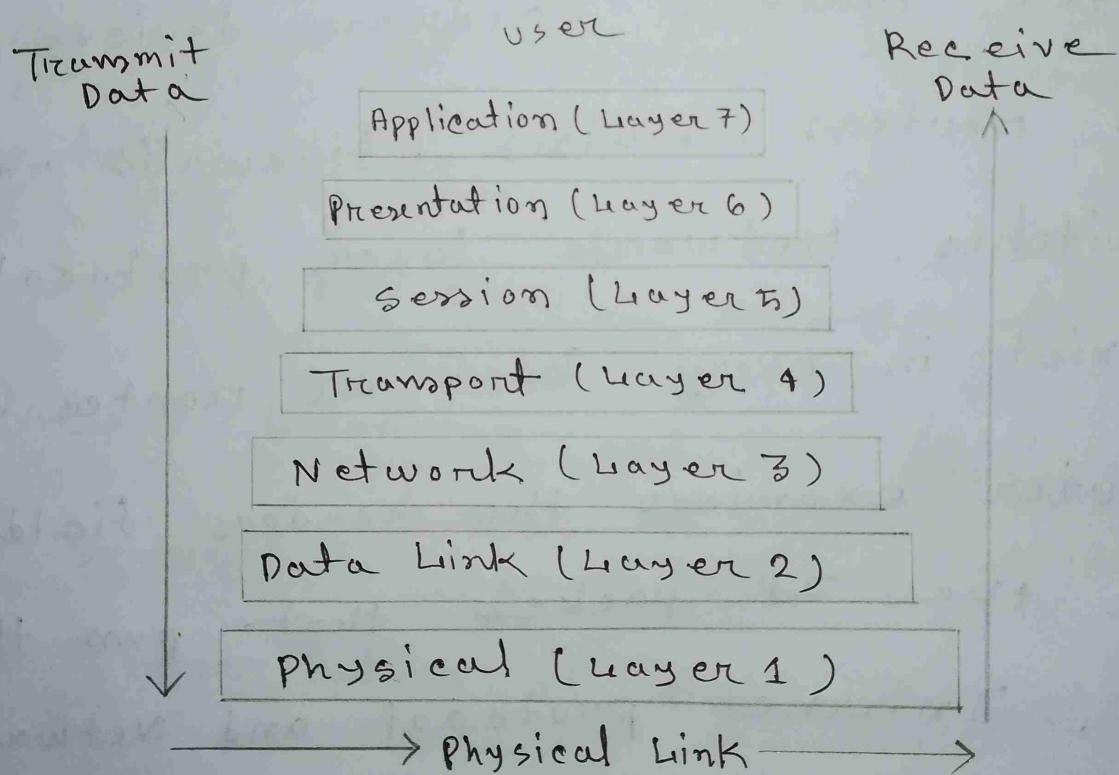
Ans: To The Question NO - 7(a)

The OSI model is a layered framework for the design of network systems that allows communication between all types of computer systems. It consists of seven separate but related layers, each of which defines a part of the process of moving information across a network.

We can't compare ISO and OSI model. OSI is a model for understanding and designing a network architecture.

Ans: To The Question NO - 7(b)

OSI stands for Open System Interconnection.
It has been developed by ISO - International Organization of Standardization.



Ans: To The Question NO - 7(c)

The network layer is considered the backbone of the OSI model. It selects and manages the best logical path for data transfer between nodes. This layer contains hardware devices such as routers, bridges, firewalls and switches. Network layer protocols exist in every host or router. The router examines the header fields of all the IP packets that pass through it. Internet protocol and Netware IPX / SPX are the most common protocols associated with the network layer.

Ans: To The Question NO- 8(a)

Network layer takes the responsibility for routing packets from source to destination within or outside a subnet. Two different subnet may have different addressing schemes or non-compatible addressing types.

Features:

- * Quality of service management.
- * Load balancing and link management.
- * Security.
- * Interrelation of different protocols.
- * Different logical network design over the physical network design,

Ans: To The Question NO - 8(b)

Layer 3 network addressing is one of the major tasks of Network Layer. Network Addresses are always logical these are software based addresses which can be changed by appropriate configurations. A Network address always points to host / node / server or it can represent a whole network. Network address is always configured on network interface card and is generally mapped by system with the MAC address of the machine for layer 2 communication.

Ans: To The Question NO - 8(c)

There are different kinds of network addresses in existence:

- * IP
- * IPX
- * AppleTalk