

## Computer Network Lab Viva Questions

### **What is meant by Router ?**

A router is an electronic device that interconnects two or more computer networks, and selectively interchanges packets of data between them. A router is a networking device whose software and hardware are customized to the tasks of routing and forwarding information.

### **What is meant by Hubs ?**

A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets.

### **What is meant by Bridges ?**

A network bridge connects multiple network segments at the data link layer (layer 2) of the OSI model. Bridges come in three basic types:

- **Local bridges:** Directly connect local area networks (LANs)
- **Remote bridges:** Can be used to create a wide area network (WAN) link between LANs. Remote bridges, where the connecting link is slower than the end networks, largely have been replaced with routers.
- **Wireless bridges:** Can be used to join LANs or connect remote stations to LANs.

### **What do u mean by NIC (Network Interface Card) ?**

A network card, network adapter, or NIC (network interface card) is a piece of computer hardware designed to allow computers to communicate over a computer network. It provides physical access to a networking medium and often provides a low-level addressing system through the use of MAC addresses.

### **What do u mean by Repeater ?**

A repeater is an electronic device that receives a signal, cleans it of unnecessary noise, regenerates it, and retransmits it at a higher power level, or to the other side of an obstruction, so that the signal can cover longer distances without degradation.

### **Definitions of Firewall ?**

Firewalls are the most important aspect of the network and its security in today's era. Due to maximization of attacks on the networks from various groups stealing data, denying

services etc the firewall is playing a vital roles in computer networks.

### **What is the Difference between HUB and SWITCH ?**

**HUB**-it is a network device that provide a central connection on for cables from work station , server etc.the hub take incoming single one port and provide every port so that is main reason for collision.

**switch**.it also provide central connection to the work station.it provide the unique cast.it is better than a hub.

**HUB** HUB (1)work on physical layer in osi model

(2) Hub is half duplex

(3) collision detection is on in hub

(4) Hub broadcast of transmitted message.

**Switch** (1) switch work in data link layer in osi model

(2) switch work half and full duplex

(3) collision detection is off

(4) switch transmitted messagee unicast and some time broadcast.

### **Difference between Physical Address and Logical Address ?**

A Physical address is a 48-bit flat address burned into the ROM of the NIC card which is a Layer1 device of the OSI model. This is divided into 24-bit vendor code and 24-bit serial address. This is unique for each system and cannot be changed.

A Logical address is a 32-bit address assigned to each system in a network. This works in Layer-3 of OSI Model. This would be generally the IP address.

### **What is MAC Address ?**

A unique 48 Bit address assigned to each network card. It is also called as physical address.

### **What is PING Utility ?**

PING stands Packet Internet Gopher. This is a utility for ensuring connectivity between computers. ICMP protocol works behind this utility. Under it, sending node sends packets to destination node and reply is received if there is proper communication between two.

Ping command use to check the Destination host or router connectivity to use the icmp and echo packet.

### **What do u mean by Gateway ?**

They relay packets among networks that have different protocols (e.g. between a LAN and a WAN). They accept a packet formatted for one protocol and convert it to a packet formatted for another protocol before forwarding it. They operate in all seven layers of the OSI model.

### **What is meant by Base band and Broadband Transmission ?**

In base band transmission we transmit digital signal without converting it into analog.here a low pass channel is used.

In broad band transmission we transmit digital signal by converting it into analog.Here a band pass channel is used.

### **What is SIP ?**

SIP is meant for Session Initiation Protocol. It works in application layer. It specially used for initiating, modifying and terminating a session.

### **Difference between communication and transmission ?**

Transmission is a physical movement of information and concern issues like bit polarity, synchronisation, clock etc.

Communication means the meaning full exchange of information between two communication media.

### **Explain the services provided by IP (Internet Protocol) - Addressing, Fragmentation, Packet timeouts and options**

**Latest answer:** Addressing: For the purpose of delivering datagram packets, IP needs to know about the address of the destination. By including the host addressing, this task is carried out by IP. As IP operates in an internet, its systems are designed to accept the addressing of devices which are unique.....

### **What is Network Mask?**

**Latest answer:** A network mask is used for determination of what subnet an IP address belongs to. An IP address has network address and the host address.....

### **Define Subnetting.**

**Latest answer:** A subnet describes a set of networked computers which have common IP address routing prefix.....

### **What is the User Datagram Protocol (UDP)?**

**Latest answer:** User datagram protocol allows computer applications to send messages as datagram packets from source to destination on an Internet Protocol,..... It is an connectionless protocol...

### **Explain TCP Windowing concept.**

**Latest answer:** TCP Windowing is a concept that is used for avoiding congestion in the network traffic.....

### **What is the Domain Name System (DNS)? What are the advantages of it?**

**Latest answer:** A hierarchical naming system for computer systems, services or for that matter any resource participating in the internet.....

### **What is the TTL (Time to Live)? Why is it required?**

**Latest answer:** TTL is a value in data packet of Internet Protocol. It communicates to the network router whether or not the packet should be in the network for too long or discarded.....

### **Explain the use of Internet Control Message Protocol (ICMP)**

**Latest answer:** Internet Control Message Protocol is one of the important protocols in the Internet Protocol suite. It is mainly used in operating system of networked computers.....

### **What is the use of IGMP protocol?**

**Latest answer:** Internet Group Management Protocol: - It allows internet hosts to participate in multicasting. The IGMP messages are used to learn which hosts is part of which multicast groups.....

### **What are Ping and Tracert?**

**Latest answer:** Ping and tracert are the commands used to send information to some remote computers to receive some information. Information is sent and received by packets.....

### **Explain RSVP. How does it work?**

**Latest answer:** Resource Reservation protocol is used to reserve resources across a network. It is used for requesting a specific Quality of Service (QoS) from the network.....

### **Explain the concept of DHCP.**

**Latest answer:** Dynamic Host Configuration Protocol is used assigning IP addresses to computers in a network. The IP

addresses are assigned dynamically.....

### **What are the differences between a domain and a workgroup?**

**Latest answer:** In a domain, one or more computer can be a server to manage the network. On the other hand in a workgroup all computers are peers having no control on each other.....

### **Explain how NAT works.**

**Latest answer:** Network Address Translation translates and IP address used in a network to another IP address known within another network. A NAT table is maintained for global to local and local to mapping of IP's.....

### **What is PPP protocol? Explain PPP packet format.**

**Latest answer:** Point to Point protocol helps communication between 2 computers over a serial cable, phone line or other fiber optic lines. E.g. Connection between an Internet Service Provider and a host.....

### **What is IP Spoofing and how can it be prevented?**

**Latest answer:** IP spoofing is a mechanism used by attackers to gain unauthorized access to a system. Here, the intruder sends messages to a computer with an IP address indicating that the message is coming from a trusted host.....

### **Explain IP datagram, Fragmentation and MTU.**

**Latest answer:** IP datagram can be used to describe a portion of IP data. Each IP datagram has set of fields arranged in an order. The order is specific which helps to decode and read the stream easily.....

### **What is an application gateway?**

**Latest answer:** An application gateway is an application program that runs on a firewall between two networks. An application gateway is used for establishing connection between client program and destination service.....

### **Explain Circuit Level Gateway.**

**Latest answer:** A circuit level gateway is used to find if a session in TCP handshaking is legitimate or not. It can be considered as a layer between application layer and transport layer.....  
Read answer

### **What is 'Gateway Of Last Resort'?**

A Gateway of Last Resort or Default gateway is a route used by the router when no other known route exists to transmit the IP packet. Known routes are present in the routing table.....

### **What are switches? Explain the concepts of Layer-3 switches.**

**Latest answer:** It is a device that connects multiple network segments.  
A switch analyzes the MAC address and then determines where to send the data.....

### **What is Router? Explain components of Routers.**

**Latest answer:** The way switches connect multiple computers, a router connects multiple networks. Routers comprise of data consisting of large tables of networks and addresses.....

### **Explain the concept and capabilities of Unicast IP Addresses.**

**Latest answer:** It is an IP address that uniquely identifies a host in a network.  
The datagram with a unicast IP address is received and processed by only a single host.

### **What is IP Multicasting?**

**Latest answer:** It is an IP address that identifies a particular group of hosts in network.  
This group of hosts is called a multicast group.....

### **What is Subnetting? Explain the advantages of using Subnetting.**

**Latest answer:** Subnetting is dividing a network into several subnets.  
This is usually done for the following purposes:.....  
Read answer

### **What is Supernetting? Explain the concept of custom Subnetting.**

**Latest answer:** Supernetting or Classless Inter-Domain Routing (CIDR) : It is a way to aggregate multiple Internet addresses of the same class.....

### **Explain the concepts and capabilities of IP Datagram.**

**Latest answer:** Data transmitted over an internet using IP is carried in messages called IP datagrams. Like all network protocol messages, IP uses a specific format for its datagrams.....

[Read answer](#)

### **What is MAC address?**

Media Access Control address is an identifier for assigned to most network adapters or Network Interface Cards by the manufacturer for the purpose of identification.....

### **Difference between the communication and transmission.**

The differences between the communication and transmission are: Physical movement of information and concerning about bit priority, synchronization, clock etc is referred as transmission.....

### **What is the difference between TFTP and FTP application layer protocols?**

The differences between FTP and TFTP: FTP is connection oriented, where as TFTP is not. TFTP uses error checking and flow control, where as TFTP does not cause error checking.....

### **Difference between bit rate and baud rate**

The differences between bit rate and baud rate: Bit rate is measured as number of data bits transmitted / second in communication channel.....

### **Difference between ARP and RARP**

The differences between ARP and RARP: Address Resolution Protocol is utilized for mapping IP network address to the hardware address that uses data link protocol.....

[Read answer](#)

### **What is a Transaction server?**

A transaction server is software that is used for implementing transactions. A transaction comprises of multiple steps that must automatically be completed.....

### **What is Message Oriented Middleware (MOM)?**

An infrastructure focuses on sending and receiving messages to increment interoperability, flexibility and flexibility of an application.....

### **What is Groupware server?**

Groupware server is software that allows the collaboration of users, irrespective of location through the internet or intranet.....

### **What are TP-Lite and TP-Heavy Monitors?**

TP-Lite Monitor: The integration of TP monitors functions in a database engines is called as TP-Lite monitor.....

### **Explain how Bluetooth devices integrate easily with TCP/IP network?**

Blue tooth is an IEEE 802.11 standard and a replacement of wired network. It is inter operable and works as an Adopted protocol,.....

### **Define the term 'Pairing' in Bluetooth.**

Pairing is the term that occurs at the point when 2 Bluetooth devices communicate with each other by establishing a connection.....

### **What kind of encryption is used for Bluetooth security? Explain**

The encryption standard 8-128 bits length is used for encryption in Bluetooth security. This standard prevents receiving the transmission.....

### **What do you mean by the term Frequency-Hopping Spread Spectrum (FHSS)?**

Flexibility and mobility are the growing reasons to use wireless LAN which uses radio frequencies for transmitting data. Wireless LANs are.....

### **What is LAN?**

**Latest answer:** LAN is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves.....

### **What's the difference Between an Intranet and the Internet?**

**Latest answer:** There's one major distinction between an intranet and the Internet: The Internet is an open, public space, while an intranet is designed to be a private space.....

### **Define the term Protocol.**

**Latest answer:** Protocol is a standard way of communicating across a network. A protocol is the "language" of the network. It is a method by which two dissimilar systems can communicate.....

### **Define File Transfer Protocol.**

**Latest answer:** File Transfer Protocol (FTP), a standard Internet protocol, is the simplest way to exchange files between computers on the Internet. Like the Hypertext Transfer Protocol (HTTP).....

### **What are network topologies? Explain Ring, Bus and Star topology.**

**Latest answer:** A network topology describes the layout of a network. It describes how different nodes and elements are connected to each other. Different types of topology.....  
Read answer

### **How would you define IP address?**

**Latest answer:** Computers using the TCP/IP for communication are uniquely identified by a 32 bit address called as an IP address. The routers use the IP address information to forward the packet to the destination computer.....

### **What is multicasting?**

**Latest answer:** Multicasting allows a single message to be sent to a group of recipients. Emailing, teleconferencing, are examples of multicasting.....

### **Explain the core naming mechanism, Domain Name System (DNS).**

**Latest answer:** A Domain Name system is used to convert the names of the website on the internet to IP addresses. The domain names for each IP addresses are stored in a database that is distributed across different servers.....

### **Define Telnet.**

**Latest answer:** Telnet is the main Internet protocol for creating a connection to a remote server.....

### **Define SMTP.**

**Latest answer:** SMTP - Short for Simple Mail Transfer Protocol, a protocol for sending e-mail messages between servers.....

### **Explain Maximum Transfer Unit, MTU.**

**Latest answer:** MTU specifies the largest amount of data that can be transferred across a network.....

### **What is Routing Protocol?**

**Latest answer:** Routing protocol is the way to send routing information between any routers in an autonomous system.....

### **What is Data encryption?**

**Latest answer:** Data encryption ensures data safety and very important for confidential or critical data. It protect data from being read, altered or forged while transmission.....

### **What is the Public Key Encryption?**

**Latest answer:** Public key encryption use public and private key for encryption and decryption. In this mechanism, public key is used to encrypt messages and only the corresponding private key .....

### **Define Digital Signatures.**

**Latest answer:** Digital signature is an attachment to an electronic message used for security purpose. It is used to verify the authenticity of the sender.....

### **What is FTP (File Transfer Protocol)?**

**Latest answer:** FTP is File Transfer Protocol. It used to exchange files on the internet. To enable the data transfer FTP uses TCP/IP, FTP is most commonly used to upload and download files from the internet.....

### **What is HTTP (Hypertext Transfer Protocol)?**

**Latest answer:** HTTP or Hyper Text Transfer Protocol is provides a set of rules to transfer files, videos, images over the world wide web. When the web browser is opened, a HTTP request call is made.....

### **What is NNTP (Network News Transfer Protocol)?**

**Latest answer:** NNTP or Network News Transfer Protocol is used to manage the notes posted on Unset newsgroup (a collection of posted notes on a subject posted by different users).....

### What is SMTP (Simple Mail Transfer Protocol)?

**Latest answer:** SMTP or Simple Mail Transfer Protocol is used to send email messages between servers. The messages are retrieved using email clients. SMTP is more commonly used to send messages from a mail client to a mail server.....

### What is POP3 (Post Office Protocol 3)?

**Latest answer:** POP3 or Post Office Box 3 is used for receiving emails. It is a client server protocol which holds the email.....

### What is SNMP (Simple Network Management Protocol)?

**Latest answer:** SNMP or Simple Network Management Protocol is typically used for managing the network. Managing the network includes managing the nodes present in the network.....

### TCP vs. UDP.

**Latest answer:** TCP guarantees the delivery of data. UDP on the other hand, does not guarantee delivery of data. TCP delivers messages in the order they were sent. UDP has no ordering mechanisms.....

### What is VPN?

**Latest answer:** Virtual Private network is a network that used the public telecommunication infrastructure. This means that it used public wires to connect the nodes.....

### What is a socket?

**Latest answer:** A socket is used to connect an application to a network protocol. A socket enables communication between a client and a server.....

### Datagram vs. stream.

**Latest answer:** Stream can be considered as a pipe that allows full duplex connection. A datagram or a packet on the other hand, has a source and a destination.....

### What is a stream socket?

**Latest answer:** A stream socket provides two way communications between a client and server. This communication is reliable and sequenced.....

### 1. What are 10Base2, 10Base5 and 10BaseT Ethernet LANs

**10Base2**—An Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling, with a contiguous cable segment length of 100 meters and a maximum of 2 segments.

**10Base5**—An Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling, with 5 continuous segments not exceeding 100 meters per segment.

**10BaseT**—An Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling and twisted pair cabling.

### 2. What is the difference between an unspecified passive open and a fully specified passive open?

An unspecified passive open has the server waiting for a connection request from a client. A fully specified passive open has the server waiting for a connection from a specific client.

### 3. Explain the function of Transmission Control Block

A TCB is a complex data structure that contains a considerable amount of information about each connection.

### 4. What is a Management Information Base (MIB)

A Management Information Base is part of every SNMP-managed device. Each SNMP agent has the MIB database that contains information about the device's status, its performance, connections, and configuration. The MIB is queried by SNMP.

### 5. What is anonymous FTP and why would you use it

Anonymous FTP enables users to connect to a host without using a valid login and password. Usually, anonymous FTP uses a login called anonymous or guest, with the password usually requesting the user's ID for tracking purposes only. Anonymous FTP is used to enable a large number of users to access files on the host without having to go to the trouble of setting up logins for them all. Anonymous FTP systems usually have strict controls over the areas an anonymous user can access.

### 6. What is a pseudo tty

A pseudo tty or false terminal enables external machines to connect through Telnet or rlogin. Without a pseudo tty, no connection can take place.

### 7. Which layer of the 7 layer model provides services to the Application layer over the Session layer connection?

Presentation.

### 8. What does the Mount protocol do ?

The Mount protocol returns a file handle and the name of the file system in which a requested file resides. The message is sent to the client from the server after reception of a client's

request.

### **9. What is External Data Representation**

External Data Representation is a method of encoding data within an RPC message, used to ensure that the data is not system-dependent.

### **10. Which OSI Reference Layer controls application to application communication?**

Session

### **11. BOOTP helps a diskless workstation boot. How does it get a message to the network looking for its IP address and the location of its operating system boot files ?**

BOOTP sends a UDP message with a subnetwork broadcast address and waits for a reply from a server that gives it the IP address. The same message might contain the name of the machine that has the boot files on it. If the boot image location is not specified, the workstation sends another UDP message to query the server.

### **12. What is a DNS resource record**

A resource record is an entry in a name server's database. There are several types of resource records used, including name-to-address resolution information. Resource records are maintained as ASCII files.

### **13. What protocol is used by DNS name servers**

DNS uses UDP for communication between servers. It is a better choice than TCP because of the improved speed a connectionless protocol offers. Of course, transmission reliability suffers with UDP.

### **14. What is the difference between interior and exterior neighbor gateways**

Interior gateways connect LANs of one organization, whereas exterior gateways connect the organization to the outside world.

### **15. What is the HELLO protocol used for**

The HELLO protocol uses time instead of distance to determine optimal routing. It is an alternative to the Routing Information Protocol.

### **17. What is a characteristic of Store and Forward switches?**

They read the entire frame and check CRC before forwarding.

### **18. What is source route**

It is a sequence of IP addresses identifying the route a datagram must follow. A source route may optionally be included in an IP datagram header.

### **19. What is RIP (Routing Information Protocol)**

It is a simple protocol used to exchange information between the routers.

### **20. What is SLIP (Serial Line Interface Protocol)**

It is a very simple protocol used for transmission of IP datagrams across a serial line.

### **21. What is Proxy ARP**

It is using a router to answer ARP requests. This will be done when the originating host believes that a destination is local, when in fact it lies beyond router.

### **22. What is OSPF**

It is an Internet routing protocol that scales well, can route traffic along multiple paths, and uses knowledge of an Internet's topology to make accurate routing decisions.

### **23. What is Kerberos**

It is an authentication service developed at the Massachusetts Institute of Technology. Kerberos uses encryption to prevent intruders from discovering passwords and gaining unauthorized access to files.

### **24. What is a Multi-homed Host**

It is a host that has a multiple network interfaces and that requires multiple IP addresses is called as a Multi-homed Host.

### **25. What is NVT (Network Virtual Terminal)**

It is a set of rules defining a very simple virtual terminal interaction. The NVT is used in the start of a Telnet session.

### **26. What is Gateway-to-Gateway protocol**

It is a protocol formerly used to exchange routing information between Internet core routers.

### **27. What is BGP (Border Gateway Protocol)**

It is a protocol used to advertise the set of networks that can be reached within an autonomous system. BGP enables this information to be shared with the autonomous system. This is newer than EGP (Exterior Gateway Protocol).

### **28. What is autonomous system**

It is a collection of routers under the control of a single administrative authority and that uses a common Interior Gateway Protocol.

### **29. What is EGP (Exterior Gateway Protocol)**

It is the protocol the routers in neighboring autonomous systems use to identify the set of networks that can be reached within or via each autonomous system.

### **30. What is IGP (Interior Gateway Protocol)**

It is any routing protocol used within an autonomous system.

### **31. What is Mail Gateway**

It is a system that performs a protocol translation between different electronic mail delivery protocols.

### **32. What is wide-mouth frog**

Wide-mouth frog is the simplest known key distribution center (KDC) authentication protocol.

### **33. What are Digrams and Trigrams**

The most common two letter combinations are called as digrams. e.g. th, in, er, re and an. The most common three letter combinations are called as trigrams. e.g. the, ing,

and, and ion.

### **34. What is silly window syndrome**

It is a problem that can ruin TCP performance. This problem occurs when data are passed to the sending TCP entity in large blocks, but an interactive application on the receiving side reads 1 byte at a time.

### **35. What is region**

When hierarchical routing is used, the routers are divided into what we call regions, with each router knowing all the details about how to route packets to destinations within its own region, but knowing nothing about the internal structure of other regions.

### **36. What is multicast routing**

Sending a message to a group is called multicasting, and its routing algorithm is called multicast routing.

### **37. What is traffic shaping**

One of the main causes of congestion is that traffic is often busy. If hosts could be made to transmit at a uniform rate, congestion would be less common. Another open loop method to help manage congestion is forcing the packet to be transmitted at a more predictable rate. This is called traffic shaping.

### **38. What is packet filter**

Packet filter is a standard router equipped with some extra functionality. The extra functionality allows every incoming or outgoing packet to be inspected. Packets meeting some criterion are forwarded normally. Those that fail the test are dropped.

### **39. What is virtual path**

Along any transmission path from a given source to a given destination, a group of virtual circuits can be grouped together into what is called path.

### **40. What is virtual channel**

Virtual channel is normally a connection from one source to one destination, although multicast connections are also permitted. The other name for virtual channel is virtual circuit.

### **41. What is logical link control**

One of two sublayers of the data link layer of OSI reference model, as defined by the IEEE 802 standard. This sublayer is responsible for maintaining the link between computers when they are sending data across the physical network connection.

### **42. Why should you care about the OSI Reference Model**

It provides a framework for discussing network operations and design.

### **43. What is the difference between routable and non-routable protocols**

Routable protocols can work with a router and can be used to build large networks. Non-Routable protocols are designed to work on small, local networks and cannot be used with a router.

### **44. What is MAU**

In token Ring, hub is called Multistation Access Unit(MAU).

### **45. Explain 5-4-3 rule**

In an Ethernet network, between any two points on the network, there can be no more than five network segments or four repeaters, and of those five segments only three of segments can be populated.

### **46. What is the difference between TFTP and FTP application layer protocols**

The Trivial File Transfer Protocol (TFTP) allows a local host to obtain files from a remote host but does not provide reliability or security. It uses the fundamental packet delivery services offered by UDP. The File Transfer Protocol (FTP) is the standard mechanism provided by TCP / IP for copying a file from one host to another. It uses the services offered by TCP and so is reliable and secure. It establishes two connections (virtual circuits) between the hosts, one for data transfer and another for control information.

### **47. What is the range of addresses in the classes of internet addresses**

Class A 0.0.0.0 - 127.255.255.255

Class B 128.0.0.0 - 191.255.255.255

Class C 192.0.0.0 - 223.255.255.255

Class D 224.0.0.0 - 239.255.255.255

Class E 240.0.0.0 - 247.255.255.255

### **48. What is the minimum and maximum length of the header in the TCP segment and IP datagram**

The header should have a minimum length of 20 bytes and can have a maximum length of 60 bytes.

### **49. What is difference between ARP and RARP**

The address resolution protocol (ARP) is used to associate the 32 bit IP address with the 48 bit physical address, used by a host or a router to find the physical address of another host on its network by sending an ARP query packet that includes the IP address of the receiver. The reverse address resolution protocol (RARP) allows a host to discover its Internet address when it knows only its physical address.

### **50. What is ICMP**

ICMP is Internet Control Message Protocol, a network layer protocol of the TCP/IP suite used by hosts and gateways to send notification of datagram problems back to the sender. It uses the echo test / reply to test whether a destination is reachable and responding. It also handles both control and error messages.

### **51. What are the data units at different layers of the TCP / IP protocol suite**

The data unit created at the application layer is called a message, at the transport layer the data unit created is called either a segment or a user datagram, at the network layer the data unit created is called the datagram, at the data link layer the datagram is encapsulated in to a frame and finally transmitted as signals along the transmission media.

### **53. What is Bandwidth**

Every line has an upper limit and a lower limit on the frequency of signals it can carry. This limited range is called the bandwidth.



**54. Difference between bit rate and baud rate.**

**Bit rate is the number of bits transmitted during one second whereas baud rate refers to the number of signal units per second that are required to represent those bits.**  
**baud rate = bit rate / N where N is no-of-bits represented by each signal shift.**

**55. What is MAC address**

The address for a device as it is identified at the Media Access Control (MAC) layer in the network architecture. MAC address is usually stored in ROM on the network adapter card and is unique.

**56. What is attenuation**

The degeneration of a signal over distance on a network cable is called attenuation.

**57. What is cladding**

A layer of a glass surrounding the center fiber of glass inside a fiber-optic cable.

**58. What is RAID**

A method for providing fault tolerance by using multiple hard disk drives.

**60. What is redirector**

Redirector is software that intercepts file or prints I/O requests and translates them into network requests. This comes under presentation layer.

**61. What is Beaconing**

The process that allows a network to self-repair network problems. The stations on the network notify the other stations on the ring when they are not receiving the transmissions. Beaconing is used in Token ring and FDDI networks.

**62. What is terminal emulation, in which layer it comes**

Telnet is also called as terminal emulation. It belongs to application layer.

**63. What is frame relay, in which layer it comes**

Frame relay is a packet switching technology. It will operate in the data link layer.

**65. What is SAP**

Series of interface points that allow other computers to communicate with the other layers of network protocol stack.

**66. What is subnet**

A generic term for section of a large networks usually separated by a bridge or router.

**67. What is Brouter**

Hybrid devices that combine the features of both bridges and routers.

**68. How Gateway is different from Routers**

A gateway operates at the upper levels of the OSI model and translates information between two completely different

network architectures or data formats.

**69. What are the different type of networking / internetworking devices**

**Repeater:**

Also called a regenerator, it is an electronic device that operates only at physical layer. It receives the signal in the network before it becomes weak, regenerates the original bit pattern and puts the refreshed copy back in to the link.

**Bridges:**

These operate both in the physical and data link layers of LANs of same type. They divide a larger network in to smaller segments. They contain logic that allow them to keep the traffic for each segment separate and thus are repeaters that relay a frame only the side of the segment containing the intended recipient and control congestion.

**Routers:**

They relay packets among multiple interconnected networks (i.e. LANs of different type). They operate in the physical, data link and network layers. They contain software that enable them to determine which of the several possible paths is the best for a particular transmission.

**Gateways:**

They relay packets among networks that have different protocols (e.g. between a LAN and a WAN). They accept a packet formatted for one protocol and convert it to a packet formatted for another protocol before forwarding it. They operate in all seven layers of the OSI model.

**70. What is mesh network**

A network in which there are multiple network links between computers to provide multiple paths for data to travel.

**71. What is passive topology**

When the computers on the network simply listen and receive the signal, they are referred to as passive because they don't amplify the signal in any way. Example for passive topology - linear bus.

**72. What are the important topologies for networks**

**BUS topology:**

In this each computer is directly connected to primary network cable in a single line.

**Advantages:**

Inexpensive, easy to install, simple to understand, easy to extend.

**STAR topology:**

In this all computers are connected using a central hub.

**Advantages:**

Can be inexpensive, easy to install and reconfigure and easy to trouble shoot physical problems.

**RING topology:**

In this all computers are connected in loop.

**Advantages:**

All computers have equal access to network media, installation can be simple, and signal does not degrade as

much as  
in other topologies because each computer regenerates it.

**73. What are major types of networks and explain**

Server-based network

Peer-to-peer network

Peer-to-peer network, computers can act as both servers sharing resources and as clients using the resources.

Server-based networks provide centralized control of network resources and rely on server computers to provide security and network administration

**74. What is Protocol Data Unit**

The data unit in the LLC level is called the protocol data unit (PDU). The PDU contains of four fields a destination service access point (DSAP), a source service access point (SSAP), a control field and an information field. DSAP, SSAP are addresses used by the LLC to identify the protocol stacks on the receiving and sending machines that are generating and using the data. The control field specifies whether the PDU frame is a information frame (I - frame) or a supervisory frame (S - frame) or a unnumbered frame (U - frame).

**75. What is difference between baseband and broadband transmission**

In a baseband transmission, the entire bandwidth of the cable is consumed by a single signal. In broadband transmission, signals are sent on multiple frequencies, allowing multiple signals to be sent simultaneously.

**76. What are the possible ways of data exchange**

(i) Simplex (ii) Half-duplex (iii) Full-duplex.

**78. Difference between the communication and transmission.**

Transmission is a physical movement of information and concern issues like bit polarity, synchronization, clock etc. Communication means the meaning full exchange of information between two communication media.

**79.The Internet Control Message Protocol occurs at what layer of the seven layer model?**

Network

**80.Which protocol resolves an IP address to a MAC address?**

ARP

**81.MIDI and MPEG are examples of what layer of the OSI seven layer model?**

Presentation

**82.What is the protocol number for UDP?**

17

**83.Which protocol is used for booting diskless workstations?**

RARP

**84.Which layer is responsible for putting 1s and 0s into a logical group?**

Physical

**85.What does 'P' mean when running a Trace?**

Protocol unreachable

**86.UDP works at which layer of the DOD model?**

Host to Host

**87.What is the default encapsulation of Netware 3.12?**

802.2

**88.Ping uses which Internet layer protocol?**

ICMP

**89.Which switching technology can reduce the size of a broadcast domain?**

VLAN

**90.What is the first step in data encapsulation?**

User information is converted into data.

**91.What is the protocol number for TCP?**

6

**92.What do you use the Aux port for?**

Modem

**93.Repeaters work at which layer of the OSI model?**

Physical

**94.WAN stands for which of the following?**

Wide Area Network

**96.LAN stands for which of the following?**

Local Area Network

**97.DHCP stands for**

Dynamic Host Configuration Protocol

**98.What does the acronym ARP stand for?**

Address Resolution Protocol

**99.Which layer is responsible for identifying and establishing the availability of the intended communication partner?**

Application.

**100.Which OSI layer provides mechanical, electrical, procedural for activating, maintaining physical link?**

Physical

**What is the data unit of Data Link layer?**

Frame

**What are the difference between TCP and UDP?**

- **TCP:** Connection oriented protocol, acknowledged one, Point to point communication.

- **UDP:** Connection less protocol, unreliable, less traffic

### What is the port no of DNS and Telnet?

- DNS port no: 53
- Telnet port no: 23

### What is the port no of SMTP and POP3?

- SMTP port no: 25
- POP3 port no: 110

### What is the functionality of network layer? Name the data unit of network layer.

- Functionality of network layer: Path determination and logical addressing
- Data unit of network layer: Packet

### Which three layers of OSI model is treated as "Media Layers"?

Physical layer, data link layer and network layer are treated as "Media Layers".

### What is deadlock?

Deadlock is a situation when two or more processes are waiting indefinitely for an event that can be caused by only one of the waiting processes. The implementation of a semaphore with a waiting queue may result in this situation.

### Mention the advantages and disadvantages of a router.

#### Advantages:

- Router can limit the collision domain and broadcast domain
- Router can function both on LAN & WAN.
- Different media & architectures can be connected among themselves through router.
- Router can determine best path/route for data to reach the destination.
- Router can filter the broadcasts.
- For communicating different networks, routers must be used.

#### Disadvantage:

- Router is more expensive than any other networking devices

like Hub, Bridge & Switch.

- Router only work with routable protocols.
- Routing updates consume some bandwidth.
- Increase latency due to greater degree of packet filtering.
- Routers function as software based and so it's slower compared to switch.

### Mention the private IP address range of class B and C.

- For Class B: 172.16.0.0 – 172.31.255.255
- For Class C: 192.168.0.0 – 192.168.255.255

### What is the IP range of class C IP address?

240.0.0.0 – 255.255.255.255

### What is the default subnet mask of class C IP address?

255.255.255.0

### Why do you need subnet mask?

Subnet mask is required to divide a large network into several small networks.

### Tell the full name: DNS, FTP

- DNS: Domain Name System
- FTP: File Transfer Protocol

### What is the functionality of ARP?

ARP refers to Address Resolution Protocol. ARP is a computer networking

protocol for determining a network host's link layer or hardware address when only its Internet Layer (IP) or Network Layer address is known.

### Which one is reliable: TCP or UDP?

TCP is reliable and UDP is an unreliable service.