Computer network:

1) What is a computer network?
Ans- a computer network is a collection of various computing devices. The purpose of a computer network is so that devices can share the data

2) What is data communication?

Ans- data- can be any text, image, audio, video, and multimedia files. communication-> is an act of sending or receiving the data.

Thus data communication refers to the exchange of data b/w 2 or more connected devices.

3) What are 5 components of data communication:-

1.) msg:-> it is the information or data to be communicated
2.) Sender:- is the device that sends the msg.
3.) Receiver:- is the device that receives the msg.
4.) Medium: The transmission medium is the physical path by which a message travels from sender to receiver.
E.g.– twisted wire, co-axial cable, fiber cable, and radio waves.
5) protocol:- is a set of rules that govern the data communication.

It represents an agreement b/w communicating devices w/0 a protocol 2 devices may be connected but not communicating.

4)explain different
Types of network ➖

Pan(bluetooth), lan(ethernet and wifi), can(ethernet), man(atm,fddi,cddi) ,wan(dial up)

5) What is the network?
Ans- Network is usually an informally interconnected group or association of different entities like a person, computers, radio stations, etc.

6) what is an ipv4 address? What are the different classes of ipv4?

Ans- an ip address is a 32 bit dynamic address of a node in the network.
An ipv4 address has 4 octets of 8 bit each with each number with value up to 255.
Ipv4 classes are: A, B C D E

IPv4 Class	IPv4 Start Address	IPv4 End Address	Usage
A	0.0.0.0	127.255.255.255	Used for Large Network
B	128.0.0.0	191.255.255.255	Used for Medium Size Network
C	192.0.0.0	223.255.255.255	Used for Local Area Network
D	224.0.0.0	239.255.255.255	Reserved for Multicasting
E	240.0.0.0	255.255.255.254	Study and R&D

7) tell me something about vpn?
Ans- virtual private n/w is a private wan built on the internet. It allows the creation of a secured tunnel (protected n/w) between different n/w using the internet (public n/w) .
By using vpn a client can connect to organisation network remotely.

8) advantage of using vpn?
Ans-

- **VPN is used to connect offices in different geographical locations remotely and is cheaper when compared to WAN connections.**
- **VPN is used for secure transactions and confidential data transfer between multiple offices located in different geographical locations.**
- **VPN keeps an organization's information secured against any potential threats or intrusions by using virtualization.**
- **VPN encrypts the internet traffic and disguises the online identity.**

9)What are the different types of VPN?
Ans-

- **Access VPN: Access VPN is used to provide connectivity to remote mobile users and telecommuters. It serves as an alternative to dial-up connections or ISDN (Integrated Services Digital Network) connections. It is a low-cost solution and provides a wide range of connectivity.**
- **Site-to-Site VPN: A Site-to-Site or Router-to-Router VPN is commonly used in large companies having branches in different locations to connect the network of one office to another in different locations. There are 2 sub-categories as mentioned below:**
- **Intranet VPN: Intranet VPN is useful for connecting remote offices in different geographical locations using shared infrastructure (internet connectivity and servers) with the same accessibility policies as a private WAN (wide area network).**
- **Extranet VPN: Extranet VPN uses shared infrastructure over an intranet, suppliers, customers, partners, and other entities and connects them using dedicated connections.**
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10. What are nodes and links?

Ans- node:- Any communicating device in a network is called a Node.

Link:- A link or edge refers to the connectivity between two nodes in the network.

11)What is the network topology?

Ans- Network topology is a physical layout of the network, connecting the different nodes using the links. It depicts the connectivity between the computers, devices, cables, etc.

12)Define different types of network topology

Ans- Bus Topology:

Star Topology: All the nodes are connected to one single node known as central node

Ring Topology:

Mesh Topology:

Tree Topology: **A combination of star and bus topology also know as an extended bus topology.**
Hybrid:

13) What is the DNS?

Ans- DNS is the Domain Name System. It is considered as the devices/services directory of the Internet. It is a decentralized and hierarchical naming system for devices/services connected to the Internet. It translates the domain names to their corresponding IPs. For e.g. interviewbit.com to 172.217.166.36. It uses port 53 by default.

14) What is the use of a router and how is it different from a gateway?

Ans- it routes data packets based on their IP addresses.

The router is a networking device used to connect two or more network segments. It directs the traffic in the network. It transfers information and data like web pages, emails, images, videos, etc. from source to destination in the form of packets. It operates at the network layer.

The gateways are also used to route and regulate the network traffic but, they can also send data between two dissimilar networks while a router can only send data to similar networks.

15) What is the SMTP protocol?

Ans-

- **SMTP is the Simple Mail Transfer Protocol.**
- **SMTP sets the rule for communication between servers.**
- **This set of rules helps the software to transmit emails over the internet.**
- **It supports both End-to-End and Store-and-Forward methods. It is in always-listening mode on port 25**
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16) what is OSI Model ?
Ans- osi is not a protocol . it is a network model consist of 7 separate layer.

1) **Physical- bits**
2) **Data link layer- Frame**
3) **Network - Packet ip**
4) **Transport - tcp udp**

5) Application- http https dns smtp

17) What are the HTTP and the HTTPS protocol?

Ans-

HTTP is the HyperText Transfer Protocol which defines the set of rules and standards on how the information can be transmitted on the World Wide Web (WWW). It helps the web browsers and web servers for communication. It is a 'stateless protocol' where each command is independent with respect to the previous command. HTTP is an application layer protocol built upon the TCP. It uses port 80 by default.

HTTPS is the HyperText Transfer Protocol Secure or Secure HTTP. It is an advanced and secured version of HTTP. On top of HTTP, SSL/TLS protocol is used to provide security. It enables secure transactions by encrypting the communication and also helps identify network servers securely. It uses port 443 by default.

18)What is the FTP protocol?

Ans- FTP is a File Transfer Protocol. It is an application layer protocol used to transfer files and data reliably and efficiently between hosts. It can also be used to download files from remote servers to your computer. It uses port 27 by default.

19) What is the TCP protocol?

Ans- TCP or TCP/IP is the Transmission Control Protocol/Internet Protocol. It is a set of rules that decides how a computer connects to the Internet and how to transmit the data over the network. It creates a virtual network when more than one computer is connected to the network and uses the three ways handshake model to establish the connection which makes it more reliable.

20) What is the UDP protocol?

Ans- UDP is the User Datagram Protocol and is based on Datagrams. Mainly, it is used for multicasting and broadcasting. Its functionality is almost the same as TCP/IP Protocol except for the three ways of handshaking and error checking. It

uses a simple transmission without any hand-shaking which makes it less reliable

21) What is the ARP protocol?

Ans- ARP is Address Resolution Protocol. It is a network-level protocol used to convert the logical address i.e. IP address to the device's physical address i.e. MAC address. It can also be used to get the MAC address of devices when they are trying to communicate over the local network.

22)What is the MAC address and how is it related to NIC?

Ans- MAC address is the Media Access Control address. It is a 48-bit or 64-bit unique identifier of devices in the network. It is also called the physical address embedded with Network Interface Card (NIC) used at the Data Link Layer. NIC is a hardware component in the networking device using which a device can connect to the network.

23) Differentiate the MAC address with the IP address

Ans-

MAC Address	IP Address
Media Access Control Address	Internet Protocol Address
6 or 8-byte hexadecimal number	4 (IPv4) or 16 (IPv6) Byte address
It is embedded with NIC	It is obtained from the network
Physical Address	Logical Address
Operates at Data Link Layer	Operates at Network Layer.
Helps to identify the device	Helps to identify the device connectivity on the network.

24) What is the firewall?

Ans- The firewall is a network security system that is used to monitor the incoming and outgoing traffic and blocks the same based on the firewall security policies. It acts as a wall between the internet (public network) and the networking devices (a private network). It is either a hardware device, software program, or a combination of both. It adds a layer of security to the network.

25)What happens when you enter google.com in the web browser?

Ans-
Check the browser cache first if the content is present in cache display the same
If not the browser check if the ip of url is present in the cache if not then request the os to do a dns lookup using udp to get the corr. Ip address of the url from dns server to establish a new tcp connection.

A new TCP connection is set between the browser and the server.
An HTTP request is sent to the server using a TCP connection.
Web server running on the servers handle the incoming HTTP request and send the HTTP response.