Internet Architecture & Protocols Questions Bank with Answers

1. How many bits are there in IPV6?
There are 128 bits in IPV6.

2. What is the purpose of ARP?
The address resolution protocol is used to take care of the translation of the IP addresses to link addresses and hide these link addresses from the upper layers.

3. What is the role of live to time field in IP datagram?
The time to live (TTL) parameter is used to measure the time (supposedly) a datagram has been in the internet. Each node in the internet is required to check the field and discard the datagram if the TTL value equals 0.

4. What is the difference between transmission delay and propagation delay?
The transmission delay is the amount of time required for the router to push out the packet. The propagation delay is the time it takes a bit to propagate from one router to the next.

5. What is switched WAN?
A WAN switch is a multiport internetworking device used in carrier networks. These devices typically switch such traffic as Frame Relay, X.25, and SMDS, and operate at the data link layer of the OSI reference model.

6. What is internetworking? Give any example.
Internetworking is the process or technique of connecting different networks by using intermediary devices such as routers or gateway devices. The most notable example of internetworking is the Internet, a network of networks based on many underlying hardware technologies.\

7. What is frame relay?
Frame relay is a fast relay, hold and forward technology which is designed specifically for transporting data traffic, although there is increasing interest in the industry for enhancing frame relay to support voice traffic.

8. What is a socket address?
Socket address is the combinations of IP address and port number.

9. How congestion is controlled in TCP?
Transmission Control Protocol (TCP) uses a network congestion-avoidance algorithm that includes various aspects of an additive increase/multiplicative decrease (AIMD) scheme, with other schemes such as slow start and congestion window to achieve congestion avoidance.

10.Write two error detection mechanisms?

- CRC (Cyclic Redundancy Check)
- Checksum

11.Give names of any two routing protocols?
i. Link state metric
ii. Distance vector

12.Define diff. b/w fast Ethernet and gigabit Ethernet?
The term fast Ethernet is applied to LANs that operate above the conventional 10 Mb/s wire speed while the gigabit Ethernet is applied to LANs that operate above the conventional 1000 Mb/s wire speed.

13.What is a client server model in networks? Give any examples.
The client-server model describes how a server provides resources and services to one or more clients. Examples of servers include web servers, mail servers, and file servers.

14.Which fields are changed in an IP header due to fragmentation?
The fields changed in an IP datagram due to fragmentation are: identifier, flags and fragmentation offset.

15.What are differences in classful and classless addressing?
Classless addressing uses a two-part view of IP addresses, and classful addressing has a three-part view. With classful addressing, the address always has an 8-, 16-, or 24-bit network field, based on the Class A, B, and C addressing rules. The end of the address has a host part that uniquely identifies each host inside a subnet. With classless addressing, the network and subnet parts from the classful view are combined into a single part, often called the subnet or prefix, with the address ending in the host part.

16.Write difference b/w ATM and frame relay network?
The ATM (Asynchronous transfer mode), a cell relay technology, is designed to support voice, video and data traffic. Also, the ATM technology provides for extensive QOS (Quality of Service) operations for user while frame relay is a fast relay, hold and forward technology which is designed specifically for transporting data traffic, although there is increasing interest in the industry for enhancing frame relay to support voice traffic.

17.What are headers and trailer, and how do they get added and removed?
The control data added to the beginning of a data is called headers. The control data added to the end of a data is called trailers. At the sending machine, when the message passes through the layers each layer adds the headers or trailers. At the receiving machine, each layer removes the data meant for it and passes the rest to the next layer.

18.How can NAT help in address depletion?
Network address translation (NAT) is a method of remapping one IP address space into another by modifying the network address information in the IP header of packets while they are in transit across a routing device. Normally the edge router. The technique was originally used as a shortcut to avoid the need to readdress every host when a network was moved.

19.Which types of messages are handled in ICMP protocol?
The types of messages handled in ICMP protocol are: destination unreachable, packet too big, time exceeded, parameter problem, echo request, echo reply, group membership query, group

membership report, group membership termination, router solicitation, router advertisement, neighbor solicitation, neighbor advertisement and redirect.

20.Difference between traceroute and ping?
The main difference between Ping and Traceroute is that Ping is a quick and easy utility to tell if the specified server is reachable and how long will it take to send and receive data from the server whereas Traceroute finds the exact route taken to reach the server and time taken by each step (hop).

21.How to establish TCP connection?
To establish a connection, TCP uses a three-way handshake. Before a client attempts to connect with a server, the server must first bind to and listen at a port to open it up for connections: this is called a passive open. Once the passive open is established, a client may initiate an active open.

22.Why we use CSMA/CD?
We use CSMA/CD because it provides several methods for channel acquisition. One technique, the non-persistent CSMA technique, allows all stations to transmit immediately upon sensing the idle channel, with no arbitration before the transmission. In the event is channel is busy, the stations wait a random period before sensing the channel again. Another technique, the p-persistent CSMA, provides a waiting algorithm at each station (p stands for probability).

23.Difference between bridge and router?
The basic difference between Bridge and Router is that Bridge is a network device mainly operating at the data link layer of the OSI model with filtering and forwarding capabilities. A router is attached to the two or more networks and forwards packets from one network to another.

24.What is CIDR and write down its significance?
Classless Interdomain routing (CIDR) is now used in many systems and is required for operations between autonomous systems. It permits networks to be grouped together logically, and to use one entry in a routing table for multiple class C networks.

25.Differentiate between PAP and CHAP?
PAP (Password authentication protocol) is a simple procedure for a peer to establish its identity using a 2 way handshake during initial link establishment while CHAP (Challenge-Handshake authentication protocol) is a strong authentication protocol to verify the identity of peer using 3 way handshake during the initial link establishment.

26.What is meant by transmit and receive windows, explain with example.
Many link protocols use the concept of transmit and receive windows to aid in link management operations. For example, if station A and B are to communicate with each other, station A reserves a receive window for B, and B reserves a receive window for A.

27.Write down the major functions of LCP?
LCP allows for certain configuration options to be negotiated. LCP (link control protocol) maintains the connection and provides procedure for terminating the connection. It is used to set

limits on the size of the packets exchanged between the parties, perform authentication, as well as detecting certain errors.

28.Write down the names of FDDI layers?

i. Data link layer
   a. Logical link control (LLC)
   b. Media access control (MAC)
ii. Physical layer
   a. Physical layer protocol (PHY)
   b. Physical medium department (PMD)

29.Differentiate ARP vs RARP?

The address resolution protocol is used to take care of the translation of the IP addresses to link addresses and hide these link addresses from the upper layers while Reverse address resolution protocol works in a manner similar to ARP except, as a name suggests, it works in reserve order.

30.Why ICMP protocol is used?

ICMP (Internet control message protocol) is used to notify the host if a destination is unreachable. ICMP is also responsible for creating a "time-exceeded" message in the event that the lifetime of the datagram expires.

31.Write down the default subnet mask of this address 172.20.0.0?

172.20.0.0 Address is related to class B and default subnet masks for class B is 255.255.0.0.

32.Differentiate FDMA Vs TDMA?

The basic difference between FDMA and TDMA is the definition of a channel and how it is used. In FDMA, a particular bandwidth (e.g. 6.25 kHz) at a particular frequency (e.g. 150.000 MHz) is used to define a channel. In regard to TDMA and digital technology, the 12.5 kHz channel bandwidth is maintained.

33.What is RTT and which protocol uses it?

RTT (Round Trip Time) is derived from adding the send delay, the processing time at remote host and the receive delay. If delay were not variable, this simple calculation would suffice for determining a retransmission timer. TCP (transmission control protocol) uses it.

34.Explain L2TP tunnels.

This tunnel exists between the LAC and LNS peers. It consists of the user traffic and the header information necessary to support the tunnel. Therefore, the tunnel provides the encapsulated PPP datagrams and the requisite control messages needed for the operations between the LAC and LNS.

35.What are sockets?

A socket is one endpoint of a two-way communication link between two programs running on the network.

37.Why sequence numbers are used in communication?

Sequence numbers are used in communication to specifies the position of the transmitting module's byte stream.

38.What is port address and which layer is responsible for this?
Port address is a unique number assigned to a network application as an address to receive or send data. Transport layer is responsible for this.

39.Why BOOTP protocol is used?
Internet now supports the BOOTP (bootstrap protocol) because RARP has some disadvantages. Since it is intended to operate at the hardware level, it is difficult to obtain and manage the routine from an applications program. It also contains limited information.

40.Explain TCP segmentation?
TCP receives data from an application and segments the data into pieces. This segmentation is necessary so that the information can be placed inside the TCP data field. Once the data is segmented it is encapsulated within TCP.

41.Why more security is required; which authentication will be used?
Preparing for a breach in security, therefore, is particularly important when incidents can result in fines, legal action or measures by government agencies.

42.What is the size of mandatory and optional header in IP datagram?
The options field is used to identify several additional services. The options field is not used in every datagram. Total length field specifies the total length of IP datagram. It is measured in octets and includes the length of header and data.

43.Which protocol ensures the proper delay in communication?
Network layer ensures the proper delay in communication.

44.What is diff. b/w switched and point to point WAN?
Point-to-point WAN is used when a virtual circuit in a router is connected to another. Each point-to-point sub interface requires its own subnet while a WAN switch is a multiport internetworking device used in carrier networks. These devices typically switch such traffic as Frame Relay, X.25, and SMDS, and operate at the data link layer of the OSI reference model.

45.Give any three application layer protocol?
i. FTP (file transfer protocol)
ii. HTTP (hypertext transfer protocol)
iii. DNS (Domain name system)

46.Give network layer devices?
Network layer devices are Routers, Bridge routers, 3-layer switches.

47.What is half close in connectivity?
"Half closed" means that the connection was completely opened, but the handshake for closing the connection was never completed. So for "half open": Site A sends a packet with SYN, Site B sends a packet with ACK, but the third packet with SYN+ACK set is missing.

48. What is a cell in ATM networks?
ATM transfers information in fixed-size units called cells. Each cell consists of 53 octets, or bytes. The first 5 bytes contain cell-header information, and the remaining 48 contain the payload (user information).

49. What is difference between local and global DLCI?
DLCI stands for data link connection identifier (DLCI). It is a Frame Relay 10-bit-wide linklocal virtual circuit identifier used to assign frames to a specific PVC or SVC. The DLCIs are usually assigned by the providers, so they are locally significant to a particular circuit. The only way you would have global DLCIs is if you owned the whole frame-relay network. Like if you created your own frame-relay lab.

50.Why address aggregation is used?
Address aggregation is used today to reduce the size of the routing tables. It is quite similar to the use of subnet masks.

51.What is the structure of internet?
The Internet is basically a hierarchy that allows any Internet connected device in one geographic location, talk to another Internet connected device in another geographic location.

52.Find the first address in the block if one of the addresses is 140.120.84.24/20?
The first address is 140.120.80.0/20.

53.What maximum size packets have at network layer?
The maximum size packets at network layer are 64K (65535 bytes).