COMPUTER NETWORK INTERVIEW QUESTIONS WITH ANSWERS

1.What do you mean by data communication?
Ans: It is the exchange of data between two devices via some form of transmission medium such as wire cable. The communicating system must be part of a communication system made up of a combination of hardware and software.The effectiveness of a data communication system depends on three fundamental characteristics: delivery, accuracy and timeliness.

2.What is simplex?
Ans: It is the mode of communication between two devices in which flow of data is unidirectional. i.e. one can transmit and other can receive.
E.g. keyboard and monitor.

3.What is half-duplex?
Ans: It is the mode of communication between two devices in which flow of data is bi-directional but not at the same time. ie each station can transmit and receive but not at the same time.
E.g walkie-talkies are half-duplex system.

4.What is full duplex?
Ans: It is the mode of communication between two devices in which flow of data is bi-directional and it occurs simultaneously. Here signals going in either direction share the capacity of the link.
E.g. telephone

5.What is a network?
Ans: It is a set of devices connected by communication links. A node can be a computer or any other device capable of sending and/or receiving data generated by other nodes on the network.

6.What is distributed processing?
Ans: It is a strategy in which services provided by the network reside at multiple sites.

7.What is point to point connection?
Ans: It provides a dedicated link between two devices. The entire capacity of the link is reserved for transmission between the two devices
e.g. when we change the TV channels by remote control we establish a point to point connection between remote control and TV control system.

8.What is multipoint connection?
Ans: In multipoint connection more than two specific devices share a single link.
Here the capacity of the channel is shared either separately or temporally.

9.What is a topology?
Ans: Topology of a network is defined as the geometric representation of the relationship of all the links and linking devices (node) to one another.Four basic topologies are star, bus, ring and mesh.
Star – Here each device has a dedicated point to point link only to a central controller called hub.

Bus -It is multipoint. One long cable acts as a backbone to link all the devices in the network.
Ring -Here each device has a dedicated point to point connection only with the two devices on either side of it.
Mesh -Here every device has a dedicated point to point link to every other device.

10.Define LAN, MAN and WAN.
Ans: LAN- A local area network (LAN) is a privately owned and links the devices in a single office, building or campus.
It allows resources to be shared between personal computers and work stations.
MAN- A metropolitan-area network (MAN) spreads over an entire city.
It may be wholly owned and operated by a private company, eg local telephone company.
WAN – A wide area network (WAN) provides long distance transmission of data, voice, image and video information over large geographic areas that comprise a country, a continent or even whole world.

11.Define internet?
Ans: It is a network of networks.

12.What is a protocol?
Ans: It is a set of rules that governs data communication. A protocol defines what is communicated, how it is communicated, and when it is communicated. The key elements of protocol are syntax, semantics and timing.

13.What is TCP/IP protocol model?
Ans: It is a five layered model which provides guidelines for the development of universally compatible networking protocols.
The five layers are physical, data link, network, transport and application.

14.Describe the functions of five layers?
Ans: Physical- It transmits raw bits over a medium. It provides mechanical and electrical specification.
Data link- It organizes bits into frames. It provides hop to hop delivery.
Network-It moves the packets from source to destination.It provide internetworking.
Transport-It provides reliable process to process message delivery and error recovery.
Application-It allows ti access to network resources.

15.What is ISO-OSI model?
Ans: Open Systems Interconnection or OSI model was designed by the International Organization for Standardization (ISO) .It is a seven layer model. It is a theoretical model designed to show how a protocol stack should be implemented.
It defines two extra layers in addition to TCP/IP model.
Session -It was designed to establish, maintain, and synchronize the interaction between communicating system.

Presentation-It was designed to handle the syntax and semantics of the information exchanged between the two systems. It was designed for data translation, encryption, decryption, and compression.

16. What is multiplexing?
Ans: Multiplexing is the process of dividing a link, the phycal medium, into logical channels for better efficiency. Here medium is not changed but it has several channels instead of one.

16.What is switching?
Ans: Switching in data communication is of three types
Circuit switching
Packet switching
Message switching

17.How data is transmitted over a medium?
Ans: Data is transmitted in the form of electromagnetic signals.

18. Compare analog and digital signals?
Ans: Analog signals can have an infinite number of values in a range but digital signal can have only a limited number of values.

19.Define bandwidth?
Ans: The range of frequencies that a medium can pass is called bandwidth. It is the difference between the highest and lowest frequencies that the medium can satisfactorily pass.

20.What are the factors on which data rate depends?
Ans: Data rate ie.how fast we can send data depends upon
i) Bandwidth available
ii) The levels of signals we can use
iii) The quality of the channel (level of noise)

21.Define bit rate and bit interval?
Ans: Digital signals are aperiodic.so instead of using period and frequency we use bit interval and bit rate respectively.Bit interval is the time required to send one single bit.Bit rate is the number of bit intervals per second.

22.What is Nyquist bit rate formula?
Ans: For a noiseless channel, the Nyquist bit rate formula defines the theoretical maximum bit rate
Bitrate=2* Bandwidth*log2L
Where Bandwidth is the bandwidth of the channel
L is the number of signal level used to represent the data
Bitrate is the bit rate in bits per second.

23.Define Shannon Capacity?
Ans: Shannon Capacity determines the theoretical highest data rate foe a noise channel.
Capacity= Bandwidth * log2 (1+SNR)
Bandwidth is the bandwidth of the channel.
SNR is the signal to noise ratio, it is the statical ratio of the power of the signal to the power of the noise.
Capacity is the capacity of the channel in bits per second

24.What is sampling?
Ans: It is the process of obtaining amplitude of a signal at regular intervals.

25.Define pulse amplitude modulation?
Ans: It is an analog to digital conversion method which takes analog signals, samples it and generates a series of pulse based on the results of the sampling. It is not used in data communication because the series of pulses generated still of any amplitude. To modify it we use pulse code modulation.

26.Define pulse code modulation?
Ans: Pulse code Modulation modifies pulses created by PAM to create a completely digital signal.
For this PCM first quantizes the PAM pulse. Quantization is the method of assigning integral values in a specific tange to sampled instances.PCM is made up of four separate processes: PAM, quantization, binary encoding and line encoding.

27.What is Nyquist Theorem?
Ans: According to this theorem, the sampling rate must be at least 2 times the highest frequency of the original signal.

28.What are the modes of data transmission?
Ans: Data transmission can be serial or parallel in mode
In parallel transmission, a group of bits is sent simultaneously, with each bit on a separate line.In serial transmission there is only one line and the bits are sent sequentially.

29.What is Asynchronous mode of data transmission?
Ans: It is a serial mode of transmission.
In this mode of transmission, each byte is framed with a start bit and a stop bit. There may be a variable length gap between each byte.

30.What is Synchronous mode of data transmission?
Ans: It is a serial mode of transmission.In this mode of transmission, bits are sent in a continuous stream without start and stop bit and without gaps between bytes. Regrouping the bits into meaningful bytes is the responsibility of the receiver.

31.What are the different types of multiplexing?
Ans: Multiplexing is of three types. Frequency division multiplexing and wave division multiplexing is for analog signals and time division multiplexing is for digital signals.

32.What is FDM?
Ans: In frequency division multiplexing each signal modulates a different carrier frequency. The modulated carrier combines to form a new signal that is then sent across the link.
Here multiplexers modulate and combine the signal while demultiplexers decompose and demodulate.
Guard bands keep the modulating signal from overlapping and interfering with one another.

32.What is TDM ?
Ans: In TDM digital signals from n devices are interleaved with one another, forming a frame of data.
Framing bits allow the TDM multiplexer to synchronize properly.

33.What are the different transmission media?
Ans: The transmission media is broadly categorized into two types
i)Guided media(wired)
i)Unguided media(wireless)

34.What are the different Guided Media?
Ans: The media which provides a conduct from one device to another is called a guided media. These include twisted pair cable, coaxial cable, and fiber-optic cable.

35.Describe about the different Guided Medias.
Ans: Twisted pair cable consists of two insulated cupper wires twisted together. It is used in telephone line for voice and data communications.
Coaxial cable has the following layers: a metallic rod-shaped inner conductor, an insulator covering the rod, a metallic outer conductor (shield), an insulator covering the shield, and a plastic cover.Coaxial cable can carry signals of higher frequency ranges than twisted-pair cable. Coaxial cable is used in cable TV networks and Ethernet LANs.Fiber-optic cables are composed of a glass or plastic inner core surrounded by cladding, all encased in an outer jacket.Fiber-optic cables carry data signals in the form of light. The signal is propagated along the inner core by reflection. Its features are noise resistance, low attenuation, and high bandwidth capabilities.
It is used in backbone networks, cable TV nerworks, and fast Ethernet networks.

36.What do you mean by wireless communication?
Ans: Unguided media transport electromagnetic waves without using a physical conductor. This type of communication is referred as wireless communication.
Here signals are broadcaster through air and thus available to anyone who has a device to receive it.

37.What do you mean by switching?
Ans: It is a method in which communication devices are connected to one another efficiently. A switch is intermediary hardware or software that links devices together temporarily.

38.What are the switching methods?
Ans: There are three fundamental switching methods: circuit switching, packet switching, And message switching.In circuit switching, a direct physical connection between two devices is created by space division switches, time division switches or both.
In packet switching data is transmitted using a packet switched network. Packet switched network is a network in which data are transmitted in independent units called packets.

39.What are the duties of data link layer?
Ans: Data link layer is responsible for carrying packets from one hop (computer or router) to the next. The duties of data link layer include packetizing, adderssing, error control, flow control, medium access control.

40.What are the types of errors?
Ans: Errors can be categorized as a single-bit error or burst error. A single bit error has one bit error per data unit. A burst error has two or more bits errors per data unit.

41.What do you mean by redundancy?
Ans: Redundancy is the concept of sending extra bits for use in error detection. Three common redundancy methods are parity check, cyclic redundancy check (CRC), and checksum.

42.Define parity check.
Ans: In parity check, a parity bit is added to every data unit so that the total number of 1s is even (or odd for odd parity).Simple parity check can detect all single bit errors. It can detect burst errors only if the total number of errors in each data unit is odd.In two dimensional parity checks, a block of bits is divided into rows and a redundant row of bits is added to the whole block.

43. Define cyclic redundancy check (CRC).
Ans: C RC appends a sequence of redundant bits derived from binary division to the data unit. The divisor in the CRC generator is often represented as an algebraic polynomial.

44. What is hamming code?
Ans: The hamming code is an error correction method using redundant bits. The number of bits is a function of the length of the data bits. In hamming code for a data unit of m bits, we use the formula 2r >= m+r+1 to determine the number of redundant bits needed. By rearranging the order of bit transmission of the data units, the hamming code can correct burst errors.

45.What do you mean by flow control?
Ans: It is the regulation of sender's data rate so that the receiver buffer doesn't become

overwhelmed.i.e. flow control refers to a set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgement.

46.What do you mean by error control?
Ans: Error control refers primarily to methods of error detection and retransmission. Anytime an error is detected in an exchange, specified frames are retransmitted. This process is called automatic repeat request (ARQ).

47.Define stop and wait ARQ.
Ans: In stop and wait ARQ, the sender sends a frame and waits for an acknowledgement from the receiver before sending the next frame.

48.Define Go-Back-N ARQ?
Ans: In Go-Back-N ARQ, multiple frames can be in transit at the same time. If there is an error, retransmission begins with the last Unacknowledged frame even if subsequent frames arrived correctly. Duplicate frames are discarded.

49.Define Selective Repeat ARQ?
Ans: In Selective Repeat ARQ, multiple frames can be in transit at the same time. If there is an error, only unacknowledged frame is retransmitted.

50.What do you mean by pipelining, is there any pipelining in error control?
Ans: The process in which a task is often begun before the previous task has ended is called pipelining. There is no pipelining in stop and wait ARQ however it does apply in Go-Back-N ARQ and Selective Repeat ARQ.

51.What is HDLC?
Ans: It is a bit oriented data link protocol designed to support both half duplex and full duplex communication over point to point and multi point links.HDLC is characterized by their station type,configuration and their response modes.

52.What do you mean by point to point protocol?
Ans: The point to point protocol was designed to provide a dedicated line for users who need internet access via a telephone line or a cable TV connection. Its connection goes through three phases: idle, establishing, authenticating, networking and terminating.
At data link layer it employs a version of HDLC.

53. What do you mean by point to point protocol stack?
Ans: Point to point protocol uses a stack of other protocol to use the link, to authenticate the parties involved, and to carry the network layer data. Three sets of protocols are defined: link control protocol, Authentication protocol, and network control protocol.

54.What do you mean by line control protocol?
Ans: It is responsible for establishing, maintaining, configuring, and terminating links.

55.What do you mean by Authentication protocol?
Ans: Authentication means validating the identity of a user who needs to access a set of resources.
It is of two types
i)Password Authentication Protocol(PAP)
ii)Challenge Handshake Authentication Protocol(CHAP)
PAP is a two step process. The user sends a authentication identification and a password. The system determines the validity of the Information sent.CHAP is a three step process. The system sends a value to the user. The user manipulates the value and sends the result. The system Verifies the result.

56.What do you mean by network control protocol?
Ans: Network control protocol is a set of protocols to allow the encapsulation of data coming from network layer protocol that requires the services of PPP.

57. What do you mean by CSMA?
Ans: To reduce the possibility of collision CSMA method was developed. In CSMA each station first listen to the medium (Or check the state of the medium) before sending. It can't eliminate collision.

58.What do you mean by Bluetooth?
Ans: It is a wireless LAN technology designed to connect devices of different functions such as telephones, notebooks, computers, cameras, printers and so on. Bluetooth LAN Is an adhoc network that is the network is formed spontaneously? It is the implementation of protocol defined by the IEEE 802.15 standard.

59.What is IP address?
Ans: The internet address (IP address) is 32bits that uniquely and universally defines a host or router on the internet.
The portion of the IP address that identifies the network is called netid. The portion of the IP address that identifies the host or router on the network is called hostid.

60.What do you mean by subnetting?
Ans: Subnetting divides one large network into several smaller ones. It adds an intermediate level of hierarchy in IP addressing.

61.What are the advantages of fiber optics cable ?
Ans: The advantages of fiber optics cable over twisted pair cable are Noise resistance-As they use light so external noise is not a factor. Less signal attenuation-fiber optics transmission

distance is significantly greater than that of other guided media.Higher bandwidth-It can support higher bandwidth.

62.What are the disadvantages of fiber optics cable?
Ans: The disadvantages of fiber optics cable over twisted pair cable are
Cost-It is expensive Installation/maintenance-Any roughness or cracking defuses light and alters the signal Fragility-It is more fragile.

63.What are the propagation type of radio wave ?
Ans: Radio wave propagation is dependent upon frequency.There are five propagation type.
i)surface propagation
ii)Tropospheric propagation
iii)Ionospheric propagation
iv)Line of sight propagation
v)space propagation

64.What do you mean by Geosynchronous Satellites ?
Ans: Satellite communication uses a satellite in geosynchronous orbit to relay signals.The Satellite must move at the same speed as the earth so that it seems to remain fixed above a certain spot..Only one orbit can be geosynchronous.This orbit occurs at the equatorial plane and is approximately 22,000 miles from the surface of earth.

65.What are the factors for evaluating the suitability of the media ?
Ans: The factors are cost,throughput,attenuation,Electromagneric interference(EMI),securtty.

66.What do you mean by medium access control(MAC) sublayer.
Ans: The protocols used to determine who goes next on a multi-access channel belong to a sublayer of the data link layer is called the multi-access channel(MAC) sublayer.It is the buttom part of data link layer.

67.What do you mean by ALOHA ?
Ans: It is the method used to solve the channel allocation problem .It is used for:
i)ground based radio broadcasting
ii)In a network in which uncoordinated users are competing for the use of single channel.
It is of two types:
1.Pure aloha
2.Slotted aloha

68.What is pure ALOHA?
Ans: It lets users transmit whenever they have data to sent.Collision may occur but due to feedback property sender can know the status of message.conflict occur when at one time more bits are transmitted.The assumptions are :
i)all frame size is same for all user.
ii)collision occur when frames are transmitted simultaneously
iii)indefinite population of no of user.

iv)N=number of frames/frame time
iv)it obeys poisson's distribution if N>1 there will be collision 0<1

69.What is slotted ALOHA?
Ans: In this method time is divided into discrete intervals,each interval corresponding to one frame.It requires user to agree on slot boundaries.Here data is not send at any time instead it wait for beginning of the next slot.Thus pure ALOHA is tuened into discrete one.

70.What do you mean by persistent CSMA(carrier sense multiple access) ?
Ans: When a station has data to send,it first listens to the channel to see if anyone else is transmitting at that moment.If channel is busy it waits until the station becomes idle. When collision occurs it waits and then sends.It sends frame with probability 1 when channel is idle.

71.What do you mean by non persistent CSMA(carrier sense multiple access) ?
Ans: Here if no one else is sending the station begins doing so itself.However if the channel is already in use,the station does't continuously sense it rather it waits for a random period of time and then repeats.It leads better channel utilization but longer delay.

72.What do you mean by p persistent CSMA(carrier sense multiple access) ?
Ans: It applies to slotted channels.when a station becomes ready to send,it senses the channel.If it is idle it transmits with a probability P,with a probability Q=P-1
It defers until the next slot.If that slot is also idle,it either transmits or defers again with probability P and Q.The process is repeated until either the frame has been transmitted or another station begins transmitting.

73.What is FDDI?
Ans: It is high performance fiber optic token ring LAN running at 100Mbps over distance up 1000 stations.FDDI access is limited by time.A FDDI cabling consist of two fiber rings.
i)one transmitting clockwise
ii)one transmitting counterclockwise

74.What is Firewalls?
Ans: It is an electronic downbridge which is used to enhance the security of a network. It's configuration has two components.
i)Two routers
ii)Application gateway
the packets traveling through the LAN are inspected here and packets meeting certain criteria are forwarded and others are dropped.

75.What is Repeaters ?
Ans: A receiver receives a signal before it becomes too weak or corrupted,regenerates the original bit pattern,and puts the refreshed copy back onto the link.It operates on phycal layer of OSI model.

76.What is Bridges?
Ans: They divide large network into smaller components.They can relay frames between two originally separated LANs.They provide security through partitioning traffic.They operate on phycal and data link layer of OSI model.

77.What is Routers ?
Ans: Router relay packets among multiple interconnected networks.They receive packet from one connected network and pass it to another network.They have access to network layer addresses and certain software that enables them to determine which path is best for transmission among several paths.They operate on phycal,data link and network layer of OSI model.

78.What is Gateway ?
Ans: It is a protocol converter.A gateway can accept a packet formatted for one protocol and convert it to a packet formatted for another protocol.It operates on all the seven layers of OSI model.

79.What do you mean by Data Terminal Equipment(DTE) ?
Ans: It is any device that is source of or destination for binary digital data.At phycal layer it can be a terminal computer. They generate or consume information.

80.What do you mean by Data Terminating Equipment (DCE) ?
Ans: Data circuit terminating equipment includes any functional unit that transmit or receives data in the form of an analog or digital signal through a network.DTE generates digital data and passes them to a DCE ,the DCE converts the data to a form acceptable to the transmission media and sends the converted signal to another DCE on the network.

81.What do you mean by protocol stack ?
Ans: The list of protocols used by certain system ,one protocol per layer is called protocol stack.

82.What do you mean by peer ?
Ans: Entities comprising the corresponding layers on different machines are called peers.It may be
• hardware device.
• processes
• human being
peers communicate by using protocol.

83.What do you mean by broadcasting ?
Ans: Broadcast system allow addressing a packet to all destination by using a special code in address field.when packet is transmitted it is received and processed by every machine on the network.

84.What are the advantages of broadcast network.
Ans:
• a single communication channel is shared by all computers.
• packets are transmitted and received by all the computer.
• address field is attached to whom it is intended.
• multicasting is used in network.

85.What do you mean by point to point network?
Ans: Point to point network consist of many connections between individual pair of machines.large networks are point to point.Routing algorithm plays an important in point to point network.It uses stored ad forword technique.It is a packet switching network.

86.What are the design issue of layers ?
Ans: The design issue of layer are
• Addressing technique.ie source and destination address
• Types of communication
• Error control
• Order of message.
• Speed matching
• Multiplexing and demultiplexing.

87.What are the protocols in application layer ?
Ans: The protocols defined in application layer are
• TELNET
• FTP
• SMTP
• DNS

88.What are the protocols in transport layer ?
Ans: The protocols defined in transport layer are
• TCP
• UDP

89.Define TCP ?
Ans: It is connection oriented protocol.It consist byte streams oeiginating on one machine to be delivered without error on any other machine in the network.while transmitting it fragments the stream to discrete messages and passes to interner layer.At the destination it reassembles the messages into output stream.

90.Define UDP ?
Ans: It is unreliable connectionless protocol.It is used for one-shot,client-server type,requesr-reply queries and applications in which prompt delivery is required than accuracy.

91.Define IP ?
Ans: Internetwork protocol (IP) is the transmission mechanism used by TCP/IP protocol.It is an unreliable and connectionless datagram protocol.It provides no error checking and tracking.

92.What do you mean by client server model ?
Ans: In client server model ,the client runs a program to request a service and the server runs a program to provide the service.These two programs communicate with each other. One server program can provide services to many client programs.

93.What are the information that a computer attached to a TCP/IP internet must possesses ?
Ans: Each computer attached to TCP/IP must possesses the following information
• Its IP addesss
• Its subnet mask
• The IP addesss of the router.
• The Ip address of the name server.

94.What is domain name system(DNS)?
Ans: Domain Name System (DNS)is a client server application that identifies each host on the internet with a unique user friendly name.

95.What is TELNET ?
Ans: TELNET is a client –server application that allows a user to log on to a remote machine,giving the user access to the remote system. TELNET is an abbreviation of terminal Network.

96.What do you mean by local login and remote login ?
Ans: When a user logs into a local time-sharing system ,it is called local login. When a user wants to access an application program or utility located on a remote machine,he or she performs remote login.

97.What is Network Virtual Terminal ?
Ans: A universal interface provided by TELNET is called Network Virtual Terminal(NVT) character set.Via this interface TELNET translates characters (data or command) that come from local terminal into NVT form and delivers them to the network.

98.What do you mean by Simple Mail Transfer Protocol ?
Ans: The TCP/IP protocol that supports electronic mail on the internet is called Simple Mail Transfer Protocol.SMTP provides for mail exchange between users on the same or different computer and supports Sending a single message to one or more recipient Sending message that include text, voice,video,or graphics.Sending message to users on network outside the internet.

99.What is Hypertext Transfer Protocol(HTTP) ?
Ans: It is the main protocol used to access data on the World Wide Web .the protocol transfers data in the form of plain text,hypertext,audio,video,and so on. It is so called because its

efficiency allows its use in a hypertext environment where there are rapid jumps from one document to another.

100.What is URL ?
Ans: It is a standard for specifying any kind of information on the World Wide Web.

101. What is World Wide Web ?
Ans: World Wide Web is a repository of information spread all over the world and linked together.It is a unique combination of flexibility,portability,and user-friendly features .The World Wide Web today is a distributed client-server service,in which a client using a browser can access a service using a server.The service provided is distributed over many locations called web sites.

102.What is HTML ?
Ans: Hypertext Markup Language (HTML) is a language for creating static web pages