1. **The physical layer is concerned with _____**
   **a) bit-by-bit delivery**
   b) process to process delivery
   c) application to application delivery
   d) port to port delivery

2. **Which transmission media provides the highest transmission speed in a network?**
   a) coaxial cable
   b) twisted pair cable
   **c) optical fiber**
   d) electrical cable

3. **The portion of physical layer that interfaces with the media access control sublayer is called _____**
   **a) physical signalling sublayer**
   b) physical data sublayer
   c) physical address sublayer
   d) physical transport sublayer

4. **The physical layer provides _____**
   a) mechanical specifications of electrical connectors and cables
   b) electrical specification of transmission line signal level
   c) specification for IR over optical fiber
   **d) all of the mentioned**

5. **In asynchronous serial communication the physical layer provides _____**
   **a) start and stop signalling**
   b) flow control
   **c) both start & stop signalling and flow control**
   d) only start signalling

6. **The physical layer is responsible for _____**
   a) line coding
   b) channel coding
   c) modulation
   **d) all of the mentioned**

7. **The physical layer translates logical communication requests from the _____ into hardware specific operations.**
   **a) data link layer**
   b) network layer
   c) trasnport layer
   d) application layer

8. **A single channel is shared by multiple signals by _____**
   a) analog modulation
   b) digital modulation
   **c) multiplexing**
   d) phase modulation

9. **Wireless transmission of signals can be done via _____**
   a) radio waves
   b) microwaves
   c) infrared
   **d) all of the mentioned**

10. **The data link layer takes the packets from _____ and encapsulates them into frames for transmission.**
   **a) network layer**
   b) physical layer
   c) transport layer
   d) application layer

11. **Which of the following tasks is not done by data link layer?**
   a) framing
   b) error control
   c) flow control
   **d) channel coding**

12. **Which sublayer of the data link layer performs data link functions that depend upon the type of medium?**
   a) logical link control sublayer
   **b) media access control sublayer**
   c) network interface control sublayer
   d) error control sublayer

13. **Header of a frame generally contains _____**
   a) synchronization bytes
   b) addresses
   c) frame identifier
   **d) all of the mentioned**

14. **Automatic repeat request error management mechanism is provided by _____**
   **a) logical link control sublayer**
   b) media access control sublayer
   c) network interface control sublayer
   d) application access control sublayer

15. **When 2 or more bits in a data unit has been changed during the transmission, the error is called _____**
   a) random error
   **b) burst error**
   c) inverted error
   d) double error

16. **Which of the following is a data link protocol?**
   a) ethernet
   b) point to point protocol
   c) hdlc
   **d) all of the mentioned**

17. **Which of the following is the multiple access protocol for channel access control?**
    a) CSMA/CD
    b) CSMA/CA
    **c) Both CSMA/CD & CSMA/CA**
    d) HDLC

18. **The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called _____**
    **a) piggybacking**
    b) cyclic redundancy check
    c) fletcher's checksum
    d) parity check

19. **The network layer is concerned with _____ of data.**
    a) bits
    **b) frames**
    c) packets
    d) bytes

20. **Which one of the following is not a function of network layer?**
    a) routing
    b) inter-networking
    c) congestion control
    **d) error control**

21. **A 4 byte IP address consists of _____**
    a) only network address
    b) only host address
    **c) network address & host address**
    d) network address & MAC address

22. **In virtual circuit network each packet contains _____**
    a) full source and destination address
    **b) a short VC number**
    c) only source address
    d) only destination address

23. **Which of the following routing algorithms can be used for network layer design?**
    a) shortest path algorithm
    b) distance vector routing
    c) link state routing
    **d) all of the mentioned**

24. **Which of the following is not correct in relation to multi-destination routing?**
    a) is same as broadcast routing
    b) contains the list of all destinations
    **c) data is not sent by packets**
    d) there are multiple receivers

**25. A subset of a network that includes all the routers but contains no loops is called _____**
   **a) spanning tree**
   b) spider structure
   c) spider tree
   d) special tree

**26. Which one of the following algorithm is not used for congestion control?**
   a) traffic aware routing
   b) admission control
   c) load shedding
   **d) routing information protocol**

**27. The network layer protocol for internet is _____**
   a) ethernet
   **b) internet protocol**
   c) hypertext transfer protocol
   d) file transfer protocol

**28. ICMP is primarily used for _____**
   **a) error and diagnostic functions**
   b) addressing
   c) forwarding
   d) routing

**29. Transport layer aggregates data from different applications into a single stream before passing it to _____**
   **a) network layer**
   b) data link layer
   c) application layer
   d) physical layer

**30. User datagram protocol is called connectionless because _____**
   **a) all UDP packets are treated independently by transport layer**
   b) it sends data as a stream of related packets
   c) it is received in the same order as sent order
   d) it sends data very quickly

**31. Transmission control protocol _____**
   a) is a connection-oriented protocol
   b) uses a three way handshake to establish a connection
   c) receives data from application as a single stream
   **d) all of the mentioned**

**32. An endpoint of an inter-process communication flow across a computer network is called _____**
   **a) socket**
   b) pipe
   c) port
   d) machine

**33. Socket-style API for windows is called _____**
   a) wsock
   **b) winsock**
   c) wins
   d) sockwi

**34. Which one of the following is a version of UDP with congestion control?**
   **a) datagram congestion control protocol**
   b) stream control transmission protocol
   c) structured stream transport
   d) user congestion control protocol

**35. A _____ is a TCP name for a transport service access point.**
   **a) port**
   b) pipe
   c) node
   d) protocol

**36. Transport layer protocols deals with _____**
   a) application to application communication
   **b) process to process communication**
   c) node to node communication
   d) man to man communication

**37. Which of the following is a transport layer protocol?**
   **a) stream control transmission protocol**
   b) internet control message protocol
   c) neighbor discovery protocol
   d) dynamic host configuration protocol

**38. Which network topology requires a central controller or hub?**
   **a) Star**
   b) Mesh
   c) Ring
   d) Bus

**39. _____ topology requires a multipoint connection.**
   a) Star
   b) Mesh
   c) Ring
   **d) Bus**

**40. Data communication system spanning states, countries, or the whole world is _____**
   a) LAN
   **b) WAN**
   c) MAN
   d) PAN

**41. Data communication system within a building or campus is_____**
   **a) LAN**
   b) WAN
   c) MAN
   d) PAN

**42. In TDM, slots are further divided into _____**
a) Seconds
**b) Frames**
c) Packets
d) Bits

**43. _____ is the multiplexing technique that shifts each signal to a different carrier frequency.**
**a) FDM**
b) TDM
c) Both FDM & TDM
d) PDM

**44. Multiplexing is used in _____**
**a) Packet switching**
b) Circuit switching
c) Data switching
d) Packet & Circuit switching

**45. Which multiplexing technique used to transmit digital signals?**
a) FDM
**b) TDM**
c) WDM
d) FDM & WDM

**46. _____ allows LAN users to share computer programs and data.**
a) Communication server
**b) Print server**
c) File server
d) Network

**47. A standalone program that has been modified to work on a LAN by including concurrency controls such as file and record locking is an example of _____**
**a) LAN intrinsic software**
b) LAN aware software
c) Groupware
d) LAN ignorant software

**48. The _____ portion of LAN management software restricts access, records user activities and audit data, etc.**
a) Configuration management
**b) Security management**
c) Performance management
d) Recovery management

**49. What is the max length of the Shielded twisted pair cable?**
a) 100 ft
b) 200 ft
**c) 100 m**
d) 200 m

50. **What is the max data transfer rate for optical fiber cable?**
    a) 10 Mbps
    b) 100 Mbps
    c) 1000 Mbps
    **d) 10000 Mbps**

51. **Which of the following architecture uses the CSMA/CD access method?**
    a) ARC net
    **b) Ethernet**
    c) Router
    d) STP server

52. **Which of the following is false with respect to TCP?**
    a) Connection-oriented
    b) Process-to-process
    c) Transport layer protocol
    **d) Unreliable**

53. **In TCP, sending and receiving data is done as _____**
    **a) Stream of bytes**
    b) Sequence of characters
    c) Lines of data
    d) Packets

54. **TCP process may not write and read data at the same speed.** So we need _____ for **storage**.
    a) Packets
    **b) Buffers**
    c) Segments
    d) Stacks

55. **TCP groups a number of bytes together into a packet called _____**
    a) Packet
    b) Buffer
    **c) Segment**
    d) Stack

56. **Communication offered by TCP is _____**
    **a) Full-duplex**
    b) Half-duplex
    c) Semi-duplex
    d) Byte by byte

57. **To achieve reliable transport in TCP, _____ is used to check the safe and sound arrival of data.**
    a) Packet
    b) Buffer
    c) Segment
    **d) Acknowledgment**

58. In segment header, sequence number and acknowledgement number fields refer to _____
   **a) Byte number**
   b) Buffer number
   c) Segment number
   d) Acknowledgment

59. **Suppose a TCP connection is transferring a file of 1000 bytes.** The first byte is numbered 10001. **What is the sequence number of the segment if all data is sent in only one segment?**
   a) 10000
   **b) 10001**
   c) 12001
   d) 11001

60. **Bytes of data being transferred in each connection are numbered by TCP. These numbers start with a _____**
   a) Fixed number
   b) Random sequence of 0's and 1's
   c) One
   **d) Sequence of zero's and one's**

61. **The value of acknowledgement field in a segment defines _____**
   a) sequence number of the byte received previously
   b) total number of bytes to receive
   **c) sequence number of the next byte to be received**
   d) sequence of zeros and ones

62. **Which of the following is false with respect to UDP?**
   **a) Connection-oriented**
   b) Unreliable
   c) Transport layer protocol
   d) Low overhead

63. **Return value of the UDP port "Chargen" is _____**
   **a) String of characters**
   b) String of integers
   c) Array of characters with integers
   d) Array of zero's and one's

64. **Beyond IP, UDP provides additional services such as _____**
   a) Routing and switching
   b) Sending and receiving of packets
   c) Multiplexing and demultiplexing
   **d) Demultiplexing and error checking**

65. **What is the main advantage of UDP?**
   a) More overload
   b) Reliable
   **c) Low overhead**
   d) Fast

**66.** **Port number used by Network Time Protocol (NTP) with UDP is _____**
a) 161
**b) 123**
c) 162
d) 124

**67.** **What is the header size of a UDP packet?**
**a) 8 bytes**
b) 8 bits
c) 16 bytes
d) 124 bytes

**68.** **The port number is "ephemeral port number", if the source host is _____**
a) NTP
b) Echo
c) Server
**d) Client**

**69.** **"Total length" field in UDP packet header is the length of _____**
a) Only UDP header
b) Only data
c) Only checksum
**d) UDP header plus data**

**70.** **Which is the correct expression for the length of UDP datagram?**
**a) UDP length = IP length – IP header's length**
b) UDP length = UDP length – UDP header's length
c) UDP length = IP length + IP header's length
d) UDP length = UDP length + UDP header's length

**71.** **The _____ field is used to detect errors over the entire user datagram.**
a) udp header
**b) checksum**
c) source port
d) destination port

**72.** **Which methods are commonly used in Server Socket class?**
a) Public Output Stream get Output Stream ()
**b) Public Socket accept ()**
c) Public synchronized void close ()
d) Public void connect ()

**73.** **Which constructor of Datagram Socket class is used to create a datagram socket and binds it with the given Port Number?**
a) Datagram Socket(int port)
**b) Datagram Socket(int port, Int Address address)**
c) Datagram Socket()
d) Datagram Socket(int address)

**74.  The client in socket programming must know which information?**
   a) IP address of Server
   b) Port number
   **c) Both IP address of Server & Port number**
   d) Only its own IP address

**75. The URL Connection class can be used to read and write data to the specified resource that is referred by the URL.**
   **a) True**
   b) False

**76. Datagram is basically just a piece of information but there is no guarantee of its content, arrival or arrival time.**
   **a) True**
   b) False

**77.  TCP, FTP, Telnet, SMTP, POP etc.** are examples of _____
   a) Socket
   b) IP Address
   **c) Protocol**
   d) MAC Address

**78. What does the java.net.InetAddress class represent?**
   a) Socket
   **b) IP Address**
   c) Protocol
   d) MAC Address

**79.  The flush () method of Print Stream class flushes any un-cleared buffers in the memory.**
   **a) True**
   b) False

**80.  Which classes are used for connection-less socket programming?**
   a) Datagram Socket
   b) Datagram Packet
   **c) Both Datagram Socket & Datagram Packet**
   d) Server Socket

**81.  In Inet Address class, which method returns the host name of the IP Address?**
   **a) Public String get Hostname()**
   b) Public String getHostAddress()
   c) Public static InetAddress get Localhost()
   d) Public getByName()

**82. What is the access point (AP) in a wireless LAN?**
   **a) device that allows wireless devices to connect to a wired network**
   b) wireless devices itself
   c) both device that allows wireless devices to connect to a wired network and wireless devices itself
   d) all the nodes in the network

**83. In wireless ad-hoc network _____**
   **a) access point is not required**
   b) access point is must
   c) nodes are not required
   d) all nodes are access points

**84. Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?**
   a) CDMA
   **b) CSMA/CA**
   c) ALOHA
   d) CSMA/CD

**85. In wireless distribution system _____**
   **a) multiple access point are inter-connected with each other**
   b) there is no access point
   c) only one access point exists
   d) access points are not required

**86. A wireless network interface controller can work in _____**
   **a) infrastructure mode**
   b) ad-hoc mode
   **c) both infrastructure mode and ad-hoc mode**
   d) WDS mode

**87. In wireless network an extended service set is a set of _____**
   **a) connected basic service sets**
   b) all stations
   c) all access points
   d) connected access points

**88. Mostly _____ is used in wireless LAN.**
   a) time division multiplexing
   **b) orthogonal frequency division multiplexing**
   c) space division multiplexing
   d) channel division multiplexing

**89. Which one of the following event is not possible in wireless LAN?**
   **a) collision detection**
   b) acknowledgement of data frames
   c) multi-mode data transmission
   d) connection to wired networks

**90. What is Wired Equivalent Privacy (WEP)?**
   a) security algorithm for ethernet
   **b) security algorithm for wireless networks**
   c) security algorithm for usb communication
   d) security algorithm for emails

**91. What is WPA?**
   **a) wi-fi protected access**
   b) wired protected access
   c) wired process access
   d) wi-fi process access

**92. What is internet?**
   a) a single network
   **b) a vast collection of different networks**
   c) interconnection of local area networks
   d) interconnection of wide area networks

**93. Internet access by transmitting digital data over the wires of a local telephone network is provided by _____**
   a) leased line
   **b) digital subscriber line**
   c) digital signal line
   d) digital leased line

**94. ISP exchanges internet traffic between their networks by _____**
   **a) internet exchange point**
   b) subscriber end point
   c) isp end point
   d) internet end point

**95. Which of the following protocols is used in the internet?**
   a) HTTP
   b) DHCP
   c) DNS
   **d) DNS, HTTP and DNS**

**96. Internet works on _____**
   **a) packet switching**
   b) circuit switching
   c) both packet switching and circuit switching
   d) data switching

**97. Which one of the following is not an application layer protocol used in internet?**
   a) remote procedure call
   b) internet relay chat
   **c) resource reservation protocol**
   d) local procedure call

**98. Which protocol assigns IP address to the client connected in the internet?**
   **a) DHCP**
   b) IP
   c) RPC
   d) RSVP

**99. Which one of the following is not used in media access control?**
   a) ethernet
   b) digital subscriber line
   c) fiber distributed data interface
   **d) packet switching**

**100.** An interconnected collection of piconet is called _____
   **a) scatternet**
   b) micronet
   c) mininet
   d) multinet

**101.** In a piconet, there can be up to _____ parked nodes in the network.
   a) 63
   b) 127
   **c) 255**
   d) 511

**102.** Bluetooth uses _____
   **a) frequency hopping spread spectrum**
   b) orthogonal frequency division multiplexing
   c) time division multiplexing
   d) channel division multiplexing

**103.** Unauthorised access of information from a wireless device through a bluetooth connection is called _____
   a) bluemaking
   **b) bluesnarfing**
   c) bluestring
   d) bluescoping

**104.** What is A2DP (advanced audio distribution profile)?
   **a) a bluetooth profile for streaming audio**
   b) a bluetooth profile for streaming video
   c) a bluetooth profile for security
   d) a bluetooth profile for file management

**105.** In a piconet, one master device _____
   a) can not be slave
   **b) can be slave in another piconet**
   c) can be slave in the same piconet
   d) can be master in another piconet

**106.** Bluetooth transceiver devices operate in _____ band.
   **a) 2.4 GHz ISM**
   b) 2.5 GHz ISM
   c) 2.6 GHz ISM
   d) 2.7 GHz ISM

**107.** Bluetooth supports _____
   a) point-to-point connections
   b) point-to-multipoint connection
   **c) both point-to-point connections and point-to-multipoint connection**
   d) multipoint to point connection

**108.** A scatternet can have maximum _____
   **a) 10 piconets**
   b) 20 piconets
   c) 30 piconets
   d) 40 piconets