**Multiple Choice. (70 pts.)**

1. A port address in TCP/IP is \_\_\_\_\_\_ bits long.
   1. 32
   2. 48
   3. 16
   4. none of the above
2. A television broadcast is an example of \_\_\_\_\_\_\_ transmission.
   1. simplex
   2. half-duplex
   3. full-duplex
   4. automatic
3. A \_\_\_\_\_\_\_ connection provides a dedicated link between two devices.
   1. point-to-point
   2. multipoint
   3. primary
   4. secondary
4. An unauthorized user is a network \_\_\_\_\_\_\_ issue.
   1. Performance
   2. Reliability
   3. Security
   4. All the answers are correct.
5. As the data packet moves from the upper to the lower layers, headers are \_\_\_\_\_\_\_.
   1. Added
   2. Removed
   3. Rearranged
   4. Modified
6. Communication between a computer and a keyboard involves \_\_\_\_\_\_\_\_\_\_\_\_\_\_ transmission.
   1. simplex
   2. half-duplex
   3. full-duplex
   4. automatic
7. Data flow between two devices can occur in a \_\_\_\_\_\_\_ way.
   1. simplex
   2. half-duplex
   3. full-duplex
   4. All the answers are correct.
8. Devices may be arranged in a \_\_\_\_\_ topology.
   1. mesh
   2. ring
   3. bus
   4. All the answers are correct.
9. Ethernet uses a \_\_\_\_\_\_ physical address that is imprinted on the network interface card (NIC).
   1. 32-bit
   2. 64-bit
   3. 6-byte
   4. none of the above
10. Frequency of failure and network recovery time after a failure are measures of the \_\_\_\_\_\_\_ of a network.
    1. Performance
    2. Reliability
    3. Security
    4. Feasibility
11. ICMPv6 includes \_\_\_\_\_\_\_.
    1. IGMP
    2. ARP
    3. RARP
    4. IGMP and ARP
12. In a \_\_\_\_\_\_ connection, two and only two devices are connected by a dedicated link.
    1. multipoint
    2. point-to-point
    3. multipoint and point-to-point
    4. none of the above
13. In a \_\_\_\_\_\_\_ connection, more than two devices can share a single link.
    1. point-to-point
    2. multipoint
    3. primary
    4. secondary
14. In a \_\_\_\_\_\_\_\_ connection, three or more devices share a link.
    1. multipoint
    2. point-to-point
    3. multipoint and point-to-point
    4. none of the above
15. In the original ARPANET, \_\_\_\_\_\_\_ were directly connected.
    1. IMPs
    2. host computers
    3. networks
    4. routers
16. In the OSI model, as a data packet moves from the lower to the upper layers, headers are \_\_\_\_\_\_\_.
    1. added
    2. removed
    3. rearranged
    4. modified
17. In the OSI model, encryption and decryption are functions of the \_\_\_\_\_\_\_\_ layer.
    1. transport
    2. session
    3. presentation
    4. application
18. In the OSI model, what is the main function of the transport layer?
    1. node-to-node delivery
    2. process-to-process message delivery
    3. synchronization
    4. updating and maintenance of routing tables
19. In the OSI model, when data is transmitted from device A to device B, the header from A's layer 5 is read by B's \_\_\_\_\_\_\_ layer.
    1. physical
    2. transport
    3. session
    4. presentation
20. In \_\_\_\_\_\_\_ transmission, the channel capacity is shared by both communicating devices at all times.
    1. simplex
    2. half-duplex
    3. full-duplex
    4. half-simplex
21. IPv6 has \_\_\_\_\_\_\_ -bit addresses.
    1. 32
    2. 64
    3. 128
    4. variable
22. Layer 2 lies between the physical layer and the \_\_\_\_\_\_\_ layer.
    1. Network
    2. Data link
    3. Transport
    4. None of the above
23. Mail services are available to network users through the \_\_\_\_\_\_\_ layer.
    1. Data link
    2. Physical
    3. Transport
    4. Application
24. TCP/IP is a \_\_\_\_\_\_ hierarchical protocol suite developed \_\_\_\_ the OSI model.
    1. seven-layer; before
    2. five-layer; before
    3. six-layer; before
    4. five-layer; after
25. The information to be communicated in a data communications system is the \_\_\_\_\_\_\_.
    1. Medium
    2. Protocol
    3. Message
    4. Transmission
26. The Internet model consists of \_\_\_\_\_\_\_ layers.
    1. Three
    2. Five
    3. Seven
    4. Eight
27. The Internetworking Protocol (IP) is a \_\_\_\_\_\_\_\_ protocol.
    1. reliable
    2. connection-oriented
    3. both a and b
    4. none of the above
28. The OSI model consists of \_\_\_\_\_\_\_ layers.
    1. three
    2. five
    3. seven
    4. eight
29. The physical layer is concerned with the movement of \_\_\_\_\_\_\_ over the physical medium.
    1. programs
    2. dialogs
    3. protocols
    4. bits
30. The physical, data link, and network layers are the \_\_\_\_\_\_ support layers.
    1. user
    2. network
    3. both user and network
    4. neither user nor network
31. The process-to-process delivery of the entire message is the responsibility of the \_\_\_\_\_\_\_ layer.
    1. Network
    2. Transport
    3. Application
    4. Physical
32. The session, presentation, and application layers are the \_\_\_\_ support layers.
    1. user
    2. network
    3. both user and network
    4. neither user nor network
33. The seven-layer \_\_\_\_\_ model provides guidelines for the development of universally compatible networking protocols.
    1. OSI
    2. ISO
    3. IEEE
    4. none of the above
34. The TCP/IP \_\_\_\_\_\_\_ layer is equivalent to the combined session, presentation, and application layers of the OSI model.
    1. application
    2. network
    3. data link
    4. physical
35. The \_\_\_\_ address uniquely defines a host on the Internet.
    1. physical
    2. IP
    3. port
    4. specific
36. The \_\_\_\_ created a model called the Open Systems Interconnection, which allows diverse systems to communicate.
    1. OSI
    2. ISO
    3. IEEE
    4. none of the above
37. The \_\_\_\_\_\_ layer adds a header to the packet coming from the upper layer that includes the logical addresses of the sender and receiver.
    1. physical
    2. data link
    3. network
    4. none of the above
38. The \_\_\_\_\_\_ layer establishes, maintains, and synchronizes the interactions between communicating devices.
    1. transport
    2. network
    3. session
    4. physical
39. The \_\_\_\_\_\_ layer is responsible for moving frames from one hop (node) to the next.
    1. physical
    2. data link
    3. transport
    4. none of the above
40. The \_\_\_\_\_\_ layer is responsible for the source-to-destination delivery of a packet across multiple network links.
    1. transport
    2. network
    3. data link
    4. physical
41. The \_\_\_\_\_\_\_ is the physical path over which a message travels.
    1. Protocol
    2. Medium
    3. Signal
    4. All the answers are correct.
42. The \_\_\_\_\_\_\_ layer changes bits into electromagnetic signals.
    1. Physical
    2. Data link
    3. Transport
    4. None of the above
43. The \_\_\_\_\_\_\_ layer coordinates the functions required to transmit a bit stream over a physical medium.
    1. transport
    2. network
    3. data link
    4. physical
44. The \_\_\_\_\_\_\_ layer ensures interoperability between communicating devices through transformation of data into a mutually agreed upon format.
    1. transport
    2. network
    3. data link
    4. presentation
45. The \_\_\_\_\_\_\_ layer is responsible for delivering data units from one station to the next without errors.
    1. transport
    2. network
    3. data link
    4. physical
46. The \_\_\_\_\_\_\_ layer is the layer closest to the transmission medium.
    1. Physical
    2. Data link
    3. Network
    4. Transport
47. The \_\_\_\_\_\_\_ layer lies between the network layer and the application layer.
    1. Physical
    2. Data link
    3. Transport
    4. None of the above
48. The \_\_\_\_\_\_\_ layer links the network support layers and the user support layers.
    1. transport
    2. network
    3. data link
    4. session
49. The \_\_\_\_\_\_\_ model shows how the network functions of a computer ought to be organized.
    1. CCITT
    2. OSI
    3. ISO
    4. ANSI
50. The \_\_\_\_\_\_\_\_ address, also known as the link address, is the address of a node as defined by its LAN or WAN.
    1. port
    2. physical
    3. logical
    4. none of the above
51. The \_\_\_\_\_\_\_\_ address, also known as the link address, is the address of a node as defined by its LAN or WAN.
    1. physical
    2. IP
    3. port
    4. specific
52. The \_\_\_\_\_\_\_\_ layer is responsible for the process-to-process delivery of the entire message.
    1. transport
    2. network
    3. data link
    4. physical
53. The \_\_\_\_\_\_\_\_\_ layer enables the users to access the network.
    1. transport
    2. application
    3. data link
    4. physical
54. The\_\_\_\_\_ address identifies a process on a host.
    1. physical
    2. IP
    3. port
    4. specific
55. The\_\_\_\_\_\_\_\_\_ layer is responsible for the delivery of a message from one process to another.
    1. physical
    2. transport
    3. network
    4. none of the above
56. This was the first network.
    1. CSNET
    2. NSFNET
    3. ANSNET
    4. ARPANET
57. To deliver a message to the correct application program running on a host, the \_\_\_\_\_\_\_ address must be consulted.
    1. port
    2. IP
    3. physical
    4. none of the above
58. When a host on network A sends a message to a host on network B, which address does the router look at?
    1. port
    2. logical
    3. physical
    4. none of the above
59. When data are transmitted from device A to device B, the header from A's layer 4 is read by B's \_\_\_\_\_\_\_ layer.
    1. Physical
    2. Transport
    3. Application
    4. None of the above
60. Which agency developed standards for physical connection interfaces and electronic signaling specifications?
    1. EIA
    2. ITU-T
    3. ANSI
    4. ISO
61. Which of the following is an application layer service?
    1. Remote log-in
    2. File transfer and access
    3. Mail service
    4. All the answers are correct.
62. Which organization has authority over interstate and international commerce in the communications field?
    1. ITU-T
    2. IEEE
    3. FCC
    4. ISOC
63. Which topology requires a central controller or hub?
    1. Mesh
    2. Star
    3. Bus
    4. Ring
64. Which topology requires a multipoint connection?
    1. Mesh
    2. Star
    3. Bus
    4. Ring
65. Why was the OSI model developed?
    1. Manufacturers disliked the TCP/IP protocol suite.
    2. The rate of data transfer was increasing exponentially
    3. Standards were needed to allow any two systems to communicate
    4. None of the above
66. \_\_\_\_\_ refers to two characteristics when data should be sent and how fast it can be sent.
    1. Semantics
    2. Syntax
    3. Timing
    4. none of the above
67. \_\_\_\_\_\_ refers to the physical or logical arrangement of a network.
    1. Data flow
    2. Mode of operation
    3. Topology
    4. None of the above
68. \_\_\_\_\_\_\_ are special-interest groups that quickly test, evaluate, and standardize new technologies.
    1. Forums
    2. Regulatory agencies
    3. Standards organizations
    4. All the answers are correct.
69. \_\_\_\_\_\_\_ is a process-to-process protocol that adds only port addresses, checksum error control, and length information to the data from the upper layer.
    1. TCP
    2. UDP
    3. IP
    4. none of the above
70. \_\_\_\_\_\_\_ is the protocol suite for the current Internet.
    1. TCP/IP
    2. NCP
    3. UNIX
    4. ACM