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Indicate whether the statement is true or false.

1. For each network reference model layer, the software handles packages of data, which are called packet defined units.

a. True
b. False

2. A divide and conquer approach permits concerns related to networking hardware to be completely separated from those related to networking software.

a. True
b. False

3. The entire IPv6 address space is now occupied.

a. True
b. False

4. The original ARPANET was a packet-switched network.

a. True
b. False

5. The Session layer is equipped to request retransmission of all erroneous or missing PDUs when reassembly is underway, so that it can guarantee reliable delivery of data from sender to receiver.

a. True
b. False

Indicate the answer choice that best completes the statement or answers the question.

6. Which OSI model layer handles the conversion of outgoing data from bits that computers use in the signals that networks use?

a. Data Link
b. Physical
c. Network
d. Presentation

7. Which of the following is a task handled at the Network layer?

a. recognizes and uses multiple routes
b. manages point-to-point transmission across the networking medium
c. ensures reliable end-to-end transmission of PDUs
d. maintains ongoing communications between a sender and a receiver

8. Which organization is responsible for creating and managing RFCs, in which the rules and formats for all related protocols and services are described?

a. ICANN

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b. Internet Engineering Task Force
c. Internet Architecture Board
d. Internet Society

9. In which layer are ongoing communications between a sender and a receiver set up, maintained, and then terminated, or torn down, as needed?
a. Session layer
b. Physical layer
c. Network layer
d. Presentation layer

10. Which layer defines an interface that applications can use to request network services, rather than referring directly to applications themselves?
a. Application layer
b. Physical layer
c. Session layer
d. Presentation layer

11. Which part of a PDU is most likely to provide data integrity checks for the data portion of the PDU?
a. frame identifier
b. trailer
c. sequence number
d. port field

12. Which element of a protocol analyzer is required to capture unicast packets sent to other devices?
a. promiscuous mode
b. packet filter
c. trace buffer
d. decoder

13. Which layer enables reliable transmission of data through the Physical layer at the sending end, and checks such reliability upon reception at the receiving end?
a. Data Link layer
b. Physical layer
c. Network layer
d. Presentation layer

14. Which layer includes the physical transmission medium (cables or wireless media) that any network must use to send and receive the signals that constitute the physical expression of networked communications?
a. Data Link
b. Physical

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c. Network
d. Transport

15. What does TCP/IP use to identify Application-layer protocols?
a. port numbers
b. protocol numbers
c. frame values
d. datagram IDs

16. Which process taps into the network communications system and captures packets that cross the network?
a. Payload identification
b. Multiplexing/Demultiplexing
c. PDU Encapsulation
d. Protocol analysis

17. What does RMON use to collect traffic data at a remote switch and send the data to a management device?
a. Simple Network Management Protocol
b. User Datagram Protocol
c. Virtual Private Network
d. Wide Area Information Service

18. What are TCP/IP application processes such as FTP and SMTP sometimes called?
a. link layer protocols
b. network hosts
c. network services
d. protocol IDs

19. In which layer are notions of network location addressed and the intricacies of directing a PDU from sender to receiver handled?
a. Data Link layer
b. Application layer
c. Network layer
d. Transport layer

20. Which of the following is a TCP/IP model Network Access layer protocol?
a. TCP
b. UDP
c. HDLC
d. DHCP

21. Which term refers to a single logical network composed of multiple physical networks, which may all be at

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a single physical location, or spread among multiple physical locations?

a. internetwork
b. session
c. connection-oriented
d. checksum

22. What are applied to the packets that are captured into the trace buffer so you can see the packets in a readable format?

a. Ports
b. Runts
c. Filters
d. Decodes

23. Which layer of the OSI model works with frames?

a. Data Link
b. Physical
c. Network
d. Presentation

24. Which of the following is a TCP/IP model Transport layer protocol?

a. IP
b. Frame Relay
c. DNS
d. TCP

25. Which layer manages the way data is presented to the network (on its way down the protocol stack), and to a specific machine/application combination (on its way up the protocol stack)?

a. Session
b. Physical
c. Network
d. Presentation

26. What do most analyzers have that indicate unusual network events or errors?

a. ports
b. alarms
c. sockets
d. sessions

Enter the appropriate word(s) to complete the statement.

27. The _____ layer also coordinates the sending and receiving of signals across the networking medium, and determines what kinds of cables, connectors, and network interfaces must be used to

access a specific area on a network.

28. The primary function of the _____ layer is to provide a globally unique address to every host on the Internet and paths to and from hosts.

29. _____ involves cutting up a big message into a numbered sequence of chunks, called segments, in which each chunk represents the maximum data payload that the network media can carry between sender and receiver.

30. The Session layer includes mechanisms to maintain reliable ongoing conversations, called _____.

31. The most important TCP/IP Network Access layer protocol is _____.

Match each item with a statement below.

a. Alarm
b. Anycast packet
c. Checkpoint
d. Data link layer
e. Frame
f. Packet
g. Runt
h. Datagram
i. Host

32. notification of events or errors on the network

33. an IPv6 multicast method that permits multiple recipients to be designated for a single message

34. a point in time at which all system state and information is captured and saved

35. manages point-to-point transmission across the networking medium, from one computer to another on a single logical or physical cable segment

36. Data Link layer PDU

37. the PDU associated with the Network layer

38. undersized packet

39. PDU at the TCP/IP Network Access Layer

40. device that operate on the Internet

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41. Briefly describe the three primary tasks that the Internet layer handles for TCP/IP.

42. The reference model described in ISO Standard 7498 breaks network communication into seven layers. List each layer from top to bottom.

43. Briefly discuss two elements that TCP/IP services depend on to operate.

44. List five basic elements found on most protocol analyzers.

45. Provide brief descriptions of the following protocols: High-level Data Link Control (HDLC) protocol and frame relay.

46. What is the difference between the Open Shortest Path First protocol and the Border Gateway Protocol?

47. Briefly describe three options for analyzing switched networks.

48. What is the purpose of the following protocols: Internet Protocol, Internet Control Message Protocol, and Address Resolution Protocol.

49. What is the purpose of the Internet Architecture Board?

50. What is the purpose of the Internet Engineering Task Force (IETF)?

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Answer Key

1. False

2. True

3. False

4. True

5. False

6. b

7. a

8. b

9. a

10. a

11. b

12. a

13. a

14. b

15. a

16. d

17. a

18. c

19. c

20. c

21. a

22. d

23. a

24. d

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25. d

26. b

27. Physical

28. Network

29. Segmentation

30. checkpoints

31. PPP

32. a

33. b

34. c

35. d

36. e

37. f

38. g

39. h

40. i

41. MTU fragmentation:When a route carries data from one type of network to another, the largest chunk of data that the network can carry, an MTU, can vary. When data moves from a medium that supports a larger MTU to a medium that supports a smaller MTU, that data must be reduced to smaller pieces to match the smaller of the two MTUs involved.
Addressing:This defines the mechanism whereby all network interfaces on a TCP/IP network must be associated with specific, unique bit patterns that identify each interface individually, and also identify the network (or even network locale) to which that interface belongs.
Routing:This defines the mechanism that forwards packets from sender to receiver, in which numerous intermediate relays may be involved in achieving delivery from sender to receiver.

42. The seven layers, from top to bottom, are:
Application layer
Presentation layer
Session layer
Transport layer
Network layer
Data Link layer
Physical layer

43. In UNIX terminology, a special "listener process," called a daemon, operates on a server to handle incoming user requests for specific services. On Windows Server 2008, a process called INETINFO.EXE appears in the Task Manager's

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Processes tab whenever the Web server, IIS, or FTP server is running.
Each TCP/IP service has an associated port address that uses a 16-bit number to identify a specific process or service. Addresses in the range from 0 to 1024 are often called well-known port addresses and associate a specific port address with a specific service.

44. The basic elements are:
Promiscuous mode card and driver
Packet filters
Trace buffer
Decodes
Alarms
Statistics

45. High-level Data Link Control (HDLC) protocol: Based on IBM's original SNA Data Link Control (SDLC) protocol. HDLC uses data frames to manage network links and data transmission.
Frame relay: A telecommunications service designed to support intermittent data transmission between local area networks and wide area network end points. Frame relay uses data frames to manage network links and data transmission.

46. Open Shortest Path First (OSPF): Defines a widely used, link-state routing protocol for local or interior routing regions within local internetworks.
Border Gateway Protocol (BGP): Defines a widely used routing protocol that connects to common Internet backbones, or other routing domains within the Internet where multiple parties jointly share responsibility for managing traffic.

47. Hubbing out: By placing a hub between a device of interest (such as a server) and the switch, and connecting the analyzer to the hub, you can view all traffic to and from the server.
Port redirection: Many switches can be configured to redirect (actually, to copy) the packets traveling through one port to another port. By placing your analyzer on the destination port, you can listen in on all the conversations that cross the network through the port of interest.
Remote Monitoring (RMON): Uses Simple Network Management Protocol (SNMP) to collect traffic data at a remote switch and send the data to a management device.

48. Internet Protocol (IP): Routes packets from sender to receiver.
Internet Control Message Protocol (ICMP): Handles information about IP-based routing and network behavior, especially as they relate to "traffic conditions" and errors.
Address Resolution Protocol (ARP): Address Resolution Protocol (ARP) converts between numeric IP network addresses and Media Access Control (MAC) addresses on a specific cable segment (always used for the final step of packet delivery).Routing:This defines the mechanism that forwards packets from sender to receiver, in which numerous intermediate relays may be involved in achieving delivery from sender to receiver.

49. The Internet Architecture Board (IAB), a.k.a. Internet Activities Board, is the arm of the ISOC that is the parent organization for the standards-making and research groups that handle current and future Internet technologies, protocols, and research. As such, the IAB's most important task is to provide oversight for the architecture for all Internet protocols and procedures, and to supply editorial oversight over the documents known as Requests for Comments (RFCs), wherein Internet Standards are stated, and so forth.

50. The Internet Engineering Task Force (IETF) is the group responsible for drafting, testing, proposing, and maintaining official Internet Standards, in the form of RFCs, through the agencies of multiple working groups under its purview. The IETF and the IAB use a process accurately described as "rough consensus" to create Internet Standards. This means that all participants in the standards-making process, a type of peer review process, must more or less agree before a standard can be proposed, drafted, or approved. Sometimes that consensus can be pretty rough indeed! For more information about the IETF, visit www.ietf.org.