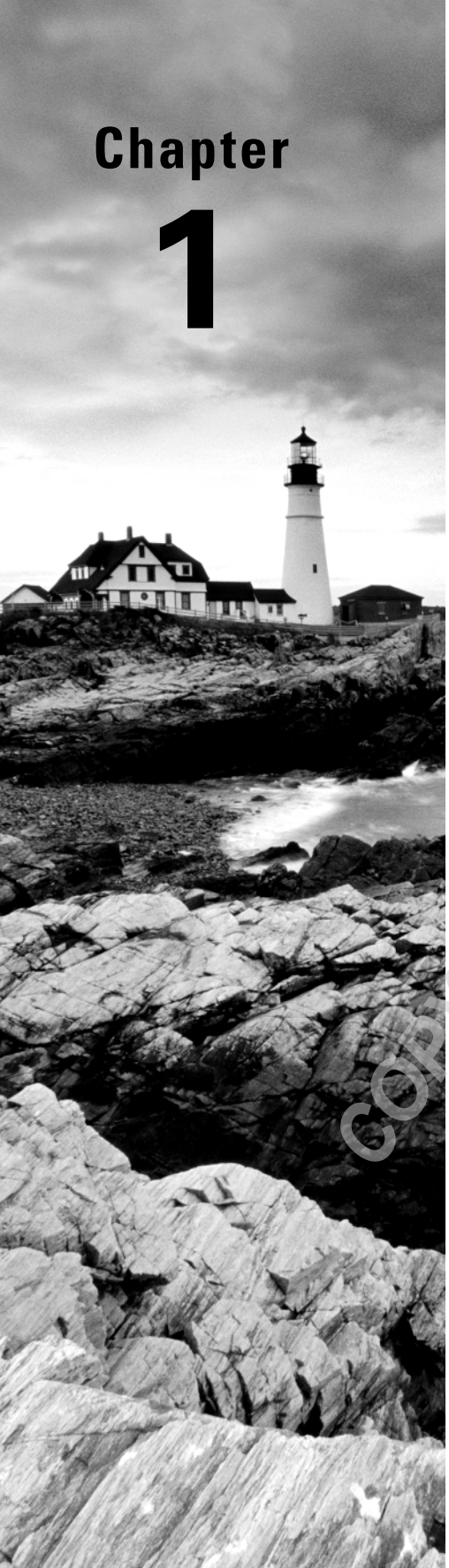

Chapter 1

Networking Concepts

THE COMPTIA NETWORK+ EXAM N10-007 TOPICS COVERED IN THIS CHAPTER INCLUDE THE FOLLOWING:

✓ **1.1 Explain the purposes and uses of ports and protocols**

- Protocols and Ports
  - SSH 22
  - DNS 53
  - SMTP 25
  - SFTP 22
  - FTP 20, 21
  - TFTP 69
  - TELNET 23
  - DHCP 67, 68
  - HTTP 80
  - HTTPS 443
  - SNMP 161
  - RDP 3389
  - NTP 123
  - SIP 5060, 5061
  - SMB 445
  - POP 110
  - IMAP 143
  - LDAP 389
  - LDAPS 636
  - H.323 1720
- Protocol Types
  - ICMP
  - UDP

- TCP
- IP

- Connection-oriented vs. connectionless

✓ **1.2 Explain devices, applications, protocols and services at their appropriate OSI layers**

- Layer 1 – Physical
- Layer 2 – Data link
- Layer 3 – Network
- Layer 4 – Transport
- Layer 5 – Session
- Layer 6 – Presentation
- Layer 7 – Application

✓ **1.3 Explain the concepts and characteristics of routing and switching**

- Properties of network traffic
  - Broadcast domains
  - CSMA/CD
  - CSMA/CA
  - Collision domains
  - Protocol data units
  - MTU
  - Broadcast
  - Multicast
  - Unicast
- Segmentation and interface properties
  - VLANs
  - Trunking (802.1q)
  - Tagging and untagging ports
  - Port mirroring
  - Switching loops/spanning tree

- PoE and PoE+ (802.3af, 802.3at)
- DMZ
- MAC address table
- ARP table

- Routing
  - Routing protocols (IPv4 and IPv6)
    - Distance-vector routing protocols
      - RIP
      - EIGRP
    - Link-state routing protocols
      - OSPF
    - Hybrid
      - BGP
  - Routing types
    - Static
    - Dynamic
    - Default
- IPv6 concepts
  - Addressing
  - Tunneling
  - Dual stack
  - Router advertisement
  - Neighbor discovery
- Performance concepts
  - Traffic shaping
  - QoS
  - Diffserv
  - CoS
- NAT/PAT
- Port forwarding

- Access control list
- Distributed switching
- Packet-switched vs. circuit-switched network
- Software-defined networking

✓ 1.4 Given a scenario, configure the appropriate IP addressing components

- Private vs. public
- Loopback and reserved
- Default gateway
- Virtual IP
- Subnet mask
- Subnetting
  - Classful
    - Classes A, B, C, D, and E
  - Classless
    - VLSM
    - CIDR notation (IPv4 vs. IPv6)
- Address assignments
  - DHCP
  - DHCPv6
  - Static
  - APIPA
  - EUI64
  - IP reservations

✓ 1.5 Compare and contrast the characteristics of network topologies, types and technologies

- Wired topologies
  - Logical vs. physical
  - Star
  - Ring
  - Mesh
  - Bus

- Wireless topologies
  - Mesh
  - Ad hoc
  - Infrastructure
- Types
  - LAN
  - WLAN
  - MAN
  - WAN
  - CAN
  - SAN
  - PAN
- Technologies that facilitate the Internet of Things (IoT)
  - Z-Wave
  - Ant+
  - Bluetooth
  - NFC
  - IR
  - RFID
  - 802.11

✓ 1.6 Given a scenario, implement the appropriate wireless technologies and configurations

- 802.11 standards
  - a
  - b
  - g
  - n
  - ac
- Cellular
  - GSM
  - TDMA
  - CDMA

- Frequencies
  - 2.4GHz
  - 5.0GHz
- Speed and distance requirements
- Channel bandwidth
- Channel bonding
- MIMO/MU-MIMO
- Unidirectional/omnidirectional
- Site surveys

✓ 1.7 Summarize cloud concepts and their purposes

- Types of services
  - SaaS
  - PaaS
  - IaaS
- Cloud delivery models
  - Private
  - Public
  - Hybrid
- Connectivity methods
- Security implications/considerations
- Relationship between local and cloud resources

✓ 1.8 Explain the functions of network services.

- DNS service
  - Record types
    - A, AAA
    - TXT (SPF, DKIM)
    - SRV
    - MX
    - CNAME
    - NS
    - PTR

- Internal vs. external DNS
- Third-party/cloud-hosted DNS
- Hierarchy
- Forward vs. reverse zone

- DHCP service
  - MAC reservations
  - Pools
  - IP exclusions
  - Scope options
  - Lease time
  - TTL
  - DHCP relay/IP helper
- NTP
- IPAM

1. Which of the following pairs of well-known ports are the default values you would use to configure a POP3 email client?
   - **A.** 110 and 25
   - **B.** 143 and 25
   - **C.** 110 and 143
   - **D.** 80 and 110
   - **E.** 25 and 80
2. Which of the following server applications use two well-known port numbers during a typical transaction?
   - **A.** NTP
   - **B.** SNMP
   - **C.** HTTP
   - **D.** FTP
3. Which of the following protocols does the Ping utility use to exchange messages with another system?
   - **A.** UDP
   - **B.** TCP
   - **C.** ICMP
   - **D.** IGMP
4. Which of the following components does the port number in a transport layer protocol header identify?
   - **A.** A transport layer protocol
   - **B.** An application
   - **C.** A gateway
   - **D.** A proxy server
5. Which of the following organizations is responsible for assigning the well-known port numbers used in transport layer protocol headers?
   - **A.** Institute for Electronic and Electrical Engineers (IEEE)
   - **B.** Internet Assigned Numbers Authority (IANA)
   - **C.** Internet Engineering Task Force (IETF)
   - **D.** International Organization for Standardization (ISO)
6. A client on a TCP/IP network is attempting to establish a session with a server. Which of the following correctly lists the order of Transmission Control Protocol (TCP) session establishment messages?
   - **A.** SYN, ACK, SYN, ACK
   - **B.** SYN, SYN, ACK, ACK

C. SYN/ACK, SYN/ACK

D. SYN, SYN/ACK, ACK

7. Which of the following is the default well-known port number for the Hypertext Transfer Protocol (HTTP) used for web client/server communications?

A. 22

B. 20

C. 80

D. 1720

8. The secured version of the Hypertext Transfer Protocol (HTTPS) uses a different well-known port from the unsecured version. Which of the following ports is used by HTTPS by default?

A. 25

B. 80

C. 110

D. 443

9. Which of the following Transmission Control Protocol (TCP) control bits is set to 1 to initiate the termination of a session?

A. SYN

B. URG

C. FIN

D. END

E. PSH

10. What field in the Transmission Control Protocol (TCP) Option subheader specifies the size of the largest segment a system can receive?

A. MSS

B. Window

C. MMS

D. WinMS

11. What is the term for the combination of an IPv4 address and a port number, as in the following example: 192.168.1.3:23?

A. Socket

B. OUI

C. Well-known port

D. Network address

E. Domain

12. Which of the following protocols generate messages that are carried directly within Internet Protocol (IP) datagrams, with no intervening transport layer protocol? (Choose all correct answers.)

A. ICMP

B. IGMP

C. SMTP

D. SNMP

13. Which of the following protocols is used to exchange directory service information?

A. RDP

B. LDAP

C. SNMP

D. SMB

14. Which of the following is the primary application layer protocol used by web browsers to communicate with web servers?

A. HTTP

B. HTML

C. SMTP

D. FTP

15. Which of the following protocols appears on the network as a service that client computers use to resolve names into IP addresses?

A. DHCP

B. BOOTP

C. DNS

D. SNMP

16. Which of the following protocols use(s) the term *datagram* to describe the data transfer unit it creates? (Choose all correct answers.)

A. Ethernet

B. IP

C. TCP

D. UDP

17. What is the native file sharing protocol used on all Microsoft Windows operating systems?

A. Hypertext Transfer Protocol (HTTP)

B. Network File System (NFS)

C. File Transfer Protocol (FTP)

D. Server Message Block (SMB)

E. Lightweight Directory Access Protocol (LDAP)

18. When analyzing captured TCP/IP packets, which of the following control bits must you look for in the Transmission Control Protocol (TCP) header to determine whether the receiving host has successfully received the sending host's data?

A. ACK

B. FIN

C. PSH

D. SYN

E. URG

19. Which of the following terms describes the Transmission Control Protocol (TCP) exchange that establishes a connection prior to the transmission of any data?

A. Synchronization

B. Initialization exchange

C. Connection establishment

D. Three-way handshake

20. Alice has been instructed to install 100 Windows workstations, and she is working on automating the process by configuring the workstations to use PXE boots. Each workstation therefore must obtain an IP address from a DHCP server and download a boot image file from a TFTP server. Which of the following well-known ports must Alice open on the firewall separating the workstations from the servers? (Choose all correct answers.)

A. 65

B. 66

C. 67

D. 68

E. 69

21. Which of the following explanations best describes the function of a Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) port number?

A. The port number indicates to the receiver that the sender can activate a specific port only.

B. The port number is used by both the sender and the receiver to identify the application that generated the information in the datagram.

C. The port number is used only by the receiver to indicate the application process running on the sender.

D. The port number is used by both the sender and the receiver to negotiate a well-known server port for the communicating processes.

22. What is the valid range of numbers for the ephemeral client ports used by the Transmission Control Protocol (TCP) and User Datagram Protocol (UDP)?

A. 1023 through 65534

B. 1 through 1024

C. 49152 through 65535

D. 1024 to 49151

23. Which of the following statements about the User Datagram Protocol (UDP) are true? (Choose all correct answers.)

A. UDP does not use packet sequencing and acknowledgments.

B. UDP uses packet sequencing and acknowledgments.

C. UDP is a connection-oriented protocol.

D. UDP is a connectionless protocol.

E. UDP has an 8-byte header.

F. UDP has a 20-byte header.

24. Which of the following port values are used by the File Transfer Protocol (FTP)? (Choose all correct answers.)

A. 21

B. 23

C. 20

D. 53

E. 69

25. Which of the following protocols provides connectionless delivery service at the transport layer of the Open Systems Interconnection (OSI) model?

A. TCP

B. HTTP

C. UDP

D. ARP

26. What is the valid range of numbers for the well-known Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) ports used by servers?

A. 1024 through 49151

B. 1 through 49151

C. 49152 through 65534

D. 1 through 1023

27. Ralph is a network administrator who has just installed a new open source email server for the users at his company. The server is configured to send and receive Internet email and create a mailbox for each user that will permanently store the user's mail on the server. Ralph next uses a protocol analyzer to examine the network traffic resulting from the new server installation. Which of the following new protocols should Ralph expect to see in his network traffic analysis? (Choose all correct answers.)

A. SNMP

B. SMTP

C. POP3

D. IMAP

E. RIP

28. Which of the following values could a web client use as an ephemeral port number when communicating with a web server?

A. 1

B. 23

C. 80

D. 1024

E. 1999

F. 50134

29. Which of the following protocols provides connection-oriented service with guaranteed delivery at the transport layer of the OSI model?

A. TCP

B. HTTP

C. UDP

D. IP

30. Which of the following protocols is limited to use on the local subnet only?

A. Address Resolution Protocol (ARP)

B. Dynamic Host Configuration Protocol (DHCP)

C. Domain Name System (DNS)

D. Simple Mail Transfer Protocol (SMTP)

31. At which of the following layers of the Open Systems Interconnection (OSI) model do the protocols on a typical local area network use MAC addresses to identify other computers on the network?

A. Physical

B. Data link

C. Network

D. Transport

32. Which of the following organizations developed the Open Systems Interconnection (OSI) model?

A. International Telecommunication Union (ITU-T)

B. Comité Consultatif International Télégraphique et Téléphonique (CCITT)

C. American National Standards Institute (ANSI)

D. Institute of Electrical and Electronics Engineers (IEEE)

E. International Organization for Standardization (ISO)

33. Which layer of the Open Systems Interconnection (OSI) model is responsible for the logical addressing of end systems and the routing of datagrams on a network?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

34. What layer of the Open Systems Interconnection (OSI) model is responsible for translating and formatting information?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

35. Which of the following devices typically operates at the network layer of the Open Systems Interconnection (OSI) model?

A. Proxy server

B. Hub

C. Network interface adapter

D. Router

36. Which layer of the Open Systems Interconnection (OSI) model provides an entrance point to the protocol stack for applications?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

37. Which layer of the Open Systems Interconnection (OSI) model is responsible for dialogue control between two communicating end systems?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

38. Some switches can perform functions associated with two layers of the Open Systems Interconnection (OSI) model. Which two of the following layers are often associated with network switching? (Choose all correct answers.)

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

39. At which layer of the Open Systems Interconnection (OSI) model are there TCP/IP protocols that can provide either connectionless or connection-oriented services to applications?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

40. Which of the following layers of the Open Systems Interconnection (OSI) model typically have dedicated physical hardware devices associated with them? (Choose all correct answers.)

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

41. At which layer of the Open Systems Interconnection (OSI) model is there a protocol that adds both a header and footer to the information that is passed down from an upper layer, thus creating a frame?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

42. Identify the layer of the Open Systems Interconnection (OSI) model that controls the addressing, transmission, and reception of Ethernet frames, and also identify the media access control method that Ethernet uses.

A. Physical layer; Carrier Sense Multiple Access with Collision Detection (CSMA/CD)

B. Physical layer; Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)

C. Data link layer; CSMA/CD

D. Data link layer; CSMA/CA

43. At which layer of the OSI model do you find the protocol responsible for the delivery of data to its ultimate destination on an internetwork?

A. Data link

B. Network

C. Session

D. Application

44. Which of the following is *not* a protocol operating at the network layer of the OSI model?

A. IP

B. ICMP

C. IGMP

D. IMAP

45. Ed is a software developer who has been given the task of creating an application that requires guaranteed delivery of information between end systems. At which layer of the Open Systems Interconnection (OSI) model does the protocol that provides the guaranteed delivery run, and what type of protocol must Ed use?

A. Data link layer; connectionless

B. Network layer; connection-oriented

C. Transport layer; connection-oriented

D. Application layer; connectionless

46. Which of the following devices operates only at the physical layer of the Open Systems Interconnection (OSI) model?

A. Hub

B. Bridge

C. Switch

D. Router

47. Alice is a network administrator designing a new local area network (LAN). She needs to determine the type of cabling and the network topology to implement. Which layers of the Open Systems Interconnection (OSI) model apply to cabling and topology elements?

A. Physical and data link layers

B. Data link and network layers

C. Network and transport layers

D. Transport and application layers

48. Which layers of the Open Systems Interconnection (OSI) model do not have protocols in the TCP/IP suite exclusively dedicated to them? (Choose all correct answers.)

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

49. The protocols at which layer of the Open Systems Interconnection (OSI) model use port numbers to identify the applications that are the source and the destination of the data in the packets?

A. Application

B. Presentation

C. Transport

D. Network

50. Which of the following is a correct listing of the Open Systems Interconnection (OSI) model layers, in order, from top to bottom?

A. Physical, data link, transport, network, session presentation, application

B. Application, session, presentation, transport, network, data link, physical

C. Presentation, application, transport, session, network, physical, data link

D. Session, application, presentation, transport, data link, network, physical

E. Application, presentation, session, transport, network, data link, physical

51. At which of the Open Systems Interconnection (OSI) model layers do switches and bridges perform their basic functions?

A. Physical

B. Data link

C. Network

D. Transport

52. Flow control is a function implemented in protocols operating at which layer of the Open Systems Interconnection (OSI) model?

A. Presentation

B. Session

C. Transport

D. Network

53. Which layer of the Open Systems Interconnection (OSI) model defines the medium, network interfaces, connecting hardware, and signaling methods used on a network?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

54. Which of the OSI model layers is responsible for syntax translation and compression or encryption?

A. Data link

B. Network

C. Session

D. Presentation

E. Application

55. Which layer of the Open Systems Interconnection (OSI) model is responsible for transmitting signals over the network medium?

A. Physical

B. Data link

C. Network

D. Transport

E. Session

F. Presentation

G. Application

56. Specify the layer of the Open Systems Interconnection (OSI) model at which the Internet Protocol (IP) operates and whether it is connection-oriented or connectionless.

A. Network; connection-oriented

B. Network; connectionless

C. Transport; connection-oriented

D. Transport; connectionless

57. An Ethernet network interface adapter provides functions that span which two layers of the Open Systems Interconnection (OSI) model?

A. Physical and data link

B. Data link and network

C. Network and transport

D. Transport and application

58. Which of the following protocols operate at the application layer of the Open Systems Interconnection (OSI) model? (Choose all correct answers.)

A. HTTP

B. SNMP

C. ICMP

D. IGMP

E. UDP

59. Which layer of the Open Systems Interconnection (OSI) model would be responsible for converting a text file encoded using EBCDIC on the sending system into ASCII code, when required by the receiving system?

A. Application

B. Presentation

C. Session

D. Physical

60. Which of the following protocols operates at the network layer of the OSI model but does not encapsulate data generated by an upper layer protocol for transmission over the network?

A. IP

B. UDP

C. ARP

D. ICMP

E. TCP

61. Which of the following could be a valid MAC address for a network interface adapter?

A. 10.124.25.43

B. FF:FF:FF:FF:FF:FF

C. 00:1A:6B:31:9A:4E

D. 03:AE:16:3H:5B:11

E. fe80::89a5:9e4d:a9d0:9ed7

62. Which of the following TCP/IP parameters, configured on an end system, specifies the Internet Protocol (IP) address of a router on the local network that provides access to other networks?

A. WINS Server Addresses

B. Default Gateway

C. DNS Server Addresses

D. Subnet Gateway

63. Which of the following services enables computers on a private IPv4 network to access the Internet using a registered IP address?

A. DHCP

B. NAT

C. DNS

D. NTP

64. Which of the following protocols prevents network switching loops from occurring by shutting down redundant links until they are needed?

A. RIP

B. STP

C. VLAN

D. NAT

65. Which of the following are techniques used in traffic shaping to prevent networks from being overwhelmed by data transmissions? (Choose all correct answers.)

A. Bandwidth throttling

B. Rate limiting

C. Broadcast storming

D. Network address translation

66. Which of the following best defines the concept of the dual stack?

A. A computer with two network interface adapters

B. A computer with two installed operating systems

C. A computer with two sets of networking protocols

D. A computer with connections to two different network segments

67. An enterprise network has been designed with individual departmental switches because in most cases, the devices in a specific department exchange network traffic with other devices in the same department. Each of the departmental switches is also connected to a host switch, which enables devices to communicate with other departments. Which of the following terms describes this switching architecture?

A. Distributed switching

B. Port forwarding

C. Traffic shaping

D. Neighbor discovery

68. Which of the following terms refers to methods by which network traffic is prioritized to prevent applications from suffering faults due to network congestion?

A. Port forwarding

B. Dynamic routing

C. VLANs

D. QoS

69. Which of the following statements about Routing Information Protocol version 1 (RIPv1) is true? (Choose all correct answers.)

A. RIPv1 broadcasts the entire contents of the routing table every 30 seconds.

B. RIPv1 advertises the subnet mask along with the destination network.

C. RIPv1 broadcasts only the elements in the routing table that have changed every 60 seconds.

D. RIPv1 does not include the subnet mask in its network advertisements.

70. Which of the following is an example of a circuit-switched network connection, as opposed to a packet-switched network connection?

A. Two wireless computers using an ad hoc topology

B. A landline voice telephone call

C. A smartphone connecting to a cellular tower

D. Computers connected by a wired LAN

71. Which of the following mechanisms for prioritizing network traffic uses a 6-bit classification identifier in the Internet Protocol (IP) header?

A. Diffserv

B. CoS

C. Traffic shaping

D. QoS

72. Which of the following is a network layer protocol that uses ICMPv6 messages to locate routers, DNS servers, and other nodes on an IPv6 network?

A. BGP

B. NDP

C. OSPF

D. PoE

73. Which of the following is a protocol that identifies VLANs by inserting a 32-bit field in the Ethernet frame?

A. IEEE 802.1P

B. IEEE 802.1Q

C. IEEE 802.1X

D. IEEE 802.1AB

74. Which of the following is *not* an advantage of packet switching over circuit switching?

A. Packets can be transmitted out of order.

B. Packets can take different routes to the destination.

C. Packets can be stored temporarily in the event of network congestion.

D. Packets can be routed around areas of network congestion.

75. Which of the following statements about static routing are true? (Choose all correct answers.)

A. Static routes are manually configured routes that administrators must add, modify, or delete when a change in the network occurs.

B. Static routes are automatically added to the routing table by routing protocols when a new network path becomes available.

C. Static routes adapt to changes in the network infrastructure automatically.

D. Static routes are a recommended solution for large internetworks with redundant paths to each destination network.

E. Static routes are a recommended solution for small internetworks with a single path to each destination network.

76. Which of the following TCP/IP routing protocols does not include the subnet mask within its route update messages, preventing it from supporting subnetting?

A. Routing Information Protocol, version 1 (RIPv1)

B. Routing Information Protocol, version 2 (RIPv2)

C. Border Gateway Protocol (BGP)

D. Open Shortest Path First (OSPF)

77. Which of the following terms refers to a routing protocol that does *not* rely on hop counts to measure the efficiency of routes?

A. Interior gateway protocol

B. Edge gateway protocol

C. Distance vector protocol

D. Link state protocol

78. What is the maximum number of routes that can be included in a single RIP broadcast packet?

A. 20

B. 25

C. 32

D. Unlimited

79. Which of the following routing protocols can you use on a TCP/IP internetwork with segments running at different speeds, making hop counts an inaccurate measure of route efficiency? (Choose all correct answers.)

A. Enhanced Interior Gateway Routing Protocol (EIGRP)

B. Routing Information Protocol (RIP)

C. Open Shortest Path First (OSPF)

D. Border Gateway Protocol (BGP)

80. What is the term for the process by which dynamic routing protocols update other routers with routing table information?

A. Convergence

B. Distance vectoring

C. Redistribution

D. Dissemination

81. Which of the following are terms for an area of an enterprise network, separated by firewalls, that contains servers that must be accessible both from the Internet and from the internal network? (Choose all correct answers.)

A. Intranet

B. DMZ

C. EGP

D. Stateless network

E. Perimeter network

82. Each of the following Carrier Sense Multiple Access with Collision Detection (CSMA/CD) events occurs on an Ethernet network when two stations transmit simultaneously, although not in the order listed. Which of the following events occurs immediately after the collision?

A. The two stations observe a random back-off interval.

B. The two stations transmit a jam signal.

C. The two stations stop transmitting.

D. The two stations listen to see if the channel is idle.

E. The two stations begin retransmitting their frames.

83. Which of the following TCP/IP routing protocols measures the efficiency of routes by the number of hops between the source and the destination?

A. Routing Information Protocol (RIP)

B. Open Shortest Path First (OSPF)

C. Border Gateway Protocol (BGP)

D. Intermediate System to Intermediate System (IS-IS)

84. Which of the following IEEE standards calls for the use of the Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) media access control mechanism?

A. 802.11ac

B. 802.1X

C. 802.3

D. All of the above

85. Which of the following devices is used to physically connect computers in the same VLAN?

A. A bridge

B. A hub

C. A switch

D. A router

86. Which of the following statements is true about an Ethernet network that uses CSMA/CD?

A. Collisions are a normal occurrence.

B. Collisions never occur unless there is a network fault.

C. Collisions cause data to be irretrievably lost.

D. Collisions are the result of duplicate IP addresses.

87. VLANs create the administrative boundaries on a switched network that are otherwise provided by which of the following devices?

A. Hubs

B. Routers

C. Domains

D. Bridges

88. Which of the following statements about VLANs are true? (Choose all correct answers.)

A. All of the devices in a particular VLAN must be physically connected to the same switch.

B. A VLAN creates a limited broadcast domain on a switched network.

C. You must have VLANs on a switched network for communication between computers on different cable segments to occur.

D. A router is required for communication between VLANs.

89. Which of the following elements can be used to identify the devices in a particular VLAN? (Choose all correct answers.)

A. Hardware addresses

B. IP addresses

C. DNS names

D. Switch port numbers

90. Network address translation (NAT) operates at which layer of the Open Systems Interconnection (OSI) model?

A. Data link

B. Network

C. Transport

D. Application

91. Which of the following types of routing protocols route datagrams between autonomous systems?

A. EGP

B. RIP

C. IGP

D. OSPF

92. Which of the following is the most accurate description of the subnetting process on a TCP/IP network?

A. You extend the IP address by adding bits for a subnet identifier.

B. You borrow bits from the network identifier to create a subnet identifier.

C. You borrow bits from the host identifier to create a subnet identifier.

D. You create a subnet identifier by borrowing half of the bits from the network identifier and half from the host identifier.

93. Which of the following IPv4 addresses are you unable to assign to a network host? (Choose all correct answers.)

A. 1.1.1.1

B. 229.6.87.3

C. 103.256.77.4

D. 9.34.0.1

94. How many bits are allocated to the host identifier in an IPv4 address on the 10.72.0.0/17 network?

A. 8

B. 15

C. 16

D. 17

95. Which of the following are *not* valid IPv4 addresses in the private address space defined by RFC 1918? (Choose all correct answers.)

A. 10.16.225.1

B. 172.33.19.7

C. 192.168.254.77

D. 10.255.255.255

E. 172.15.2.9

96. Alice has been instructed to create a network with 8 subnets and 30 hosts per subnet. She has been assigned a Class C network address. Which of the following subnet masks will she have to use?

A. 255.255.255.128

B. 255.255.255.192

C. 255.255.255.224

D. 255.255.255.240

E. 255.255.255.248

F. 255.255.255.252

97. Which of the following is the default subnet mask for an IPv4 Class A network?

A. 255.0.0.0

B. 255.255.0.0

C. 255.255.255.0

D. 255.255.255.255

98. Which of the following is the range of IPv4 addresses that Automatic Private IP Addressing (APIPA) assigns to DHCP clients that cannot access a DHCP server?

A. 10.0.0.0 to 10.0.255.255

B. 169.254.0.0 to 169.254.255.255

C. 192.168.0.0 to 192.168.0.255

D. 224.0.0.0 to 224.0.255.255

99. In which IPv4 class is the address 127.0.0.1 found?

A. Class A

B. Class B

C. Class C

D. None of the above

100. Which of the following is a valid IPv6 address?

A. fe00::b491:cf79:p493:23ff

B. 2001:0:49e6:39ff:8cf5:6812:ef56

C. fe00::c955:c944:acdd:3fcb

D. 2001:0:44ef68:23eb:99fe:72bec6:ea5f

101. To which class does the following IPv4 address belong: 190.126.14.251?

A. Class A

B. Class B

C. Class C

D. Class D

102. Classless Inter-Domain Routing (CIDR) is a standard for IP addressing that includes the ability to create subnets using any number of IP address bits, rather than using 8-bit blocks. Which of the following terms describes this ability?

A. VLSM

B. APIPA

C. VLAN

D. EUI-64

103. Ralph has been instructed to use the network address 10.12.0.0/14 for the new network he is installing. What subnet mask value should he use when configuring his computers?

A. 255.248.0.0

B. 255.252.0.0

C. 255.254.0.0

D. 255.255.248.0

E. 255.255.252.0

F. 255.255.254.0

104. Ed has been hired to design a company's network. The company has an assigned Class C network address of 192.168.30.0. Ed's client wants the network to be configured with 10 subnets, each with 14 hosts. Is this configuration possible with the given address, and if so, how many subnets and hosts can Ed create on the network?

A. Yes, this will work. By using 4 subnet bits, it is possible for Ed to create up to 16 subnets. He can then use the remaining 4 host bits to create 14 hosts on each subnet.

B. No, this will not work. A Class C address cannot be subnetted to create 8 subnets.

C. No, this will not work. Although there are sufficient bits available to create 10 subnets, there are not enough bits left over for Ed to create 14 hosts per subnet.

D. Yes, this will work. Ed can create 10 subnets with 14 hosts per subnet. By using 3 subnet bits, he can create 10 subnets, which leaves 5 bits to create up to 30 hosts per subnet.

105. What is the greatest number of subnets you can create with a Class A IPv4 address if you use a 14-bit subnet identifier?

A. 256

B. 1,022

C. 1,024

D. 16,382

E. 16,384

106. Alice has been asked to design her company's Internet Protocol (IP) addressing scheme. The company has been assigned Class C network address of 192.168.30.0. Alice's director wants 4 subnets with 28 hosts per subnet. How many bits are required for subnets? How many bits are required for hosts? What will the new subnet mask be for this network?

A. 3 subnet bits, 5 host bits, and subnet mask 255.255.255.240

B. 4 subnet bits, 3 host bits, and subnet mask 255.255.255.248

C. 3 subnet bits, 5 host bits, and subnet mask 255.255.255.224

D. 5 subnet bits, 3 host bits, and subnet mask 255.255.255.192

107. A network interface adapter in a workstation has a hexadecimal MAC address of 001F9EFC7AD0. Which of the following would be the adapter's IPv6 link local address based on its EUI-64 value?

A. FE80::001F:9EFF:FEFC:7AD0

B. FE80::FFFE:021F:9EFC:7AD0

C. FE80::FF00:1F9E:FC7A:D0FE

D. FE80::021F:9EFF:FEFC:7AD0

108. The default mask for a Class B network is 255.255.0.0. How many subnet bits do you need to create 600 subnets with 55 hosts per subnet, and what is the new subnet mask for the network?

A. 10 subnet bits with a subnet mask of 255.255.255.192

B. 9 subnet bits with a subnet mask of 255.255.255.128

C. 10 subnet bits with a subnet mask of 255.255.224.0

D. 11 subnet bits with a subnet mask of 255.255.255.192

109. What is the greatest number of host addresses you can create on a single subnet of a network with the following address: 172.16.0.0/20?

A. 142

B. 144

C. 4,094

D. 4,096

110. Ralph has a Class B network with a subnet mask of 255.255.248.0. How many subnets can he create, and how many hosts can he create per subnet?

A. 64 subnets and 2046 hosts

B. 32 subnets and 2046 hosts

C. 30 subnets and 1022 hosts

D. 62 subnets and 1022 hosts

111. Convert the binary mask 11111111.11111111.11100000.00000000 into its equivalent decimal value. What is the decimal representation of this mask?

A. 255.255.224.0

B. 255.255.240.0

C. 255.255.248.0

D. 255.255.252.0

112. If you have a network address of 192.168.1.32/27, what is the valid range of host addresses you can use for your workstations?

A. 192.168.1.33 through 192.168.1.63

B. 192.168.1.33 through 192.168.1.62

C. 192.168.1.34 through 192.168.1.62

D. 192.168.1.34 through 192.168.1.63

113. Alice has been assigned the network address 172.21.0.0/22 for the creation of a new department network in her company. How many host addresses does she have available to her?

A. 510

B. 512

C. 1022

D. 1024

114. Automatic Private IP Addressing (APIPA) assigns IPv4 addresses from which of the following classes to Dynamic Host Configuration Protocol (DHCP) clients that cannot contact a DHCP server?

A. Class A

B. Class B

C. Class C

D. Class D

115. Which of the following Internet Protocol (IP) address classes identifies multicast addresses?

A. Class A

B. Class B

C. Class C

D. Class D

E. Class E

116. Which of the following is an address that you can assign to a host on a private IPv4 network?

A. 192.167.9.46

B. 172.16.255.255

C. 10.1.0.253

D. 225.87.34.1

117. Which of the following is the correct subnet mask for a network with the address 172.16.0.0/20?

A. 255.255.224.0

B. 255.255.240.0

C. 255.255.248.0

D. 255.255.255.224

E. 255.255.255.240

118. Ed has been assigned the IPv4 network address 192.168.2.32/28 for the computers in his department. Which of the following ranges of addresses can Ed use to configure the TCP/IP clients on his computers?

A. 192.168.2.32 to 192.168.2.55

B. 192.168.2.33 to 192.168.2.46

C. 192.168.2.33 to 192.168.2.40

D. 192.168.2.1 to 192.168.2.254

119. Which of the following IP addresses is available for use on a network device?

A. 1.0.0.1

B. 127.98.127.0

C. 234.9.76.32

D. 240.65.8.124

120. Which of the following IPv6 address types is the functional equivalent of an IPv4 APIPA address?

A. Link local

B. Global unicast

C. Site local

D. Anycast

121. Ralph is having trouble accessing the Internet this morning and calls his colleague Ed in another department to find out if he's experiencing the same problem. Ed says he's having no problem accessing the Internet, but that might not mean anything because they might be on different subnets. Ralph asks Ed how to tell if they're on different subnets. Ed asks Ralph to read him his IP address. Ralph's address is 192.168.176.171, and Ed says his is 192.168.176.195. Both of them are using the same subnet mask: 255.255.255.224. Are the two men working on the same subnet?

A. No, they are not on the same subnet. Ralph's subnet address is 192.168.176.192, and Ed's subnet address is 192.168.176.160.

B. No, they are not on the same subnet. Ralph's subnet address is 192.168.176.160, and Ed's subnet address is 192.168.176.192.

C. Yes, they are on the same subnet. The subnet address for both is 192.168.176.192.

D. Yes, they are on the same subnet. The subnet address for both is 192.168.176.160.

122. Ralph has been contracted to consult for a company that wants to update its legacy Ethernet network to Gigabit Ethernet. On examining the site, he discovers that the network is still using coaxial-based Thin Ethernet. What change in network topology must occur to upgrade the existing network to Gigabit Ethernet using unshielded twisted pair (UTP) cable?

A. Bus to ring

B. Ring to star

C. Star to bus

D. Bus to star

E. Star to ring

123. An electrician installing a new light fixture accidentally severs one of the LAN cables running through the dropped ceiling space. With which topology would the severed cable cause the greatest amount of disturbance to the network?

A. Bus

B. Star

C. Logical ring

D. Mesh

124. Which of the following statements about a wired local area network (LAN) is true?

A. Wired LANs support only the star topology.

B. Wired LANs support only the star and bus topologies.

C. Wired LANs support only the star and ring topologies.

D. Wired LANs can support ring, bus, or star topologies.

125. Which type of network is typically confined to a small area, such as a single room, floor, or building?

A. WAN

B. LAN

C. MAN

D. CAN

126. Which type of network connects local area networks (LANs) in distant locations?

A. WAN

B. LAN

C. MAN

D. CAN

127. Which of the following topologies requires the installation of terminating resistors at two locations?

A. Bus

B. Star

C. Ring

D. Mesh

128. A wireless access point (AP) enables computers equipped with wireless network interface adapters to function in which of the following topologies?

A. Star

B. Ad hoc

C. Bus

D. Infrastructure

129. Which of the following topologies is used by the majority of new Ethernet networks installed today?

A. Bus

B. Virtual ring

C. Mesh

D. Hierarchical star

130. Which of the following technologies associated with the Internet of Things (IoT) is often used to identify pets using embedded chips?

A. Z-wave

B. Bluetooth

C. NFC

D. RFID

131. Alice has constructed a five-node failover cluster in which all five servers are connected to a hard disk array using a dedicated Fibre Channel network. Which of the following terms describes this network arrangement?

A. SAN

B. PAN

C. WAN

D. MAN

132. Which of the following is not a technology typically used for a personal area network (PAN)?

A. Bluetooth

B. Z-Wave

C. NFC

D. ISDN

133. Near-field communication (NFC) is a short-range wireless technology that is designed to facilitate communications between two devices within which of the following distances from each other?

A. 4 millimeters

B. 4 centimeters

C. 4 decimeters

D. 4 meters

134. Which of the following network topologies are used by wireless local area networks (WLANs)? (Choose all correct answers.)

A. Ad hoc

B. Bus

C. Infrastructure

D. Star

135. Which of the following cabling topologies was used by the first Ethernet networks?

A. Bus

B. Ring

C. Star

D. Mesh

136. On an Ethernet network using the star topology, which of the following devices can function as the cabling nexus that forms the figurative center of the star? (Choose all correct answers.)

A. Hub

B. Router

C. Switch

D. All of the above

137. Which of the following topologies enables wireless devices to access resources on a wired network?

A. Ad hoc

B. Star

C. Infrastructure

D. Bus

138. Which of the following components are required for two computers to communicate using an IEEE 802.11 wireless LAN using an ad hoc topology?

A. A router connected to the Internet

B. A wireless access point

C. An external antenna

D. None of the above

139. Which of the following is typically *not* an example of the Internet of Things (IoT)?

A. A key fob that unlocks your car

B. A smartphone home automation app

C. A remotely monitored cardiac pacemaker

D. A seismic early warning system

140. Which of the following topologies provides the greatest number of redundant paths through the network?

A. Star

B. Ring

C. Mesh

D. Bus

141. Which of the following Ethernet physical layer options does not use the star topology?

A. 10Base2

B. 10Base-T

C. 100Base-TX

D. 1000Base-T

142. Which of the following network types are typically wireless? (Choose all correct answers.)

A. WAN

B. PAN

C. SAN

D. WLAN

143. In its physical implementation, a LAN using a logical ring topology most closely resembles which of the following physical topologies?

A. Bus

B. Mesh

C. Star

D. Ad hoc

144. Which of the following wireless networking technologies will never experience interference from a 2.4 GHz wireless telephone? (Choose all correct answers.)

A. IEEE 802.11a

B. IEEE 802.11b

C. IEEE 802.11g

D. IEEE 802.11n

E. IEEE 802.11ac

145. Which of the following wireless networking standards is capable of supporting speeds of 54 Mbps and is also backward compatible with IEEE 802.11b?

A. IEEE 802.11a

B. IEEE 802.11 g

C. IEEE 802.11n

D. Bluetooth

E. IEEE 802.11

146. Which of the following wireless LAN standards include the ability to use multiple input and multiple output (MIMO) antennae? (Choose all correct answers.)

A. IEEE 802.11a

B. IEEE 802.11b/g

C. IEEE 802.11n

D. IEEE 802.11ac

147. Which of the following is a cellular communication technology that is virtually obsolete in the United States?

A. GSM

B. CDMA

C. CSMA/CD

D. TDMA

148. Which of the following IEEE wireless LAN standards uses the Direct Sequence Spread Spectrum (DSSS) signal modulation technique?

A. 802.11a

B. 802.11b

C. 802.11 g

D. 802.11n

E. 802.11ac

149. When designing a wireless LAN installation, which of the following are valid reasons to install a unidirectional antenna in an access point, rather than an omnidirectional one? (Choose all correct answers.)

A. The access point will be located against an outside wall.

B. There are many interior walls between the access point and the most distant workstation.

C. A unidirectional antenna can be focused to a specific signal pattern width.

D. All of the above.

150. How do wireless networking devices conforming to the IEEE 802.11n and 802.11ac standards achieve transmission speeds greater than 72.2 Mbps?

A. By using direct sequence spread spectrum (DSSS) modulation

B. By using multiple antennae to transmit several data streams simultaneously

C. By using frequencies in the 5 GHz band

D. By sacrificing transmission range for speed

151. Which of the following are possible reasons why the 5 GHz frequency tends to perform better than the 2.4 GHz frequency on a wireless LAN? (Choose all correct answers.)

A. The 5 GHz frequency has more channels than the 2.4 GHz frequency.

B. The 5 GHz frequency supports longer ranges than the 2.4 GHz frequency.

C. The 5 GHz frequency conflicts with fewer common household devices than the 2.4 GHz frequency.

D. The 5 GHz frequency transmits at faster speeds than the 2.4 GHz frequency.

152. Alice is attempting to deploy an IEEE 802.11b/g wireless LAN on the fifth floor of a ten-story office building that is surrounded on all sides by other office buildings, all of which seem to be running many wireless LANs. Scanning the 2.4 GHz band, she sees literally dozens of networks, spread across all of the available channels. As a result, her wireless devices have trouble connecting to their access point, and when they do, they achieve only low speeds. Choose the two tasks from the following list that Alice should perform to enable the wireless clients to connect to the network most reliably. (Choose two correct answers.)

A. Upgrade all of the wireless network devices to IEEE 802.11n.

B. Configure the wireless devices to use the 5 GHz band.

C. Configure all of the network devices to use WPA2 encryption with AES.

D. Configure the access point to suppress SSID broadcasts.

E. Upgrade all of the network devices to the latest firmware.

153. Which of the following is the fastest speed achievable by a wireless LAN using the currently ratified IEEE 802.11 standards?

A. 54 Mbps

B. 600 Mbps

C. 1.3 Gbps

D. 2.6 Gbps

154. What is the term for the technology implemented in the IEEE 802.11ac standard that enables a wireless device to transmit multiple frames to multiple clients simultaneously?

A. MIMO

B. Channel bonding

C. CSMA/CA

D. MU-MIMO

155. On an IEEE 802.11b/g/n wireless network running at 2.4 GHz with multiple access points, the traditional best practice is to use channels 1, 6, and 11, with no two adjacent access points configured to use the same channel. Which of the following is the real reason why this is a good plan?

A. Channels 1, 6, and 11 are the only three channels with frequencies that do not overlap.

B. Channels 1, 6, and 11 have more bandwidth than the other channels.

C. Channels 1, 6, and 11 have greater ranges than the other channels.

D. Channels 1, 6, and 11 are the default settings on most wireless devices.

156. Ralph is performing a site survey for a wireless LAN installation in a warehouse with two offices at either end of the building, approximately 300 feet apart. If he installs a single access point in the center of the warehouse, equidistant from the two offices, which of the following standards should he look for when purchasing hardware so that workstations in both offices will be able to connect to the network at the best possible speed?

A. IEEE 802.11a

B. IEEE 802.11g

C. IEEE 802.11n

D. IEEE 802.11ac

157. Which of the following terms defines a wireless LAN transmission technique in which devices use multiple antennae to increase transmission speeds?

A. MIMO

B. TDMA

C. PAN

D. Ant+

158. What is the maximum channel width possible using wireless networking equipment based on the ratified IEEE 802.11 standards?

A. 20 MHz

B. 40 MHz

C. 80 MHz

D. 160 MHz

159. Which of the following wireless networking standards are capable of using only the 5 GHz frequency? (Choose all correct answers.)

A. IEEE 802.11a

B. IEEE 802.11b

C. IEEE 802.11g

D. IEEE 802.11n

E. IEEE 802.11ac

160. Which of the following IEEE wireless LAN standards provides the greatest possible throughput?

A. 802.11a

B. 802.11ac

C. 802.11b

D. 802.11g

E. 802.11n

161. Which of the following IEEE 802.11 wireless LAN standards are capable of supporting both the 2.4 GHz and 5 GHz frequencies?

A. 802.11a

B. 802.11b

C. 802.11g

D. 802.11n

E. 802.11ac

162. What is the maximum number of transmit and receive antennae supported by the currently ratified IEEE 802.11 wireless LAN standards?

A. 2

B. 4

C. 8

D. 16

163. Which of the following is the term for the network name that you use to connect a client device to an access point on a wireless LAN?

A. BSS

B. ESS

C. SSID

D. BSSID

164. Which of the following IEEE wireless LAN standards define devices with a maximum aggregate channel width of 20 MHz? (Choose all correct answers.)

A. 802.11a

B. 802.11g

C. 802.11n

D. 802.11ac

165. Which of the following cloud service models enables you to select the operating system you want to install?

A. IaaS

B. PaaS

C. SaaS

D. All of the above

166. When you contract with a provider to obtain email services for your company using their servers in the public cloud, which of the following service models are you using?

A. IaaS

B. PaaS

C. SaaS

D. None of the above

167. Which of the following cloud service models provides the consumer with the most control over the cloud resources?

A. IaaS

B. PaaS

C. SaaS

D. IaaS, PaaS, and SaaS all provide the same degree of control.

168. Alice has just created a new Windows Server 2016 virtual machine using remote controls provided by a cloud service provider on the Internet. Which of the following cloud architectures is she using? (Choose all correct answers.)

A. IaaS

B. PaaS

C. SaaS

D. Public cloud

E. Private cloud

F. Hybrid cloud

169. In which of the following cloud models does a single organization function as both the provider and the consumer of all cloud services?

A. Public cloud

B. Private cloud

C. Hybrid cloud

D. Ad hoc cloud

170. Ed is the overnight manager of his company's datacenter, and he is responsible for both private and public resources in the company's hybrid cloud. Due to a new TV commercial shown that night, the company's website experiences a massive upsurge in traffic. The web server farm on the private cloud is being overwhelmed, so Ed configures some virtual machines in the public cloud to take up the slack. Which of the following is a common term for what Ed has done?

A. Cloud busting

B. Cloud bursting

C. Cloud splitting

D. Cloud migrating

171. Microsoft's `Outlook.com` email service is an example of which of the following cloud service models?

A. IaaS

B. PaaS

C. SaaS

D. None of the above

172. Which of the following statements about cloud delivery models is true?

A. A public cloud is inherently insecure because anyone can access it.

B. A private cloud consists of hardware that is all located in a single datacenter.

C. A hybrid cloud enables administrators to migrate services between public and private resources.

D. Public, private, and hybrid clouds all utilize the same hardware resources.

173. Ed has just created a new Windows application for his company, and he wants to deploy it in the public cloud. He is looking for a provider that will furnish his company with a fully installed and configured Windows server on which he can install and run his application. Which of the following service models is he seeking to use?

A. IaaS

B. PaaS

C. SaaS

D. None of the above

174. In which of the following DNS transactions does the querying system generate a recursive query? (Choose all correct answers.)

A. A DNS client sends the server name `www.adatum.com` from a URL to its designated DNS server for resolution.

B. A client's DNS server sends a request to a root domain server to find the authoritative server for the `com` top-level domain.

C. A client's DNS server sends a request to the `com` top-level domain server to find the authoritative server for the `adatum.com` domain.

D. A client's DNS server, which has been configured to function as a forwarder, sends the server name `www.adatum.com` from a URL to its ISP's DNS server for resolution.

E. A client's DNS server sends a request to the `adatum.com` domain server to find the IP address associated with the server name `www`.

175. Which of the following devices would you most likely configure to function as a Dynamic Host Configuration Protocol (DHCP) server?

A. A wireless router

B. An unmanaged switch

C. A hub

D. A bridge

176. Which of the following protocols are responsible for assigning IP addresses to hosts? (Choose all correct answers.)

A. Dynamic Host Configuration Protocol (DHCP)

B. Address Resolution Protocol (ARP)

C. Domain Name System (DNS)

D. File Transfer Protocol (FTP)

E. Bootstrap Protocol (BOOTP)

177. Which of the following Domain Name System (DNS) resource records is used only for reverse name resolution?

A. MX

B. AAAA

C. CNAME

D. PTR

178. Which of the following features is supported by DHCP, but not by BOOTP and RARP?

A. Dynamic address allocation

B. Relay agents

C. Manual address allocation

D. Automatic address allocation

179. Which of the following message types are exchanged by Dynamic Host Configuration Protocol (DHCP) clients and servers during a successful IP address allocation transaction? (Choose all correct answers.)

A. DHCPDISCOVER

B. DHCPOFFER

C. DHCPINFORM

D. DHCPACK

E. DHCPREQUEST

F. DHCPNAK

G. DHCPRENEW

H. DHCPRELEASE

180. Which of the following message types are exchanged by Dynamic Host Configuration Protocol (DHCP) clients and servers during a successful IP address lease renewal transaction? (Choose all correct answers.)

A. DHCPDISCOVER

B. DHCPOFFER

C. DHCPINFORM

D. DHCPACK

E. DHCPREQUEST

F. DHCPNAK

G. DHCPRENEW

H. DHCPRELEASE

181. Which of the following is not a protocol used to allocate IP address assignments to clients on a network?

A. ARP

B. RARP

C. BOOTP

D. DHCP

182. Which of the following best describes what happens when a DNS server receives an iterative name resolution query?

A. The DNS server responds immediately to the query with the best information it has in its resource records or in its cache or, failing that, with an error message stating that it could not resolve the requested name.

B. The DNS server attempts to resolve the requested name by checking its own resource records and cache or, failing that, by issuing its own iterative queries to other DNS servers.

C. The DNS server attempts to resolve the requested name by checking its own resource records and cache or, failing that, by forwarding the name resolution request to another DNS server in a recursive query.

D. The DNS server responds immediately if it is the authoritative server for the domain in which the requested name is located. Otherwise, it returns an error message stating that it could not resolve the requested name.

183. What is the term used to refer to the DNS client mechanism that generates name resolution queries and sends them to DNS servers?

A. Requestor

B. Forwarder

C. Authority

D. Resolver

184. Which of the following TCP/IP parameters, configured on an end system, specifies the IP address of a device that performs domain name resolution services?

A. WINS Server Addresses

B. Default Gateway

C. DNS Server Addresses

D. Subnet Gateway

185. Which IP address allocation method is not supported by Dynamic Host Configuration Protocol (DHCP)?

A. Manual

B. Dynamic

C. Stable

D. Automatic

186. On a Dynamic Host Configuration Protocol (DHCP) server, what is the name of the element you create to specify which IP addresses the server should assign to clients?

A. Range

B. Scope

C. Pool

D. Subnet

187. Why is it necessary to use a relay agent to enable a Dynamic Host Configuration Protocol (DHCP) server to assign IP addresses to clients on other networks? (Choose all correct answers.)

A. Because DHCP requires a separate license for each subnet

B. Because clients cannot initiate an address assignment by contacting DHCP servers on other networks directly

C. Because DHCP must use the Transmission Control Protocol (TCP) to communicate with clients

D. Because the DHCP address assignment process relies on broadcast transmissions

188. Which of the following Domain Name System (DNS) resource records is used to resolve a hostname into an IPv6 address?

A. MX

B. PTR

C. AAAA

D. CNAME

189. Ralph has configured a server called NE6 to function as a web server. He does not want to change the server's existing name, but he wants it to be accessible to clients using the name `www`. What Domain Name System (DNS) modification can Ralph make to accomplish this?

A. Create an additional A resource record.

B. Create a new CNAME resource record.

C. Modify the existing A resource record.

D. Create a new PTR resource record.

190. Which of the following options should you configure on a Dynamic Host Configuration Protocol (DHCP) server to supply clients with a default gateway address?

A. Router

B. Time Server

C. Name Server

D. LPR Server

191. Dynamic Host Configuration Protocol (DHCP) clients rely on which of the following types of transmissions to locate and initiate contact with DHCP servers on the local network?

A. Unicast

B. Broadcast

C. Multicast

D. Anycast

192. Which of the following Domain Name System (DNS) resource record types specifies the IP addresses of the authoritative DNS servers for a particular zone?

A. NS

B. PTR

C. MX

D. SRV

193. Which of the following must you create on a DHCP server if you want it to always assign the same IP address to a particular computer?

A. Exclusion

B. Scope

C. Reservation

D. Relay

194. Which of the following DHCP address allocation methods enables the server to reclaim IP addresses when they are no longer in use by clients?

A. Automatic

B. Dynamic

C. Manual

D. Static

195. Which of the following technologies enables the IP addresses assigned to clients by a Dynamic Host Configuration Protocol (DHCP) server to be automatically added to the DNS namespace?

A. Reverse name resolution

B. Dynamic DNS

C. Automatic allocation

D. HOSTS

196. Which of the following is a tool that integrates DHCP and DNS so that each is aware of the changes made by the other?

A. HOSTS

B. DHCPv6

C. IPAM

D. APIPA

197. Which of the following protocols is used to synchronize computer clocks to a time signal provided by a server?

A. TFTP

B. HTTP

C. SMTP

D. NTP

198. Which of the words in the fully qualified domain name (FQDN) `www.paris.mydomain.org` represents the topmost layer in the DNS namespace hierarchy?

A. `www`

B. `paris`

C. `mydomain`

D. `org`

199. Which of the following Dynamic Host Configuration Protocol (DHCP) options prevents the client from transmitting IP datagrams that circulate endlessly around the network?

A. Interface MTU

B. Default IP TTL

C. ARP cache timeout

D. TCP keepalive interval

200. In designing a network for a client, Ed has decided to use both internal and external DNS servers. Which of the following resources should Ed register with the external DNS server? (Choose all correct answers.)

A. Company database servers

B. Internet web servers

C. Incoming email servers

D. Domain controllers

201. Which of the following features enables an intrusion detection system (IDS) to monitor all of the traffic on a switched network?

A. Stateful packet inspection

B. Port mirroring

C. Trunking

D. Service dependent filtering

202. Which of the following Domain Name System (DNS) resource records is used to implement email security mechanisms such as Sender Policy Framework and DomainKey Identified Mail?

A. MX

B. PTR

C. TXT

D. CNAME