

CCNA 1 – Introduction to Networks (Version 7.00) – ITNv7 Final Exam Answers Full

1. Which two traffic types use the Real-Time Transport Protocol (RTP)?
(Choose two.)

- **video**
- web
- file transfer
- **voice**
- peer to peer

2. Which wireless technology has low-power and data rate requirements making it popular in-home automation applications?

- **ZigBee**
- LoRaWAN
- 5G
- Wi-Fi

3. Which layer of the TCP/IP model provides a route to forward messages through an internetwork?

- application
- network access
- **internet**
- transport

4. Which type of server relies on record types such as A, NS, AAAA, and MX in order to provide services?

- **DNS**
- email
- file
- web

5. What are proprietary protocols?

- protocols developed by private organizations to operate on any vendor hardware
- protocols that can be freely used by any organization or vendor
- **protocols developed by organizations who have control over their definition and operation**
- a collection of protocols known as the TCP/IP protocol suite

6. What service is provided by DNS?

- **Resolves domain names, such as cisco.com, into IP addresses.**
- A basic set of rules for exchanging text, graphic images, sound, video, and other multimedia files on the web.
- Allows for data transfers between a client and a file server.

- Uses encryption to secure the exchange of text, graphic images, sound, and video on the web.

7. A client packet is received by a server. The packet has a destination port number of 110. What service is the client requesting?

- DNS
- DHCP
- SMTP
- **POP3**

8. What command can be used on a Windows PC to see the IP configuration of that computer?

- show ip interface brief
- ping
- show interfaces
- **ipconfig**

9. A wired laser printer is attached to a home computer. That printer has been shared so that other computers on the home network can also use the printer. What networking model is in use?

- client-based
- master-slave
- point-to-point
- **peer-to-peer (P2P)**

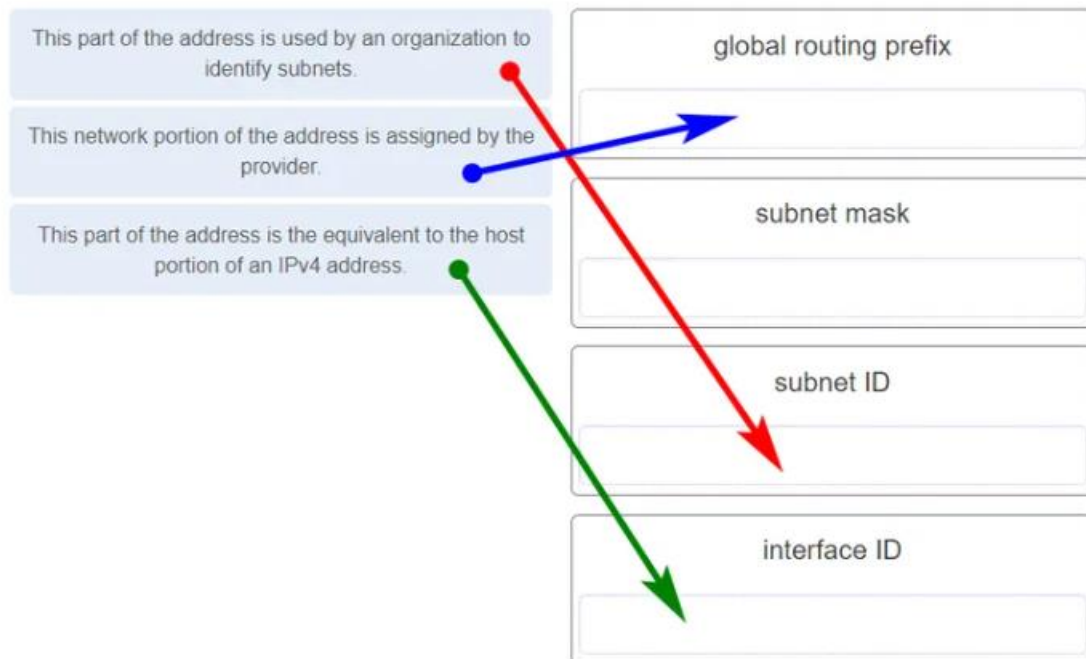
10. What characteristic describes a virus?

- a network device that filters access and traffic coming into a network
- the use of stolen credentials to access private data
- an attack that slows or crashes a device or network service
- **malicious software or code running on an end device**

11. Three bank employees are using the corporate network. The first employee uses a web browser to view a company web page in order to read some announcements. The second employee accesses the corporate database to perform some financial transactions. The third employee participates in an important live audio conference with other corporate managers in branch offices. If QoS is implemented on this network, what will be the priorities from highest to lowest of the different data types?

- financial transactions, web page, audio conference
- **audio conference, financial transactions, web page**
- financial transactions, audio conference, web page
- audio conference, web page, financial transactions

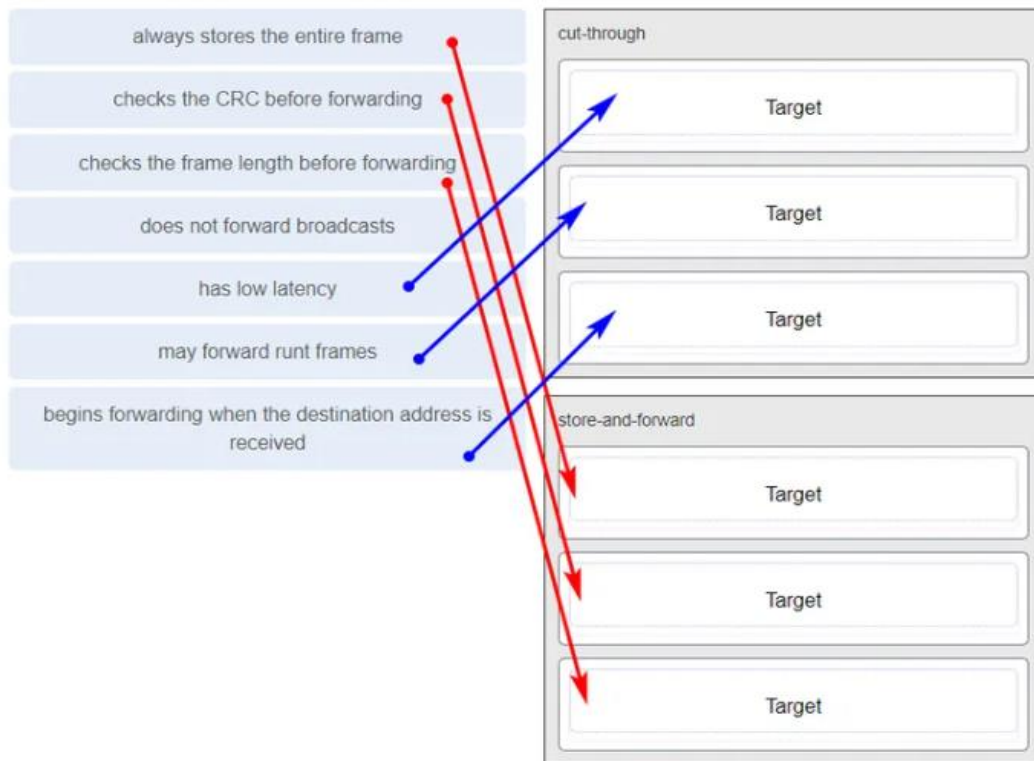
12. Match the description to the IPv6 addressing component. (Not all options are used.)



13. Refer to the exhibit. If Host1 were to transfer a file to the server, what layers of the TCP/IP model would be used?

- only application and Internet layers
- only Internet and network access layers
- only application, Internet, and network access layers
- **application, transport, Internet, and network access layers**
- only application, transport, network, data link, and physical layers
- application, session, transport, network, data link, and physical layers

14. Match the characteristic to the forwarding method. (Not all options are used.)



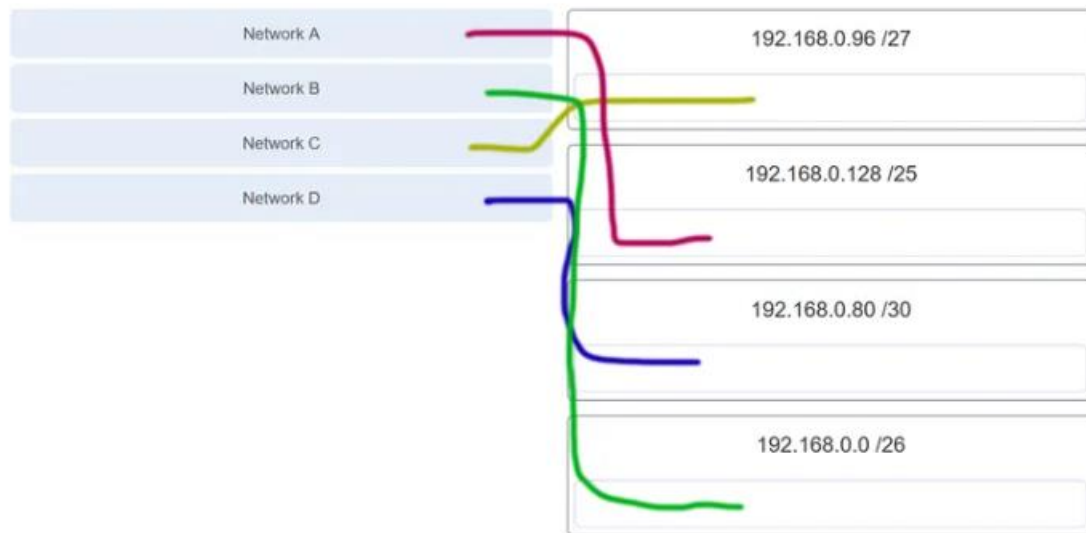
15. Refer to the exhibit. The IP address of which device interface should be used as the default gateway setting of hosts H1?

- R1: S0/0/0
- R2: S0/0/1
- **R1: G0/0**
- R2: S0/0/0

16. What service is provided by Internet Messenger?

- **An application that allows real-time chatting among remote users.**
- Allows remote access to network devices and servers.
- Resolves domain names, such as cisco.com, into IP addresses.
- Uses encryption to provide secure remote access to network devices and servers.

17. Refer to the exhibit. Match the network with the correct IP address and prefix that will satisfy the usable host addressing requirements for each network.



18. Refer to the exhibit. Which protocol was responsible for building the table that is shown?

- DHCP
- **ARP**
- DNS
- ICMP

19. A network administrator notices that some newly installed Ethernet cabling is carrying corrupt and distorted data signals. The new cabling was

installed in the ceiling close to fluorescent lights and electrical equipment. Which two factors may interfere with the copper cabling and result in signal distortion and data corruption? (Choose two.)

- crosstalk
- extended length of cabling
- **RFI**
- **EMI**
- signal attenuation

20. A host is trying to send a packet to a device on a remote LAN segment, but there are currently no mappings in its ARP cache. How will the device obtain a destination MAC address?

- It will send the frame and use its own MAC address as the destination.
- It will send an ARP request for the MAC address of the destination device.
- It will send the frame with a broadcast MAC address.
- It will send a request to the DNS server for the destination MAC address.
- **It will send an ARP request for the MAC address of the default gateway.**

22. A client packet is received by a server. The packet has a destination port number of 53. What service is the client requesting?

- **DNS**
- NetBIOS (NetBT)
- POP3
- IMAP

23. A network administrator is adding a new LAN to a branch office. The new LAN must support 25 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- 255.255.255.128
- 255.255.255.192
- **255.255.255.224**
- 255.255.255.240

24. What characteristic describes a Trojan horse?

- **malicious software or code running on an end device**
- an attack that slows or crashes a device or network service
- the use of stolen credentials to access private data
- a network device that filters access and traffic coming into a network

25. What service is provided by HTTPS?

- Uses encryption to provide secure remote access to network devices and servers.
- Resolves domain names, such as cisco.com, into IP addresses.
- **Uses encryption to secure the exchange of text, graphic images, sound, and video on the web.**
- Allows remote access to network devices and servers.

26. A technician with a PC is using multiple applications while connected to the Internet. How is the PC able to keep track of the data flow between multiple application sessions and have each application receive the correct packet flows?

- The data flow is being tracked based on the destination MAC address of the technician PC.
- **The data flow is being tracked based on the source port number that is used by each application.**
- The data flow is being tracked based on the source IP address that is used by the PC of the technician.
- The data flow is being tracked based on the destination IP address that is used by the PC of the technician.

27. A network administrator is adding a new LAN to a branch office. The new LAN must support 61 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- 255.255.255.240
- 255.255.255.224
- **255.255.255.192**
- 255.255.255.128

28. Refer to the exhibit. Match the network with the correct IP address and prefix that will satisfy the usable host addressing requirements for each

network. (Not all options are used.)

Network A	192.168.0.0 /24
Network B	
Network C	192.168.0.192 /27
Network D	Network C
	192.168.0.228 /32
	192.168.0.0 /25
	Network A
	192.168.0.224 /30
	Network D
	192.168.0.128 /26
	Network B

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29. What characteristic describes a DoS attack?

- the use of stolen credentials to access private data
- a network device that filters access and traffic coming into a network
- software that is installed on a user device and collects information about the user
- **an attack that slows or crashes a device or network service**

30. Match the application protocols to the correct transport protocols



31. What service is provided by SMTP?

- **Allows clients to send email to a mail server and the servers to send email to other servers.**
- Allows remote access to network devices and servers.
- Uses encryption to provide secure remote access to network devices and servers.
- An application that allows real-time chatting among remote users.

32. Which scenario describes a function provided by the transport layer?

- A student is using a classroom VoIP phone to call home. The unique identifier burned into the phone is a transport layer address used to contact another network device on the same network.
- A student is playing a short web-based movie with sound. The movie and sound are encoded within the transport layer header.
- **A student has two web browser windows open in order to access two web sites. The transport layer ensures the correct web page is delivered to the correct browser window.**
- A corporate worker is accessing a web server located on a corporate network. The transport layer formats the screen so the web page appears properly no matter what device is being used to view the web site.

33. Refer to the exhibit. Host B on subnet Teachers transmits a packet to host D on subnet Students. Which Layer 2 and Layer 3 addresses are contained in the

PDUs that are transmitted from host B to the router?

Layer 2 destination address = 00-00-0c-94-36-ab

Layer 2 source address = 00-00-0c-94-36-bb

Layer 3 destination address = 172.16.20.200` `9

9

Layer 3 source address = 172.16.10.200

Layer 2 destination address = 00-00-0c-94-36-dd

Layer 2 source address = 00-00-0c-94-36-bb

Layer 3 destination address = 172.16.20.200

Layer 3 source address = 172.16.10.200

Layer 2 destination address = 00-00-0c-94-36-cd

Layer 2 source address = 00-00-0c-94-36-bb

Layer 3 destination address = 172.16.20.99

Layer 3 source address = 172.16.10.200

Layer 2 destination address = 00-00-0c-94-36-ab

Layer 2 source address = 00-00-0c-94-36-bb

Layer 3 destination address = 172.16.20.200

Layer 3 source address = 172.16.100.200

34. What does the term “attenuation” mean in data communication?

- strengthening of a signal by a networking device
- leakage of signals from one cable pair to another
- time for a signal to reach its destination
- **loss of signal strength as distance increases**

35. Refer to the exhibit. An administrator is trying to configure the switch but receives the error message that is displayed in the exhibit. What is the problem?

- The entire command, configure terminal, must be used.
- The administrator is already in global configuration mode.
- **The administrator must first enter privileged EXEC mode before issuing the command.**

- The administrator must connect via the console port to access global configuration mode.

36. Which two protocols operate at the top layer of the TCP/IP protocol suite? (Choose two.)

- TCP
- IP
- UDP
- **POP**
- **DNS**
- Ethernet

37. A company has a file server that shares a folder named Public. The network security policy specifies that the public folder is assigned Read-Only rights to anyone who can log into the server while the Edit rights are assigned only to the network admin group. Which component is addressed in the AAA network service framework?

- automation
- accounting
- authentication
- **authorization**

38. What three requirements are defined by the protocols used in network communications to allow message transmission across a network? (Choose three.)

- **message size**
- **message encoding**
- connector specifications
- media selection
- **delivery options**
- end-device installation

39. What are two characteristics of IP? (Choose two.)

- **does not require a dedicated end-to-end connection**
- **operates independently of the network media**
- retransmits packets if errors occur
- re-assembles out of order packets into the correct order at the receiver end
- guarantees delivery of packets

40. An employee of a large corporation remotely logs into the company using the appropriate username and password. The employee is attending an important video conference with a customer concerning a large sale. It is important for the video quality to be excellent during the meeting. The employee is unaware that after a successful login, the connection to the company ISP failed. The secondary connection, however, activated within seconds. The disruption was not noticed by the employee or other employees.

What three network characteristics are described in this scenario? (Choose three.)

- **security**
- **quality of service**
- scalability
- powerline networking
- integrity
- **fault tolerance**

41. What are two common causes of signal degradation when using UTP cabling? (Choose two.)

- **improper termination**
- low-quality shielding in cable
- installing cables in conduit
- **low-quality cable or connectors**
- loss of light over long distances

42. Which subnet would include the address 192.168.1.96 as a usable host address?

- **192.168.1.64/26**
- 192.168.1.32/27
- 192.168.1.32/28
- 192.168.1.64/29

43. Refer to the exhibit. On the basis of the output, which two statements about network connectivity are correct? (Choose two.)

- This host does not have a default gateway configured.
- **There are 4 hops between this device and the device at 192.168.100.1.**
- **There is connectivity between this device and the device at 192.168.100.1.**
- The connectivity between these two hosts allows for videoconferencing calls.
- The average transmission time between the two hosts is 2 milliseconds.

44. Which two statements describe how to assess traffic flow patterns and network traffic types using a protocol analyzer? (Choose two.)

- Capture traffic on the weekends when most employees are off work.
- **Capture traffic during peak utilization times to get a good representation of the different traffic types.**

- Only capture traffic in the areas of the network that receive most of the traffic such as the data center.
- **Perform the capture on different network segments.**
- Only capture WAN traffic because traffic to the web is responsible for the largest amount of traffic on a network.

45. What is the consequence of configuring a router with the *ipv6 unicast-routing* global configuration command?

- All router interfaces will be automatically activated.
- **The IPv6 enabled router interfaces begin sending ICMPv6 Router Advertisement messages.**
- Each router interface will generate an IPv6 link-local address.
- It statically creates a global unicast address on this router.

46. Which three layers of the OSI model map to the application layer of the TCP/IP model? (Choose three.)

- **application**
- network
- data link
- **session**
- **presentation**
- transport

47. Refer to the exhibit. If PC1 is sending a packet to PC2 and routing has been configured between the two routers, what will R1 do with the Ethernet frame header attached by PC1?

- nothing, because the router has a route to the destination network
- open the header and use it to determine whether the data is to be sent out S0/0/0
- open the header and replace the destination MAC address with a new one

- **remove the Ethernet header and configure a new Layer 2 header before sending it out S0/0/0**

48. What will happen if the default gateway address is incorrectly configured on a host?

- The host cannot communicate with other hosts in the local network.
- **The host cannot communicate with hosts in other networks.**
- A ping from the host to 127.0.0.1 would not be successful.
- The host will have to use ARP to determine the correct address of the default gateway.
- The switch will not forward packets initiated by the host.

49. What are two features of ARP? (Choose two.)

- When a host is encapsulating a packet into a frame, it refers to the MAC address table to determine the mapping of IP addresses to MAC addresses.
- An ARP request is sent to all devices on the Ethernet LAN and contains the IP address of the destination host and its multicast MAC address.
- **If a host is ready to send a packet to a local destination device and it has the IP address but not the MAC address of the destination, it generates an ARP broadcast.**
- If no device responds to the ARP request, then the originating node will broadcast the data packet to all devices on the network segment.
- **If a device receiving an ARP request has the destination IPv4 address, it responds with an ARP reply.**

50. A network administrator is adding a new LAN to a branch office. The new LAN must support 90 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- **255.255.255.128**
- 255.255.255.240
- 255.255.255.248
- 255.255.255.224

51. What are two ICMPv6 messages that are not present in ICMP for IPv4? (Choose two.)

- **Neighbor Solicitation**
- Destination Unreachable
- Host Confirmation
- Time Exceeded
- **Router Advertisement**
- Route Redirection

52. A client packet is received by a server. The packet has a destination port number of 80. What service is the client requesting?

- DHCP
- SMTP

- DNS
- HTTP

53. What is an advantage for small organizations of adopting IMAP instead of POP?

- POP only allows the client to store messages in a centralized way, while IMAP allows distributed storage.
- **Messages are kept in the mail servers until they are manually deleted from the email client.**
- When the user connects to a POP server, copies of the messages are kept in the mail server for a short time, but IMAP keeps them for a long time.
- IMAP sends and retrieves email, but POP only retrieves email.

54. A technician can ping the IP address of the web server of a remote company but cannot successfully ping the URL address of the same web server. Which software utility can the technician use to diagnose the problem?

- tracert
- ipconfig
- netstat
- **nslookup**

55. Which two functions are performed at the LLC sublayer of the OSI Data Link Layer to facilitate Ethernet communication? (Choose two.)

- implements CSMA/CD over legacy shared half-duplex media
- **enables IPv4 and IPv6 to utilize the same physical medium**
- integrates Layer 2 flows between 10 Gigabit Ethernet over fiber and 1 Gigabit Ethernet over copper
- implements a process to delimit fields within an Ethernet 2 frame
- **places information in the Ethernet frame that identifies which network layer protocol is being encapsulated by the frame**

Other case:

- responsible for internal structure of Ethernet frame
- applies source and destination MAC addresses to Ethernet frame
- **handles communication between upper layer networking software and Ethernet NIC hardware**
- **adds Ethernet control information to network protocol data**
- implements trailer with frame check sequence for error detection

Other case:

- integrates Layer 2 flows between 10 Gigabit Ethernet over fiber and 1 Gigabit Ethernet over copper
- **places information in the Ethernet frame that identifies which network layer protocol is being encapsulated by the frame**
- implements CSMA/CD over legacy shared half-duplex media
- **adds Ethernet control information to network protocol data**
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Other case:

- **enables IPv4 and IPv6 to utilize the same physical medium**
- **adds Ethernet control information to network protocol data**
- applies source and destination MAC addresses to Ethernet frame
- responsible for the internal structure of Ethernet frame
- implements trailer with frame check sequence for error detection

Other case:

- **enables IPv4 and IPv6 to utilize the same physical medium**
- applies source and destination MAC addresses to Ethernet frame
- integrates Layer 2 flows between 10 Gigabit Ethernet over fiber and 1 Gigabit Ethernet over copper
- **handles communication between upper layer networking software and Ethernet NIC hardware**
- responsible for internal structure of Ethernet frame

56. The global configuration command *ip default-gateway 172.16.100.1* is applied to a switch. What is the effect of this command?

- The switch can communicate with other hosts on the 172.16.100.0 network.
- **The switch can be remotely managed from a host on another network.**
- The switch is limited to sending and receiving frames to and from the gateway 172.16.100.1.
- The switch will have a management interface with the address 172.16.100.1.

57. What happens when the *transport input ssh* command is entered on the switch vty lines?

- The SSH client on the switch is enabled.
- The switch requires a username/password combination for remote access.
- **Communication between the switch and remote users is encrypted.**
- The switch requires remote connections via a proprietary client software.

58. Match the type of threat with the cause. (Not all options are used.)



59. A disgruntled employee is using some free wireless networking tools to determine information about the enterprise wireless networks. This person is planning on using this information to hack the wireless network. What type of attack is this?

- DoS
- access
- **reconnaissance**
- Trojan horse

60. What service is provided by HTTP?

- Uses encryption to secure the exchange of text, graphic images, sound, and video on the web.
- Allows for data transfers between a client and a file server.
- An application that allows real-time chatting among remote users.
- **A basic set of rules for exchanging text, graphic images, sound, video, and other multimedia files on the web.**

61. A client packet is received by a server. The packet has a destination port number of 67. What service is the client requesting?

- FTP
- **DHCP**
- Telnet
- SSH

62. What are two problems that can be caused by a large number of ARP request and reply messages? (Choose two.)

- Switches become overloaded because they concentrate all the traffic from the attached subnets.
- **The ARP request is sent as a broadcast, and will flood the entire subnet.**
- The network may become overloaded because ARP reply messages have a very large payload due to the 48-bit MAC address and 32-bit IP address that they contain.
- A large number of ARP request and reply messages may slow down the switching process, leading the switch to make many changes in its MAC table.
- **All ARP request messages must be processed by all nodes on the local network.**

63. A group of Windows PCs in a new subnet has been added to an Ethernet network. When testing the connectivity, a technician finds that these PCs can access local network resources but not the Internet resources. To troubleshoot the problem, the technician wants to initially confirm the IP address and DNS configurations on the PCs, and also verify connectivity to the local router. Which three Windows CLI commands and utilities will provide the necessary information? (Choose three.)

- netsh interface ipv6 show neighbor
- Arp -a
- tracert
- **ping**
- **ipconfig**
- **nslookup**
- telnet

64. During the process of forwarding traffic, what will the router do immediately after matching the destination IP address to a network on a directly connected routing table entry?

- analyze the destination IP address
- **switch the packet to the directly connected interface**
- look up the next-hop address for the packet
- discard the traffic after consulting the route table

65. What characteristic describes antispyware?

- **applications that protect end devices from becoming infected with malicious software**
- a network device that filters access and traffic coming into a network
- software on a router that filters traffic based on IP addresses or applications
- a tunneling protocol that provides remote users with secure access into the network of an organization

66. A network administrator needs to keep the user ID, password, and session contents private when establishing remote CLI connectivity with a switch to manage it. Which access method should be chosen?

- Telnet
- AUX
- **SSH**
- Console

67. What are the two most effective ways to defend against malware? (Choose two.)

- Implement a VPN.
- Implement network firewalls.
- Implement RAID.
- Implement strong passwords.
- **Update the operating system and other application software.**
- **Install and update antivirus software.**

Explanation: A cybersecurity specialist must be aware of the technologies and measures that are used as countermeasures to protect the organization from threats and vulnerabilities.

68. Which type of security threat would be responsible if a spreadsheet add-on disables the local software firewall?

- brute-force attack
- **Trojan horse**
- DoS
- buffer overflow

Explanation: A Trojan horse is software that does something harmful, but is hidden in legitimate software code. A denial of service (DoS) attack results in interruption of network services to users, network devices, or applications. A brute-force attack commonly involves trying to access a network device. A buffer overflow occurs when a program attempts to store more data in a memory location than it can hold.

69. Which frame field is created by a source node and used by a destination node to ensure that a transmitted data signal has not been altered by interference, distortion, or signal loss?

- User Datagram Protocol field
- transport layer error check field
- flow control field
- **frame check sequence field**
- error correction process field

70. A network administrator is adding a new LAN to a branch office. The new LAN must support 4 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- **255.255.255.248**
- 255.255.255.0
- 255.255.255.128
- 255.255.255.192

71. What service is provided by POP3?

- **Retrieves email from the server by downloading the email to the local mail application of the client.**
- An application that allows real-time chatting among remote users.
- Allows remote access to network devices and servers.
- Uses encryption to provide secure remote access to network devices and servers.

72. What two security solutions are most likely to be used only in a corporate environment? (Choose two.)

- antispyware
- **virtual private networks**
- **intrusion prevention systems**
- strong passwords
- antivirus software

73. What characteristic describes antivirus software?

- **applications that protect end devices from becoming infected with malicious software**
- a network device that filters access and traffic coming into a network
- a tunneling protocol that provides remote users with secure access into the network of an organization
- software on a router that filters traffic based on IP addresses or applications

74. What mechanism is used by a router to prevent a received IPv4 packet from traveling endlessly on a network?

- It checks the value of the TTL field and if it is 0, it discards the packet and sends a Destination Unreachable message to the source host.

- It checks the value of the TTL field and if it is 100, it discards the packet and sends a Destination Unreachable message to the source host.
- **It decrements the value of the TTL field by 1 and if the result is 0, it discards the packet and sends a Time Exceeded message to the source host.**
- It increments the value of the TTL field by 1 and if the result is 100, it discards the packet and sends a Parameter Problem message to the source host.

75. A client packet is received by a server. The packet has a destination port number of 69. What service is the client requesting?

- DNS
- DHCP
- SMTP
- **TFTP**

76. An administrator defined a local user account with a secret password on router R1 for use with SSH. Which three additional steps are required to configure R1 to accept only encrypted SSH connections? (Choose three.)

- Configure DNS on the router.
- Generate two-way pre-shared keys.
- **Configure the IP domain name on the router.**
- **Generate the SSH keys.**
- **Enable inbound vty SSH sessions.**
- Enable inbound vty Telnet sessions.

77. Which two functions are performed at the MAC sublayer of the OSI Data Link Layer to facilitate Ethernet communication? (Choose two.)

- handles communication between upper layer networking software and Ethernet NIC hardware
- **implements trailer with frame check sequence for error detection**
- places information in the Ethernet frame that identifies which network layer protocol is being encapsulated by the frame
- **implements a process to delimit fields within an Ethernet 2 frame**
- adds Ethernet control information to network protocol data

Case 2:

- places information in the Ethernet frame that identifies which network layer protocol is being encapsulated by the frame
- adds Ethernet control information to network protocol data
- **responsible for internal structure of Ethernet frame**
- enables IPv4 and IPv6 to utilize the same physical medium
- **implements trailer with frame check sequence for error detection**

Case 3:

- **integrates Layer 2 flows between 10 Gigabit Ethernet over fiber and 1 Gigabit Ethernet over copper**

- enables IPv4 and IPv6 to utilize the same physical medium
- handles communication between upper layer networking software and Ethernet NIC hardware
- adds Ethernet control information to network protocol data
- **implements CSMA/CD over legacy shared half-duplex media**

78. An IPv6 enabled device sends a data packet with the destination address of FF02::2. What is the target of this packet?

- all IPv6 enabled devices on the local link
- all IPv6 DHCP servers
- all IPv6 enabled devices across the network
- **all IPv6 configured routers on the local link**

79. What are the three parts of an IPv6 global unicast address? (Choose three.)

- **subnet ID**
- subnet mask
- broadcast address
- **global routing prefix**
- **interface ID**

80. A network administrator is designing the layout of a new wireless network. Which three areas of concern should be accounted for when building a wireless network? (Choose three.)

- extensive cabling
- mobility options
- packet collision
- **interference**
- **security**
- **coverage area**

Explanation: The three areas of concern for wireless networks focus on the size of the coverage area, any nearby interference, and providing network security. Extensive cabling is not a concern for wireless networks, as a wireless network will require minimal cabling for providing wireless access to hosts. Mobility options are not a component of the areas of concern for wireless networks.

81. A new network administrator has been asked to enter a banner message on a Cisco device. What is the fastest way a network administrator could test whether the banner is properly configured?

- Enter CTRL-Z at the privileged mode prompt.
- Exit global configuration mode.
- Power cycle the device.
- Reboot the device.
- **Exit privileged EXEC mode and press Enter .**

82. What method is used to manage contention-based access on a wireless network?

- token passing

- **CSMA/CA**
- priority ordering
- CSMA/CD

83. What is a function of the data link layer?

- provides the formatting of data
- provides end-to-end delivery of data between hosts
- provides delivery of data between two applications
- **provides for the exchange of frames over a common local media**

84. What is the purpose of the TCP sliding window?

- to ensure that segments arrive in order at the destination
- to end communication when data transmission is complete
- to inform a source to retransmit data from a specific point forward
- **to request that a source decrease the rate at which it transmits data**

Explanation: The TCP sliding window allows a destination device to inform a source to slow down the rate of transmission. To do this, the destination device reduces the value contained in the window field of the segment. It is acknowledgment numbers that are used to specify retransmission from a specific point forward. It is sequence numbers that are used to ensure segments arrive in order. Finally, it is a FIN control bit that is used to end a communication session.

85. What characteristic describes spyware?

- a network device that filters access and traffic coming into a network
- **software that is installed on a user device and collects information about the user**
- an attack that slows or crashes a device or network service
- the use of stolen credentials to access private data

86. Which switching method drops frames that fail the FCS check?

- **store-and-forward switching**
- borderless switching
- ingress port buffering
- cut-through switching

87. Which range of link-local addresses can be assigned to an IPv6-enabled interface?

- FEC0::/10
- FDEE::/7
- **FE80::/10**
- FF00::/8

Explain:

Link-local addresses are in the range of FE80::/10 to FEBF::/10. The original IPv6 specification defined site-local addresses and used the prefix range FEC0::/10, but these addresses were deprecated by the IETF in favor of unique local addresses. FDEE::/7 is a unique local address because it is in the range of FC00::/7 to FDFF::/7. IPv6 multicast addresses have the prefix FF00::/8.

88. What service is provided by FTP?

- A basic set of rules for exchanging text, graphic images, sound, video, and other multimedia files on the web.
- An application that allows real-time chatting among remote users.
- **Allows for data transfers between a client and a file server.**
- Uses encryption to secure the exchange of text, graphic images, sound, and video on the web.

89. A user is attempting to access <http://www.cisco.com/> without success. Which two configuration values must be set on the host to allow this access? (Choose two.)

- **DNS server**
- source port number
- HTTP server
- source MAC address
- **default gateway**

90. Which two statements accurately describe an advantage or a disadvantage when deploying NAT for IPv4 in a network? (Choose two.)

- NAT adds authentication capability to IPv4.
- **NAT introduces problems for some applications that require end-to-end connectivity.**
- NAT will impact negatively on switch performance.
- **NAT provides a solution to slow down the IPv4 address depletion.**
- NAT improves packet handling.
- NAT causes routing tables to include more information.

Explanation: Network Address Translation (NAT) is a technology that is implemented within IPv4 networks. One application of NAT is to use private IP addresses inside a network and use NAT to share a few public IP addresses for many internal hosts. In this way it provides a solution to slow down the IPv4 address depletion. However, since NAT hides the actual IP addresses that are used by end devices, it may cause problems for some applications that require end-to-end connectivity.

91. What would be the interface ID of an IPv6 enabled interface with a MAC address of 1C-6F-65-C2-BD-F8 when the interface ID is generated by using the EUI-64 process?

- 0C6F:65FF:FEC2:BDF8
- **1E6F:65FF:FEC2:BDF8**
- C16F:65FF:FEC2:BDF8
- 106F:65FF:FEC2:BDF8

Explanation: To derive the EUI-64 interface ID by using the MAC address 1C-6F-65-C2-BD-F8, three steps are taken.

- Change the seventh bit of the MAC address from a binary 0 to a binary 1 which changes the hex C, into a hex E.
- Insert hex digits FFFE into the middle of the address.
- Rewrite the address in IPv6 format.

The three steps, when complete, give the interface ID of **1E6F:65FF:FEC2:BDF8**.

92. Refer to the exhibit. PC1 issues an ARP request because it needs to send a packet to PC2. In this scenario, what will happen next?

- SW1 will send an ARP reply with the SW1 Fa0/1 MAC address.
- SW1 will send an ARP reply with the PC2 MAC address.
- **PC2 will send an ARP reply with the PC2 MAC address.**
- RT1 will send an ARP reply with the RT1 Fa0/0 MAC address.
- RT1 will send an ARP reply with the PC2 MAC address.

Explain: When a network device wants to communicate with another device on the same network, it sends a broadcast ARP request. In this case, the request will contain the IP address of PC2. The destination device (PC2) sends an ARP reply with its MAC address.

93. What service is provided by BOOTP?

- Uses encryption to secure the exchange of text, graphic images, sound, and video on the web.
- Allows for data transfers between a client and a file server.
- **Legacy application that enables a diskless workstation to discover its own IP address and find a BOOTP server on the network.**
- A basic set of rules for exchanging text, graphic images, sound, video, and other multimedia files on the web.

94. What characteristic describes adware?

- a network device that filters access and traffic coming into a network
- **software that is installed on a user device and collects information about the user**
- the use of stolen credentials to access private data
- an attack that slows or crashes a device or network service

95. When a switch configuration includes a user-defined error threshold on a per-port basis, to which switching method will the switch revert when the error threshold is reached?

- cut-through
- **store-and-forward**
- fast-forward
- fragment-free

96. Match a statement to the related network model. (Not all options are used.)

requires a specific user interface

no dedicated server is required

a background service is required

client and server roles are set on a per request basis

devices can only function in one role at a time

peer-to-peer network

no dedicated server is required

client and server roles are set on a per request basis

peer-to-peer application

requires a specific user interface

a background service is required

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Place the options in the following order: **peer-to-peer network**

[+] no dedicated server is required

[+] client and server roles are set on a per request basis

peer-to-peer application

[#] requires a specific user interface

[#] a background service is required

Explain:

Peer-to-peer networks do not require the use of a dedicated server, and devices can assume both client and server roles simultaneously on a per request basis. Because they do not require formalized accounts or permissions, they are best

used in limited situations. Peer-to-peer applications require a user interface and background service to be running, and can be used in more diverse situations.

97. What are two primary responsibilities of the Ethernet MAC sublayer?

(Choose two.)

- error detection
- frame delimiting
- **accessing the media**
- **data encapsulation**
- logical addressing

98. Refer to the exhibit. What three facts can be determined from the viewable output of the show ip interface brief command? (Choose three.)

- Two physical interfaces have been configured.
- **The switch can be remotely managed.**
- **One device is attached to a physical interface.**
- Passwords have been configured on the switch.
- Two devices are attached to the switch.
- **The default SVI has been configured.**

Explain:

Vlan1 is the default SVI. Because an SVI has been configured, the switch can be configured and managed remotely. FastEthernet0/0 is showing up and up, so a device is connected.

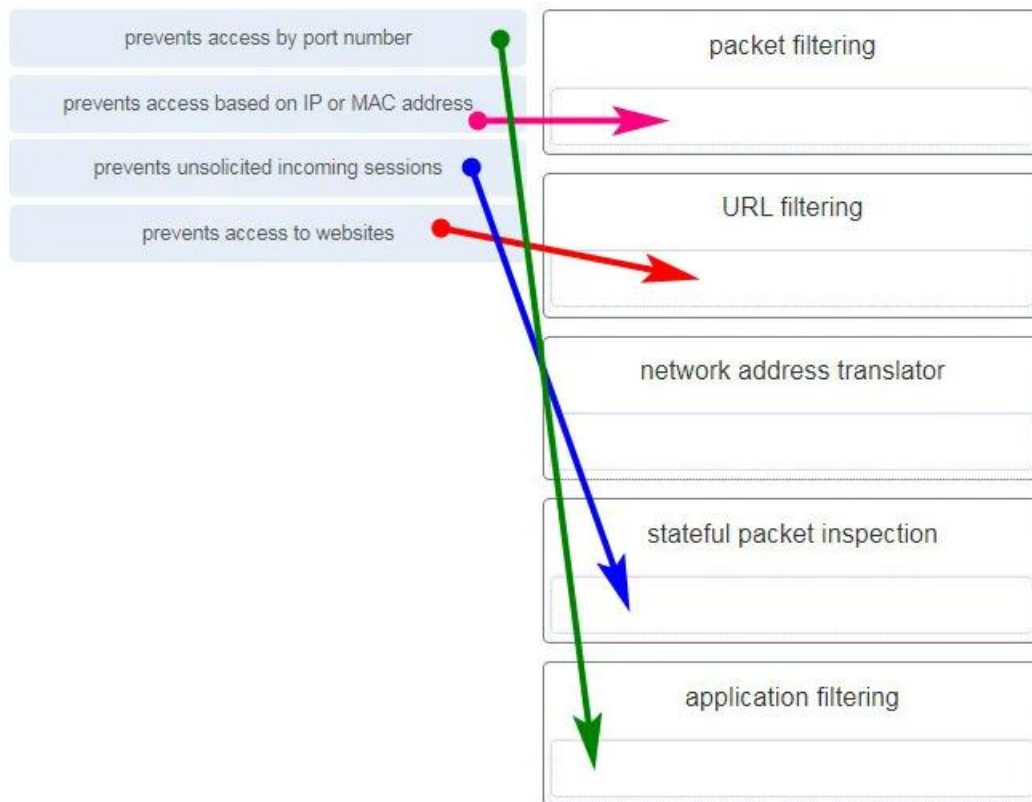
99. Match each type of frame field to its function. (Not all options are used.)



100. What is the subnet ID associated with the IPv6 address 2001:DA48:FC5:A4:3D1B::1/64?

- 2001:DA48::/64
- 2001:DA48:FC5::A4:/64
- **2001:DA48:FC5:A4::/64**
- 2001::/64

101. Match the firewall function to the type of threat protection it provides to the network. (Not all options are used.)



- packet filtering – prevents access based on IP or MAC address
- URL filtering – prevents access to websites
- network address translator – (none)
- stateful packet inspection – prevents unsolicited incoming sessions
- application filtering – prevents access by port number

Explain: Firewall products come packaged in various forms. These products use different techniques for determining what will be permitted or denied access to a network. They include the following:

- + Packet filtering – Prevents or allows access based on IP or MAC addresses
- + Application filtering – Prevents or allows access by specific application types based on port numbers
- + URL filtering – Prevents or allows access to websites based on specific URLs or keywords
- + Stateful packet inspection (SPI) – Incoming packets must be legitimate responses to requests from internal hosts. Unsolicited packets are blocked unless permitted specifically. SPI can also include the capability to recognize and filter out specific types of attacks, such as denial of service (DoS)

102. Users are reporting longer delays in authentication and in accessing network resources during certain time periods of the week. What kind of

information should network engineers check to find out if this situation is part of a normal network behavior?

- syslog records and messages
- **the network performance baseline**
- debug output and packet captures
- network configuration files

103. How does the service password-encryption command enhance password security on Cisco routers and switches?

- It requires encrypted passwords to be used when connecting remotely to a router or switch with Telnet.
- **It encrypts passwords that are stored in router or switch configuration files.**
- It requires that a user type encrypted passwords to gain console access to a router or switch.
- It encrypts passwords as they are sent across the network.

Explain: The service password-encryption command encrypts plaintext passwords in the configuration file so that they cannot be viewed by unauthorized users.

104. Which two statements are correct in a comparison of IPv4 and IPv6 packet headers? (Choose two.)

- **The Source Address field name from IPv4 is kept in IPv6.**
- The Version field from IPv4 is not kept in IPv6.
- The Destination Address field is new in IPv6.
- The Header Checksum field name from IPv4 is kept in IPv6.
- **The Time-to-Live field from IPv4 has been replaced by the Hop Limit field in IPv6.**

Explanation: The IPv6 packet header fields are as follows: Version, Traffic Class, Flow Label, Payload Length, Next Header, Hop Limit, Source Address, and Destination Address. The IPv4 packet header fields include the following: Version, Differentiated Services, Time-to-Live, Protocol, Source IP Address, and Destination IP Address. Both versions have a 4-bit Version field. Both versions have a Source (IP) Address field. IPv4 addresses are 32 bits; IPv6 addresses are 128 bits. The Time-to-Live or TTL field in IPv4 is now called Hop Limit in IPv6, but this field serves the same purpose in both versions. The value in this 8-bit field decrements each time a packet passes through any router. When this value is 0, the packet is discarded and is not forwarded to any other router.

105. A network administrator wants to have the same network mask for all networks at a particular small site. The site has the following networks and number of devices:

IP phones – 22 addresses

PCs – 20 addresses needed

Printers – 2 addresses needed

Scanners – 2 addresses needed

The network administrator has deemed that 192.168.10.0/24 is to be the network used at this site. Which single subnet mask would make the most efficient use of the available addresses to use for the four subnetworks?

- 255.255.255.192
- 255.255.255.252
- 255.255.255.240
- 255.255.255.248
- 255.255.255.0
- **255.255.255.224**

106. What characteristic describes identity theft?

- **the use of stolen credentials to access private data**
- software on a router that filters traffic based on IP addresses or applications
- software that identifies fast-spreading threats
- a tunneling protocol that provides remote users with secure access into the network of an organization

107. A network administrator is adding a new LAN to a branch office. The new LAN must support 200 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- 255.255.255.240
- **255.255.255.0**
- 255.255.255.248
- 255.255.255.224

108. What are three commonly followed standards for constructing and installing cabling? (Choose three.)

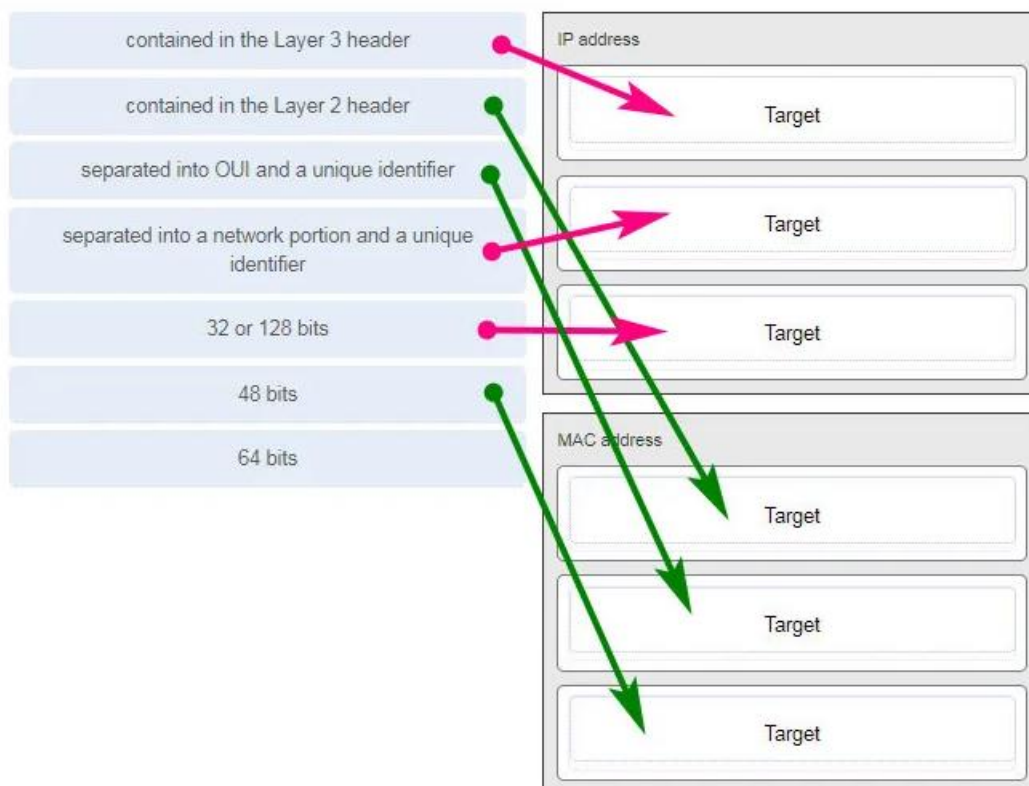
- cost per meter (foot)
- **cable lengths**
- connector color
- **pinouts**
- **connector types**
- tensile strength of plastic insulator

109. Refer to the exhibit. What is wrong with the displayed termination?

- The woven copper braid should not have been removed.
- The wrong type of connector is being used.
- **The untwisted length of each wire is too long.**
- The wires are too thick for the connector that is used.

Explanation: When a cable to an RJ-45 connector is terminated, it is important to ensure that the untwisted wires are not too long and that the flexible plastic sheath surrounding the wires is crimped down and not the bare wires. None of the colored wires should be visible from the bottom of the jack.

110. Match the characteristic to the category. (Not all options are used.)



111. A client packet is received by a server. The packet has a destination port number of 143. What service is the client requesting?

- **IMAP**

- FTP
- SSH
- Telnet

112. What are two characteristics shared by TCP and UDP? (Choose two.)

- default window size
- connectionless communication
- **port numbering**
- 3-way handshake
- ability to carry digitized voice
- **use of checksum**

Explain:

Both TCP and UDP use source and destination port numbers to distinguish different data streams and to forward the right data segments to the right applications. Error checking the header and data is done by both protocols by using a checksum calculation to determine the integrity of the data that is received. TCP is connection-oriented and uses a 3-way handshake to establish an initial connection. TCP also uses window to regulate the amount of traffic sent before receiving an acknowledgment. UDP is connectionless and is the best protocol for carry digitized VoIP signals.

113. Refer to the exhibit. Which two network addresses can be assigned to the network containing 10 hosts? Your answers should waste the fewest addresses, not reuse addresses that are already assigned, and stay within the 10.18.10.0/24 range of addresses. (Choose two.)

- 10.18.10.200/28
- **10.18.10.208/28**
- 10.18.10.240/27
- 10.18.10.200/27
- 10.18.10.224/27
- **10.18.10.224/28**

Explanation: Addresses 10.18.10.0 through 10.18.10.63 are taken for the leftmost network. Addresses 192 through 199 are used by the center network. Because 4 host bits are needed to accommodate 10 hosts, a /28 mask is needed. 10.18.10.200/28 is not a valid network number. Two subnets that can be used are 10.18.10.208/28 and 10.18.10.224/28.

114. A client packet is received by a server. The packet has a destination port number of 21. What service is the client requesting?

- **FTP**
- LDAP
- SLP
- SNMP

115. What attribute of a NIC would place it at the data link layer of the OSI model?

- attached Ethernet cable
- IP address
- **MAC address**
- RJ-45 port
- TCP/IP protocol stack

116. A network administrator is adding a new LAN to a branch office. The new LAN must support 10 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- 255.255.255.192
- 255.255.255.248
- 255.255.255.224
- **255.255.255.240**

117. What technique is used with UTP cable to help protect against signal interference from crosstalk?

- wrapping a foil shield around the wire pairs
- **twisting the wires together into pairs**
- terminating the cable with special grounded connectors
- encasing the cables within a flexible plastic sheath

Explanation: To help prevent the effects of crosstalk, UTP cable wires are twisted together into pairs. Twisting the wires together causes the magnetic fields of each wire to cancel each other out.

118. Refer to the exhibit. The network administrator has assigned the LAN of LBMISS an address range of 192.168.10.0. This address range has been subnetted using a /29 prefix. In order to accommodate a new building, the technician has decided to use the fifth subnet for configuring the new network (subnet zero is the first subnet). By company policies, the router interface is always assigned the first usable host address and the workgroup server is given the last usable host address. Which configuration should be entered into

the properties of the workgroup server to allow connectivity to the Internet?

- IP address: 192.168.10.65 subnet mask: 255.255.255.240, default gateway: 192.168.10.76
- IP address: 192.168.10.38 subnet mask: 255.255.255.240, default gateway: 192.168.10.33
- **IP address: 192.168.10.38 subnet mask: 255.255.255.248, default gateway: 192.168.10.33**
- IP address: 192.168.10.41 subnet mask: 255.255.255.248, default gateway: 192.168.10.46
- IP address: 192.168.10.254 subnet mask: 255.255.255.0, default gateway: 192.168.10.1

Explain:

Using a /29 prefix to subnet 192.168.10.0 results in subnets that increment by 8:

192.168.10.0 (1)

192.168.10.8 (2)

192.168.10.16 (3)

192.168.10.24 (4)

192.168.10.32 (5)

119. Refer to the exhibit. The switches are in their default configuration. Host A needs to communicate with host D, but host A does not have the MAC address for its default gateway. Which network hosts will receive the ARP

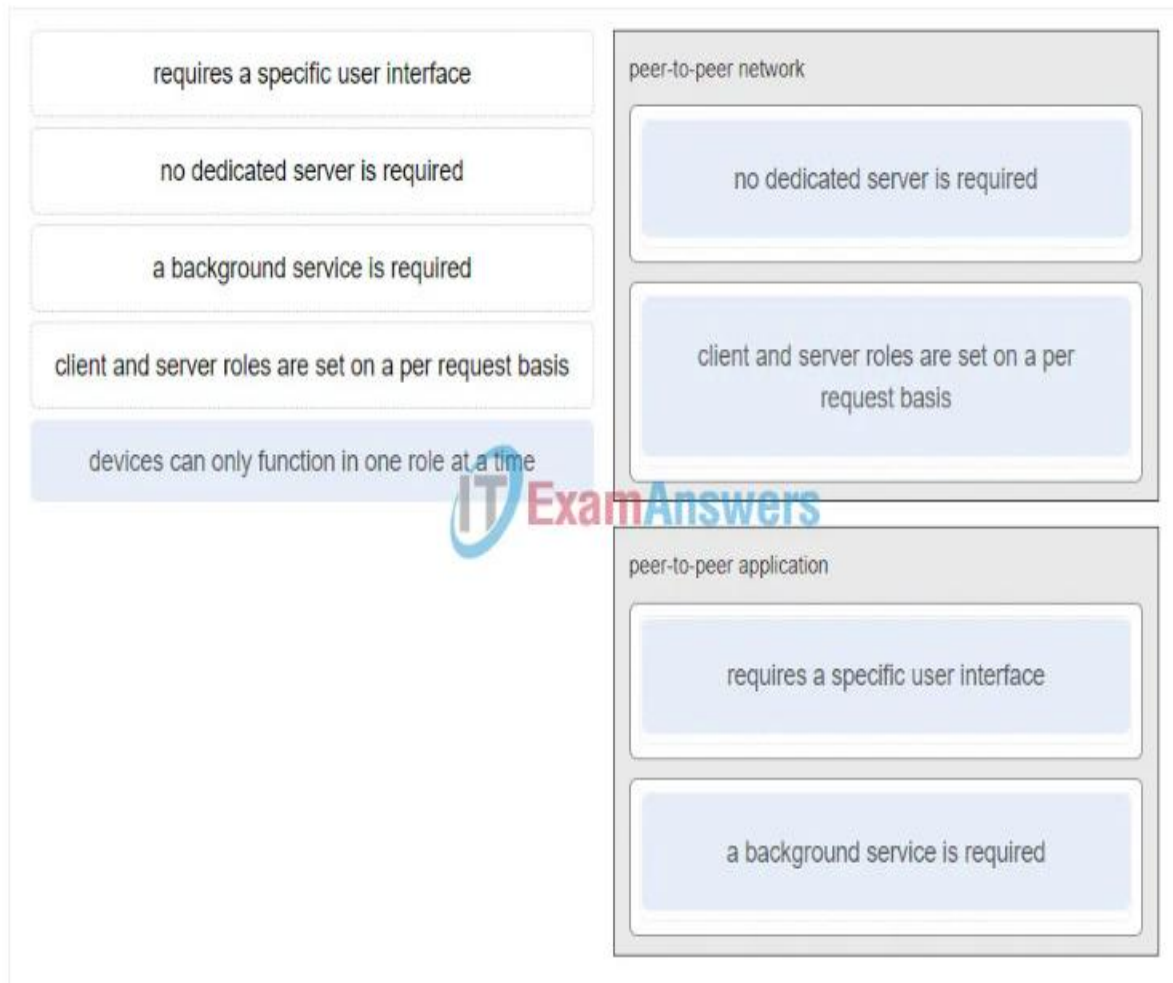
request sent by host A?

- only host D
- only router R1
- only hosts A, B, and C
- only hosts A, B, C, and D
- only hosts B and C
- **only hosts B, C, and router R1**

Explain:

Since host A does not have the MAC address of the default gateway in its ARP table, host A sends an ARP broadcast. The ARP broadcast would be sent to every device on the local network. Hosts B, C, and router R1 would receive the broadcast. Router R1 would not forward the message.

120. Match a statement to the related network model. (Not all options are used.)



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Place the options in the following order: peer-to-peer network

[+] no dedicated server is required

[+] client and server roles are set on a per request basis

peer-to-peer application

[#] requires a specific user interface

[#] a background service is required

Explain:

Peer-to-peer networks do not require the use of a dedicated server, and devices can assume both client and server roles simultaneously on a per request basis. Because they do not require formalized accounts or permissions, they are best used in limited situations. Peer-to-peer applications require a user interface and background service to be running, and can be used in more diverse situations.

121. Refer to the exhibit. A network engineer has been given the network address of 192.168.99.0 and a subnet mask of 255.255.255.192 to subnet across the four networks shown. How many total host addresses are unused

across all four subnets?

- 88
- **200**
- 72
- 224
- 158

122. Which connector is used with twisted-pair cabling in an Ethernet LAN?



LC connector



SC connector



BNC



RJ 11

ue Answer:



RJ 45 (true answer)

RJ 45 (true answer)

123. A client packet is received by a server. The packet has a destination port number of 22. What service is the client requesting?

- **SSH**
- SMB/CIFS
- HTTPS
- SLP

124. What characteristic describes an IPS?

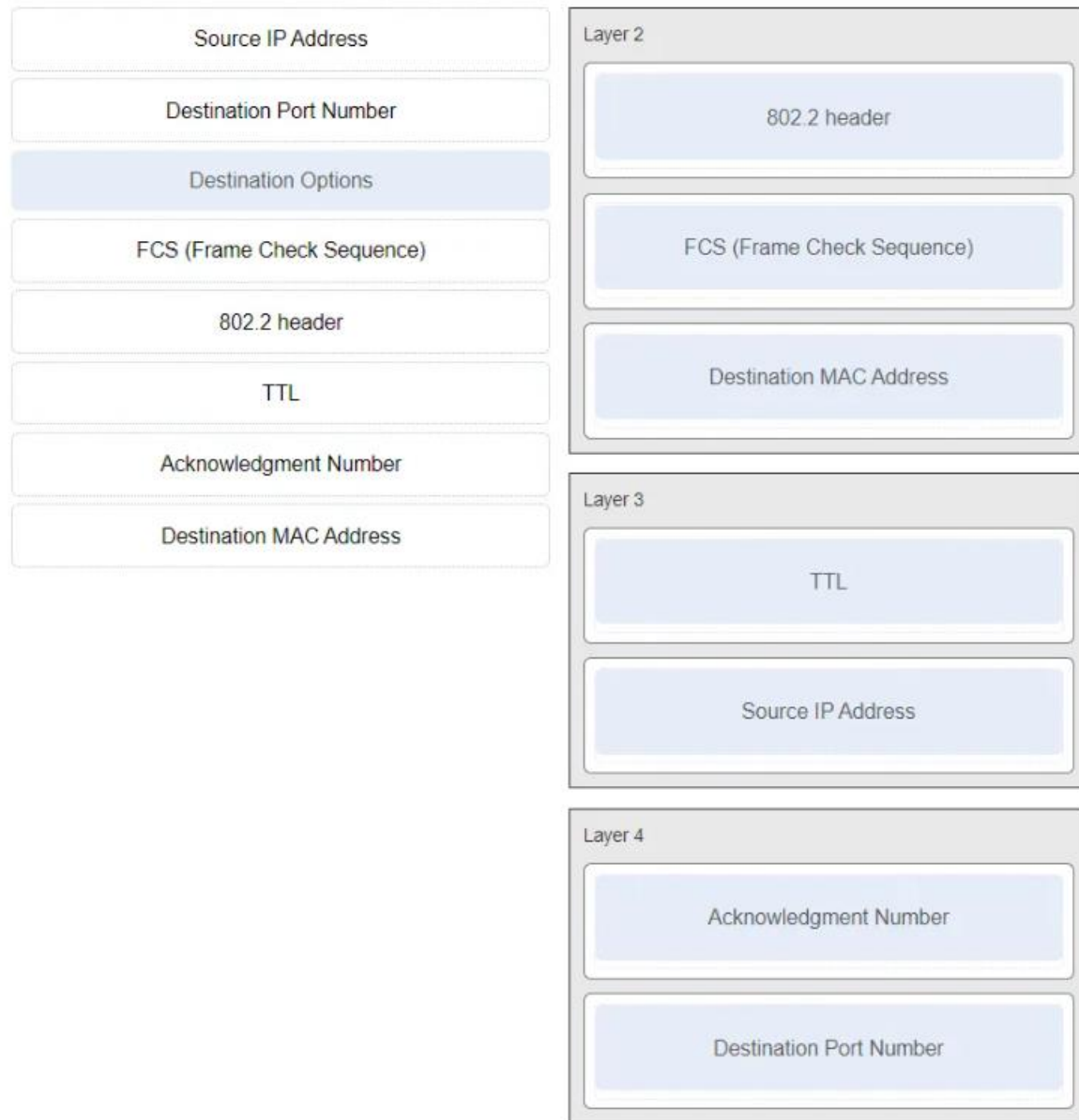
- a tunneling protocol that provides remote users with secure access into the network of an organization
- **a network device that filters access and traffic coming into a network**
- software that identifies fast-spreading threats
- software on a router that filters traffic based on IP addresses or applications

Explanation: IPS – An intrusion prevention system (IPS) monitors incoming and outgoing traffic looking for malware, network attack signatures, and more. If it recognizes a threat, it can immediately stop it.

125. What service is provided by DHCP?

- An application that allows real-time chatting among remote users.
- Allows remote access to network devices and servers.
- **Dynamically assigns IP addresses to end and intermediary devices.**
- Uses encryption to provide secure remote access to network devices and servers.

126. Match the header field with the appropriate layer of the OSI model. (Not all options are used.)



127. Refer to the exhibit. The switches have a default configuration. Host A needs to communicate with host D, but host A does not have the MAC address for the default gateway. Which network devices will receive the ARP request sent by host A?

i360201v3n1_275353.png

- only host D
- only hosts A, B, C, and D
- only hosts B and C
- **only hosts B, C, and router R1**
- only hosts A, B, and C
- only router R1

Explanation: Because host A does not have the MAC address of the default gateway in the ARP table, host A sends an ARP broadcast. The ARP broadcast would be sent to every device on the local network. Hosts B, C, and router R1 would receive the broadcast. Router R1 would not forward the message.

128. Which wireless technology has low-power and low-data rate requirements making it popular in IoT environments?

- Bluetooth
- **Zigbee**
- WiMAX
- Wi-Fi

Explanation: Zigbee is a specification used for low-data rate, low-power communications. It is intended for applications that require short-range, low data-rates and long battery life. Zigbee is typically used for industrial and Internet of Things (IoT) environments such as wireless light switches and medical device data collection.

129. What two ICMPv6 message types must be permitted through IPv6 access control lists to allow resolution of Layer 3 addresses to Layer 2 MAC addresses? (Choose two.)

- **neighbor solicitations**
- echo requests
- **neighbor advertisements**
- echo replies

- router solicitations
- router advertisements

130. A client is using SLAAC to obtain an IPv6 address for its interface. After an address has been generated and applied to the interface, what must the client do before it can begin to use this IPv6 address?

- It must send a DHCPv6 INFORMATION-REQUEST message to request the address of the DNS server.
- It must send a DHCPv6 REQUEST message to the DHCPv6 server to request permission to use this address.
- It must send an ICMPv6 Router Solicitation message to determine what default gateway it should use.
- **It must send an ICMPv6 Neighbor Solicitation message to ensure that the address is not already in use on the network.**

131. Two pings were issued from a host on a local network. The first ping was issued to the IP address of the default gateway of the host and it failed. The second ping was issued to the IP address of a host outside the local network and it was successful. What is a possible cause for the failed ping?

- The default gateway is not operational.
- The default gateway device is configured with the wrong IP address.
- **Security rules are applied to the default gateway device, preventing it from processing ping requests.**
- The TCP/IP stack on the default gateway is not working properly.

132. An organization is assigned an IPv6 address block of 2001:db8:0:ca00::/56. How many subnets can be created without using bits in the interface ID space?

- **256**
- 512
- 1024
- 4096

133. What subnet mask is needed if an IPv4 network has 40 devices that need IP addresses and address space is not to be wasted?

- 255.255.255.0
- 255.255.255.240
- 255.255.255.128
- **255.255.255.192**
- 255.255.255.224

134. Refer to the exhibit. If host A sends an IP packet to host B, what will the destination address be in the frame when it leaves host A?

- DD:DD:DD:DD:DD:DD
- 172.168.10.99
- CC:CC:CC:CC:CC:CC
- 172.168.10.65
- **BB:BB:BB:BB:BB:BB**
- AA:AA:AA:AA:AA:AA

Explain:

When a host sends information to a distant network, the Layer 2 frame header will contain a source and destination MAC address. The source address will be the originating host device. The destination address will be the router interface that connects to the same network. In the case of host A sending information to host B, the source address is AA:AA:AA:AA:AA:AA and the destination address is the MAC address assigned to the R2 Ethernet interface, BB:BB:BB:BB:BB:BB.

135. What is a benefit of using cloud computing in networking?

- Technology is integrated into every-day appliances allowing them to interconnect with other devices, making them more 'smart' or automated.
- **Network capabilities are extended without requiring investment in new infrastructure, personnel, or software.**
- End users have the freedom to use personal tools to access information and communicate across a business network.
- Home networking uses existing electrical wiring to connect devices to the network wherever there is an electrical outlet, saving the cost of installing data cables.

Explanation: Cloud computing extends IT's capabilities without requiring investment in new infrastructure, training new personnel, or licensing new software. These services are available on-demand and delivered economically to any device anywhere in the world without compromising security or function.

BYOD is about end users having the freedom to use personal tools to access information and communicate across a business or campus network. Smart home technology is integrated into every-day appliances allowing them to interconnect with other devices, making them more 'smart' or automated. Powerline networking is a trend for home networking that uses existing electrical wiring to connect devices to the network wherever there is an electrical outlet, saving the cost of installing data cables.

136. Which two statements are correct about MAC and IP addresses during data transmission if NAT is not involved? (Choose two.)

- **Destination IP addresses in a packet header remain constant along the entire path to a target host.**
- Destination MAC addresses will never change in a frame that goes across seven routers.
- Every time a frame is encapsulated with a new destination MAC address, a new destination IP address is needed.
- **Destination and source MAC addresses have local significance and change every time a frame goes from one LAN to another.**
- A packet that has crossed four routers has changed the destination IP address four times.

137. What is one main characteristic of the data link layer?

- It generates the electrical or optical signals that represent the 1 and 0 on the media.
- It converts a stream of data bits into a predefined code.
- **It shields the upper layer protocol from being aware of the physical medium to be used in the communication.**
- It accepts Layer 3 packets and decides the path by which to forward the packet to a remote network.

138. What are three characteristics of the CSMA/CD process? (Choose three.)

- The device with the electronic token is the only one that can transmit after a collision.
- **A device listens and waits until the media is not busy before transmitting.**
- **After detecting a collision, hosts can attempt to resume transmission after a random time delay has expired.**
- **All of the devices on a segment see data that passes on the network medium.**
- A jam signal indicates that the collision has cleared and the media is not busy.
- Devices can be configured with a higher transmission priority.

Explanation: The Carrier Sense Multiple Access/Collision Detection (CSMA/CD) process is a contention-based media access control mechanism used on shared media access networks, such as Ethernet. When a device needs to transmit data, it listens and waits until the media is available (quiet), then it will send data.

If two devices transmit at the same time, a collision will occur. Both devices will detect the collision on the network. When a device detects a collision, it will stop the data transmission process, wait for a random amount of time, then try again.

139. Which information does the show startup-config command display?

- the IOS image copied into RAM
- the bootstrap program in the ROM
- the contents of the current running configuration file in the RAM
- **the contents of the saved configuration file in the NVRAM**

Explain:

The show startup-config command displays the saved configuration located in NVRAM. The show running-config command displays the contents of the currently running configuration file located in RAM.

140. Which two commands can be used on a Windows host to display the routing table? (Choose two.)

- netstat -s
- **route print**
- show ip route
- **netstat -r**
- tracert

Explain:

On a Windows host, the route print or netstat -r commands can be used to display the host routing table. Both commands generate the same output. On a router, the show ip route command is used to display the routing table. The netstat -s command is used to display per-protocol statistics. The tracert command is used to display the path that a packet travels to its destination.

141. What are two functions that are provided by the network layer? (Choose two.)

- **directing data packets to destination hosts on other networks**
- placing data on the network medium
- carrying data between processes that are running on source and destination hosts
- providing dedicated end-to-end connections
- **providing end devices with a unique network identifier**

Explanation: The network layer is primarily concerned with passing data from a source to a destination on another network. IP addresses supply unique identifiers for the source and destination. The network layer provides connectionless, best-effort delivery. Devices rely on higher layers to supply services to processes.

142. Which two statements describe features of an IPv4 routing table on a router? (Choose two.)

- Directly connected interfaces will have two route source codes in the routing table: C and S .

- If there are two or more possible routes to the same destination, the route associated with the higher metric value is included in the routing table.
- The netstat -r command can be used to display the routing table of a router.
- The routing table lists the MAC addresses of each active interface.
- **It stores information about routes derived from the active router interfaces.**
- **If a default static route is configured in the router, an entry will be included in the routing table with source code S .**

143. What characteristic describes a VPN?

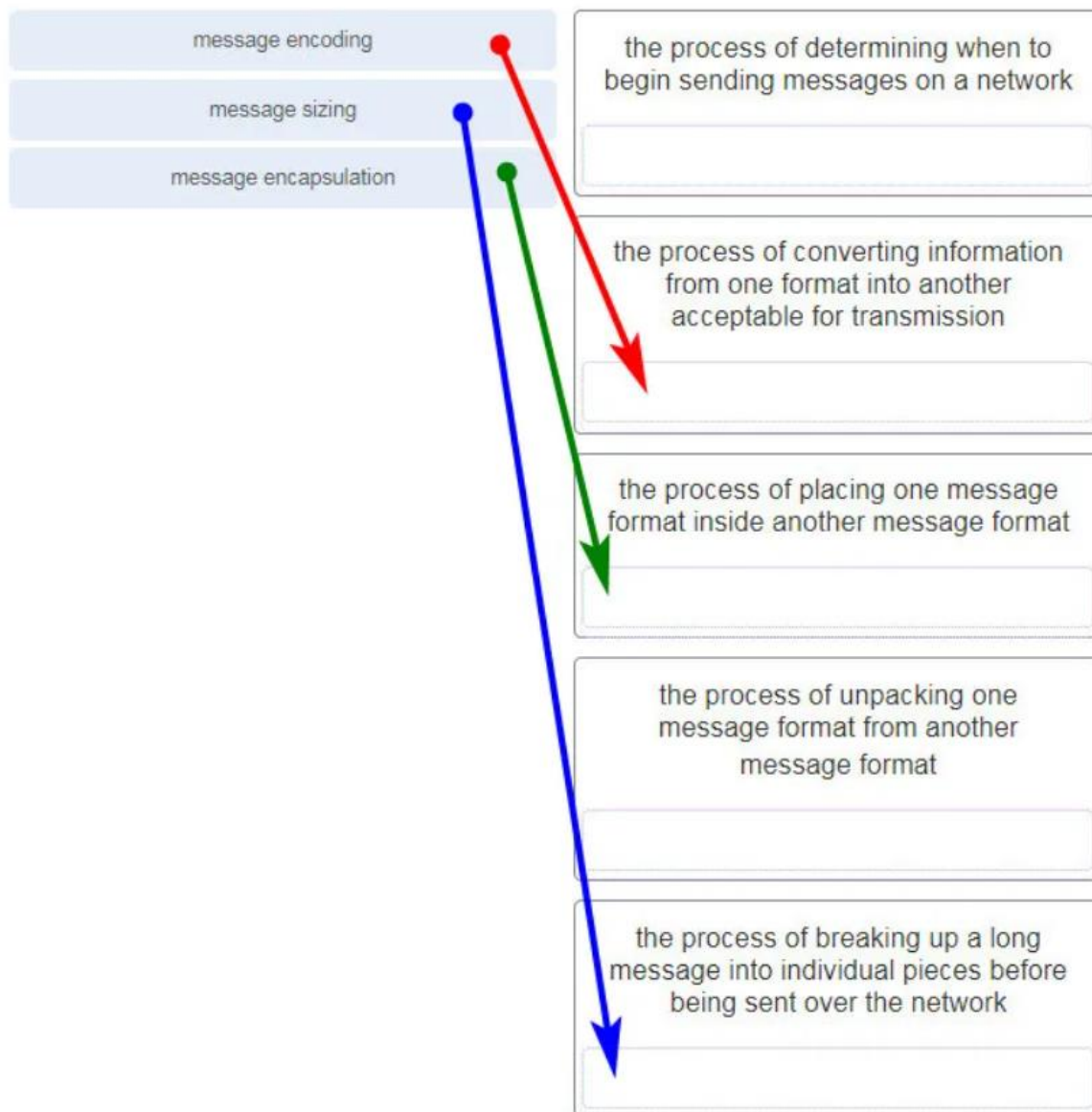
- software on a router that filters traffic based on IP addresses or applications
- software that identifies fast-spreading threats
- **a tunneling protocol that provides remote users with secure access into the network of an organization**
- a network device that filters access and traffic coming into a network

144. Why would a Layer 2 switch need an IP address?

- to enable the switch to send broadcast frames to attached PCs
- to enable the switch to function as a default gateway
- **to enable the switch to be managed remotely**
- to enable the switch to receive frames from attached PCs

Explanation: A switch, as a Layer 2 device, does not need an IP address to transmit frames to attached devices. However, when a switch is accessed remotely through the network, it must have a Layer 3 address. The IP address must be applied to a virtual interface rather than to a physical interface. Routers, not switches, function as default gateways.

145. Match each description to its corresponding term. (Not all options are used.)



146. A user sends an HTTP request to a web server on a remote network. During encapsulation for this request, what information is added to the address field of a frame to indicate the destination?

- the network domain of the destination host
- the IP address of the default gateway
- the MAC address of the destination host
- **the MAC address of the default gateway**

Explanation: A frame is encapsulated with source and destination MAC addresses. The source device will not know the MAC address of the remote host. An ARP request will be sent by the source and will be responded to by the router.

The router will respond with the MAC address of its interface, the one which is connected to the same network as the source.

147. What is an advantage to using a protocol that is defined by an open standard?

- A company can monopolize the market.
- The protocol can only be run on equipment from a specific vendor.
- An open standard protocol is not controlled or regulated by standards organizations.
- **It encourages competition and promotes choices.**

Explain:

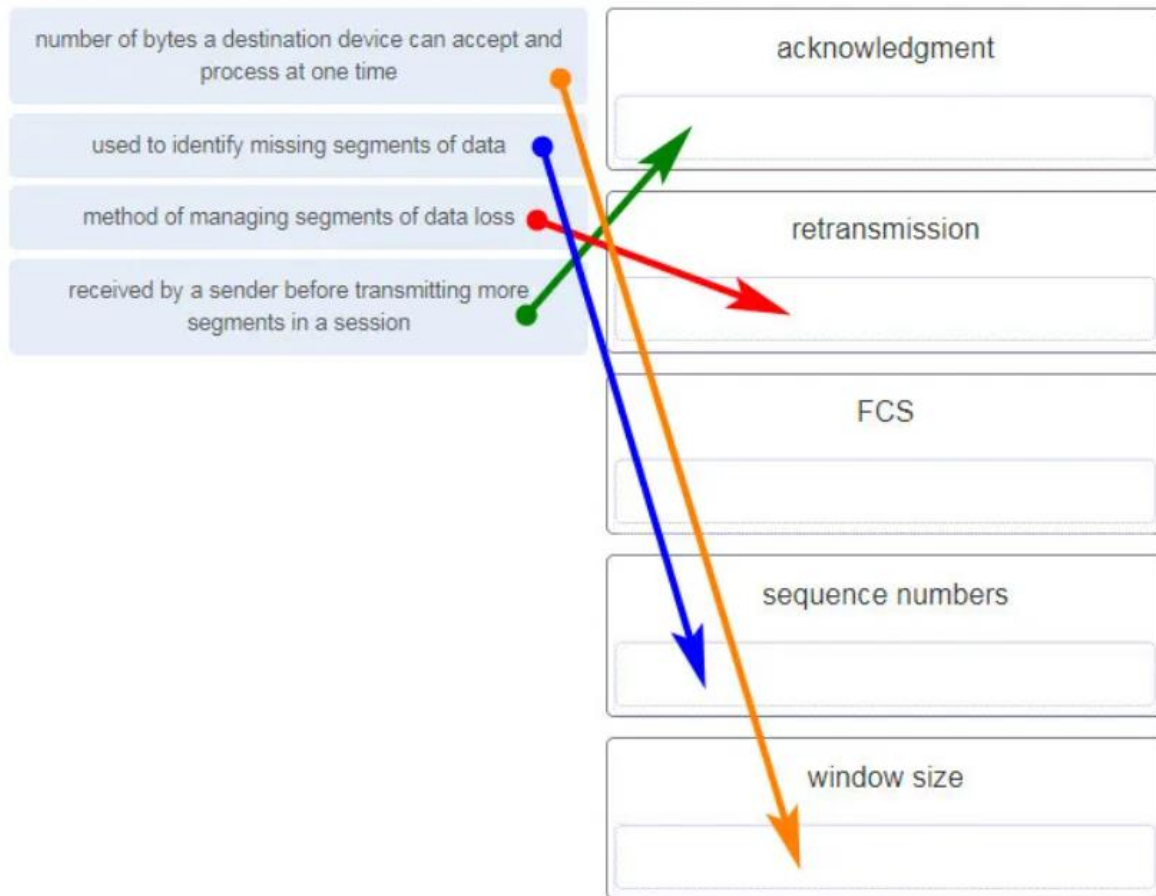
A monopoly by one company is not a good idea from a user point of view. If a protocol can only be run on one brand, it makes it difficult to have mixed equipment in a network. A proprietary protocol is not free to use. An open standard protocol will in general be implemented by a wide range of vendors.

148. Data is being sent from a source PC to a destination server. Which three statements correctly describe the function of TCP or UDP in this situation? (Choose three.)

- **The source port field identifies the running application or service that will handle data returning to the PC.**
- The TCP process running on the PC randomly selects the destination port when establishing a session with the server.
- **UDP segments are encapsulated within IP packets for transport across the network.**
- **The UDP destination port number identifies the application or service on the server which will handle the data.**
- TCP is the preferred protocol when a function requires lower network overhead.
- The TCP source port number identifies the sending host on the network.

Explanation: Layer 4 port numbers identify the application or service which will handle the data. The source port number is added by the sending device and will be the destination port number when the requested information is returned. Layer 4 segments are encapsulated within IP packets. UDP, not TCP, is used when low overhead is needed. A source IP address, not a TCP source port number, identifies the sending host on the network. Destination port numbers are specific ports that a server application or service monitors for requests.

149. Match each description with the corresponding TCP mechanism. (Not all options are used.)



150. Refer to the exhibit. A company uses the address block of 128.107.0.0/16 for its network. What subnet mask would provide the maximum number of equal size subnets while providing enough host addresses for each subnet in the exhibit?

- 255.255.255.192
- 255.255.255.0
- **255.255.255.128**
- 255.255.255.240
- 255.255.255.224

Explanation: The largest subnet in the topology has 100 hosts in it so the subnet mask must have at least 7 host bits in it ($2^7 - 2 = 126$). 255.255.255.0 has 8 host bits, but this does not meet the requirement of providing the maximum number of subnets.

151. A network administrator wants to have the same subnet mask for three subnetworks at a small site. The site has the following networks and numbers of devices:

Subnetwork A: IP phones – 10 addresses

Subnetwork B: PCs – 8 addresses

Subnetwork C: Printers – 2 addresses

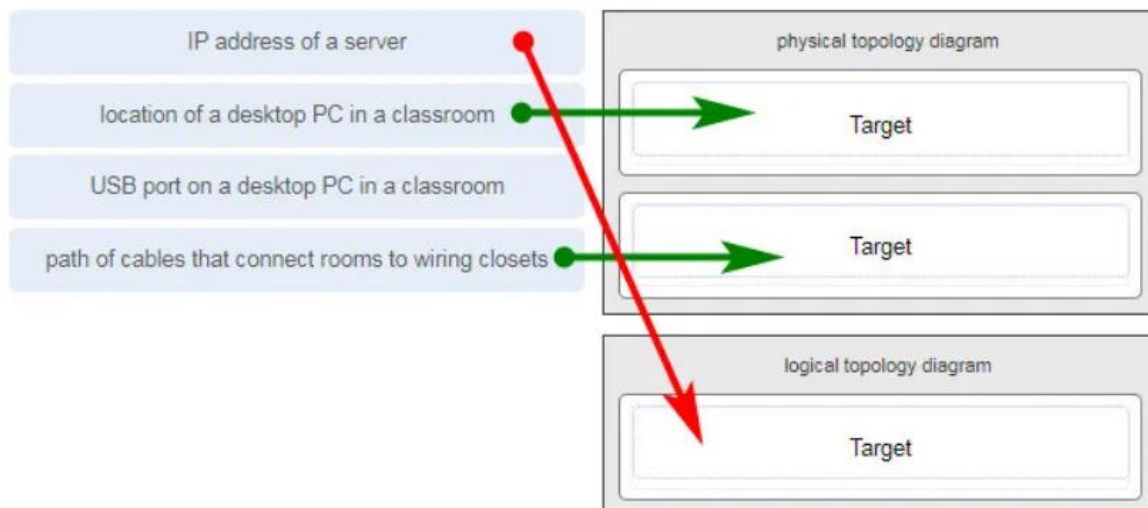
What single subnet mask would be appropriate to use for the three subnetworks?

- 255.255.255.0
- **255.255.255.240**
- 255.255.255.248
- 255.255.255.252

Explain:

If the same mask is to be used, then the network with the most hosts must be examined for number of hosts. Because this is 10 hosts, 4 host bits are needed. The /28 or 255.255.255.240 subnet mask would be appropriate to use for these networks.

152. Match each item to the type of topology diagram on which it is typically identified. (Not all options are used.)



153. What two pieces of information are displayed in the output of the show ip interface brief command? (Choose two.)

- **IP addresses**
- interface descriptions
- MAC addresses
- next-hop addresses
- **Layer 1 statuses**
- speed and duplex settings

Explanation: The command show ip interface brief shows the IP address of each interface, as well as the operational status of the interfaces at both Layer 1 and Layer 2. In order to see interface descriptions and speed and duplex settings, use the command show running-config interface. Next-hop addresses are displayed in the routing table with the command show ip route, and the MAC address of an interface can be seen with the command show interfaces.

154. A user is complaining that an external web page is taking longer than normal to load. The web page does eventually load on the user machine. Which tool should the technician use with administrator privileges in order to locate where the issue is in the network?

- ping
- nslookup
- **tracert**
- ipconfig /displaydns

155. Which value, that is contained in an IPv4 header field, is decremented by each router that receives a packet?

- Header Length
- Differentiated Services
- **Time-to-Live**
- Fragment Offset

Explanation: When a router receives a packet, the router will decrement the Time-to-Live (TTL) field by one. When the field reaches zero, the receiving router will discard the packet and will send an ICMP Time Exceeded message to the sender.

156. A network technician is researching the use of fiber optic cabling in a new technology center. Which two issues should be considered before implementing fiber optic media? (Choose two.)

- **Fiber optic cabling requires different termination and splicing expertise from what copper cabling requires.**
- Fiber optic cabling requires specific grounding to be immune to EMI.
- Fiber optic cabling is susceptible to loss of signal due to RFI.
- Fiber optic cable is able to withstand rough handling.
- **Fiber optic provides higher data capacity but is more expensive than copper cabling.**

157. Match each description with an appropriate IP address. (Not all options are used.)

a link-local address	127.0.0.1
a public address	a loopback address
an experimental address	172.18.45.9
a loopback address	
	240.2.6.255
	an experimental address
	198.133.219.2
	a public address
	169.254.1.5
	a link-local address

IT ExamAnswers

ITN (Version 7.00) – ITNv7 Final Exam

158. A user is executing a tracert to a remote device. At what point would a router, which is in the path to the destination device, stop forwarding the packet?

- when the router receives an ICMP Time Exceeded message
- when the RTT value reaches zero
- when the host responds with an ICMP Echo Reply message
- **when the value in the TTL field reaches zero**
- when the values of both the Echo Request and Echo Reply messages reach zero

Explain:

When a router receives a traceroute packet, the value in the TTL field is decremented by 1. When the value in the field reaches zero, the receiving router

will not forward the packet, and will send an ICMP Time Exceeded message back to the source.

159. Users report that the network access is slow. After questioning the employees, the network administrator learned that one employee downloaded a third-party scanning program for the printer. What type of malware might be introduced that causes slow performance of the network?

- virus
- **worm**
- phishing
- spam

Explanation: A cybersecurity specialist needs to be familiar with the characteristics of the different types of malware and attacks that threaten an organization.

CCNA 2: Switching, Routing, and Wireless Essentials (Version 7.00) – SRWE Final Exam Answers

1. Refer to the exhibit. What will router R1 do with a packet that has a destination IPv6 address of 2001:db8:cafe:5::1?

- forward the packet out GigabitEthernet0/0
- drop the packet
- forward the packet out GigabitEthernet0/1
- **forward the packet out Serial0/0/0**

Explanation: The route ::/0 is the compressed form of the 0000:0000:0000:0000:0000:0000:0000:0000/0 default route. The default route is used if a more specific route is not found in the routing table.

2. Refer to the exhibit. Currently router R1 uses an EIGRP route learned from Branch2 to reach the 10.10.0.0/16 network. Which floating static route would

create a backup route to the 10.10.0.0/16 network in the event that the link between R1 and Branch2 goes down?

- ip route 10.10.0.0 255.255.0.0 Serial 0/0/0 100
- ip route 10.10.0.0 255.255.0.0 209.165.200.226 100
- **ip route 10.10.0.0 255.255.0.0 209.165.200.225 100**
- ip route 10.10.0.0 255.255.0.0 209.165.200.225 50

Explanation: A floating static route needs to have an administrative distance that is greater than the administrative distance of the active route in the routing table. Router R1 is using an EIGRP route which has an administrative distance of 90 to reach the 10.10.0.0/16 network. To be a backup route the floating static route must have an administrative distance greater than 90 and have a next hop address corresponding to the serial interface IP address of Branch1.

3. Refer to the exhibit. R1 was configured with the static route command ip route 209.165.200.224 255.255.255.224 S0/0/0 and consequently users on network 172.16.0.0/16 are unable to reach resources on the Internet. How should this static route be changed to allow user traffic from the LAN to reach the Internet?

- Add an administrative distance of 254.
- **Change the destination network and mask to 0.0.0.0 0.0.0.0**
- Change the exit interface to S0/0/1.
- Add the next-hop neighbor address of 209.165.200.226.

Explain: The static route on R1 has been incorrectly configured with the wrong destination network and mask. The correct destination network and mask is 0.0.0.0 0.0.0.0.

4. Which option shows a correctly configured IPv4 default static route?

- ip route 0.0.0.0 255.255.255.0 S0/0/0
- **ip route 0.0.0.0 0.0.0.0 S0/0/0**
- ip route 0.0.0.0 255.255.255.255 S0/0/0
- ip route 0.0.0.0 255.0.0.0 S0/0/0

Explanation: The static route ip route 0.0.0.0 0.0.0.0 S0/0/0 is considered a default static route and will match all destination networks.

5. Refer to the exhibit. Which static route command can be entered on R1 to forward traffic to the LAN connected to R2?

CCNA 2 v7 Switching Routing and Wireless Essentials-Version-Final-Answers-5

- ipv6 route 2001:db8:12:10::/64 S0/0/0
- **ipv6 route 2001:db8:12:10::/64 S0/0/1 fe80::2**
- ipv6 route 2001:db8:12:10::/64 S0/0/0 fe80::2
- ipv6 route 2001:db8:12:10::/64 S0/0/1 2001:db8:12:10::1

6. What is a method to launch a VLAN hopping attack?

- **introducing a rogue switch and enabling trunking**
- sending spoofed native VLAN information

- sending spoofed IP addresses from the attacking host
- flooding the switch with MAC addresses

7. A cybersecurity analyst is using the macof tool to evaluate configurations of switches deployed in the backbone network of an organization. Which type of LAN attack is the analyst targeting during this evaluation?

- VLAN hopping
- DHCP spoofing
- **MAC address table overflow**
- VLAN double-tagging

Explanation: Macof is a network attack tool and is mainly used to flood LAN switches with MAC addresses.

8. Refer to the exhibit. A network administrator is configuring a router as a DHCPv6 server. The administrator issues a show ipv6 dhcp pool command to verify the configuration. Which statement explains the reason that the number of active clients is 0?

- The default gateway address is not provided in the pool.
- No clients have communicated with the DHCPv6 server yet.
- The IPv6 DHCP pool configuration has no IPv6 address range specified.
- **The state is not maintained by the DHCPv6 server under stateless DHCPv6 operation.**

Explain:

Under the stateless DHCPv6 configuration, indicated by the command `ipv6 nd other-config-flag`, the DHCPv6 server does not maintain the state information, because client IPv6 addresses are not managed by the DHCP server. Because the clients will configure their IPv6 addresses by combining the prefix/prefix-

length and a self-generated interface ID, the ipv6 dhcp pool configuration does not need to specify the valid IPv6 address range. And because clients will use the link-local address of the router interface as the default gateway address, the default gateway address is not necessary.

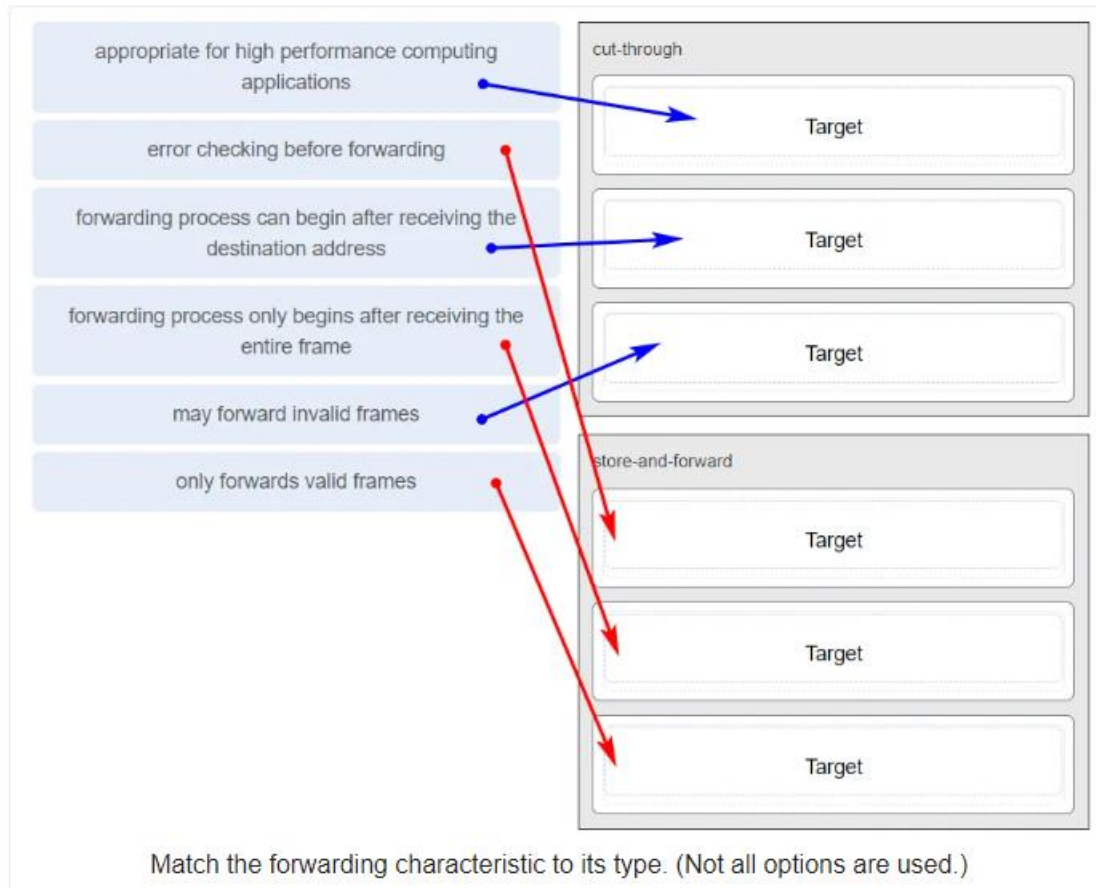
9. Refer to the exhibit. A network administrator configured routers R1 and R2 as part of HSRP group 1. After the routers have been reloaded, a user on Host1 complained of lack of connectivity to the Internet. The network administrator issued the show standby brief command on both routers to verify the HSRP operations. In addition, the administrator observed the ARP table on Host1. Which entry should be seen in the ARP table on Host1 in order to gain connectivity to the Internet?

- **the virtual IP address and the virtual MAC address for the HSRP group 1**
- the virtual IP address of the HSRP group 1 and the MAC address of R1
- the virtual IP address of the HSRP group 1 and the MAC address of R2

- the IP address and the MAC address of R1

Explanation: Hosts will send an ARP request to the default gateway which is the virtual IP address. ARP replies from the HSRP routers contain the virtual MAC address. The host ARP tables will contain a mapping of the virtual IP to the virtual MAC.

10. Match the forwarding characteristic to its type. (Not all options are used.)



Match the forwarding characteristic to its type. (Not all options are used.)

11. Which statement is correct about how a Layer 2 switch determines how to forward frames?

- **Frame forwarding decisions are based on MAC address and port mappings in the CAM table.**
- Only frames with a broadcast destination address are forwarded out all active switch ports.
- Unicast frames are always forwarded regardless of the destination MAC address.
- Cut-through frame forwarding ensures that invalid frames are always dropped.

Explanation: Cut-through frame forwarding reads up to only the first 22 bytes of a frame, which excludes the frame check sequence and thus invalid frames may

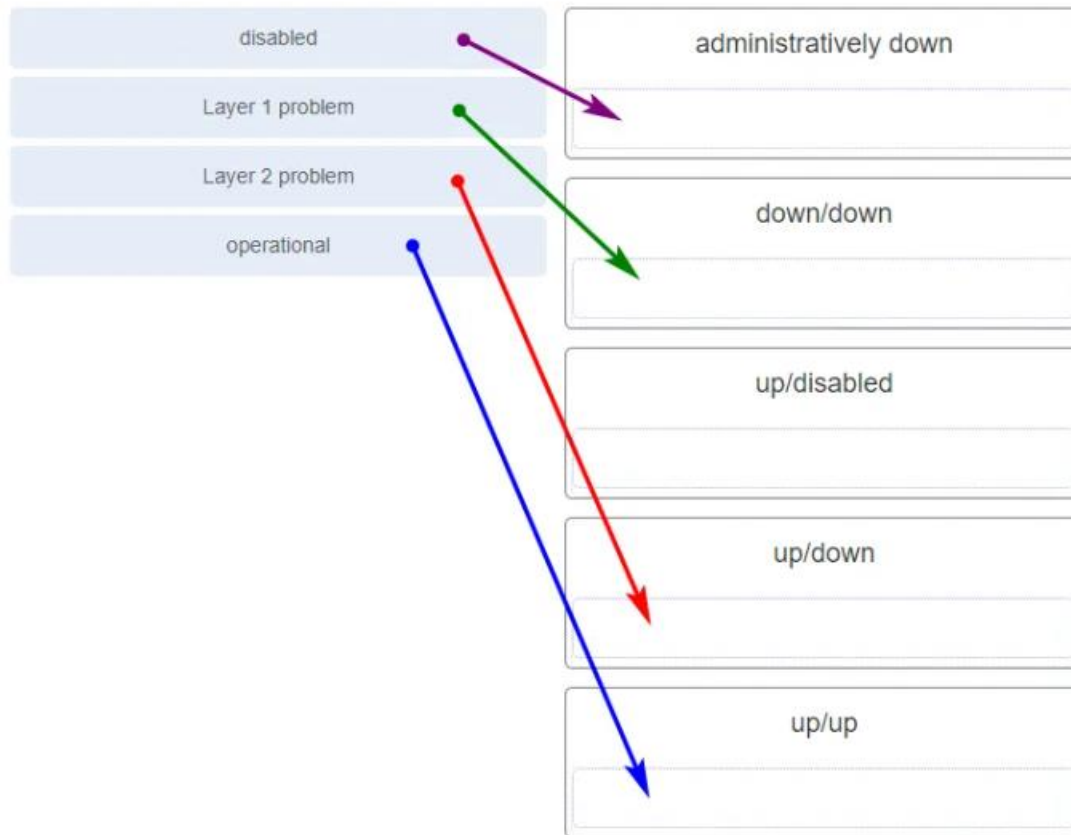
be forwarded. In addition to broadcast frames, frames with a destination MAC address that is not in the CAM are also flooded out all active ports. Unicast frames are not always forwarded. Received frames with a destination MAC address that is associated with the switch port on which it is received are not forwarded because the destination exists on the network segment connected to that port.

12. Which statement describes a result after multiple Cisco LAN switches are interconnected?

- **The broadcast domain expands to all switches.**
- One collision domain exists per switch.
- There is one broadcast domain and one collision domain per switch.
- Frame collisions increase on the segments connecting the switches.
- Unicast frames are always forwarded regardless of the destination MAC address.

Explanation: In Cisco LAN switches, the microsegmentation makes it possible for each port to represent a separate segment and thus each switch port represents a separate collision domain. This fact will not change when multiple switches are interconnected. However, LAN switches do not filter broadcast frames. A broadcast frame is flooded to all ports. Interconnected switches form one big broadcast domain.

13. Match the link state to the interface and protocol status. (Not all options are used.)



14. Refer to the exhibit. How is a frame sent from PCA forwarded to PCC if the MAC address table on switch SW1 is empty?

- SW1 forwards the frame directly to SW2. SW2 floods the frame to all ports connected to SW2, excluding the port through which the frame entered the switch.
- SW1 floods the frame on all ports on the switch, excluding the interconnected port to switch SW2 and the port through which the frame entered the switch.
- **SW1 floods the frame on all ports on SW1, excluding the port through which the frame entered the switch.**
- SW1 drops the frame because it does not know the destination MAC address.

Explanation: When a switch powers on, the MAC address table is empty. The switch builds the MAC address table by examining the source MAC address of incoming frames. The switch forwards based on the destination MAC address found in the frame header. If a switch has no entries in the MAC address table or if the destination MAC address is not in the switch table, the switch will forward the frame out all ports except the port that brought the frame into the switch.

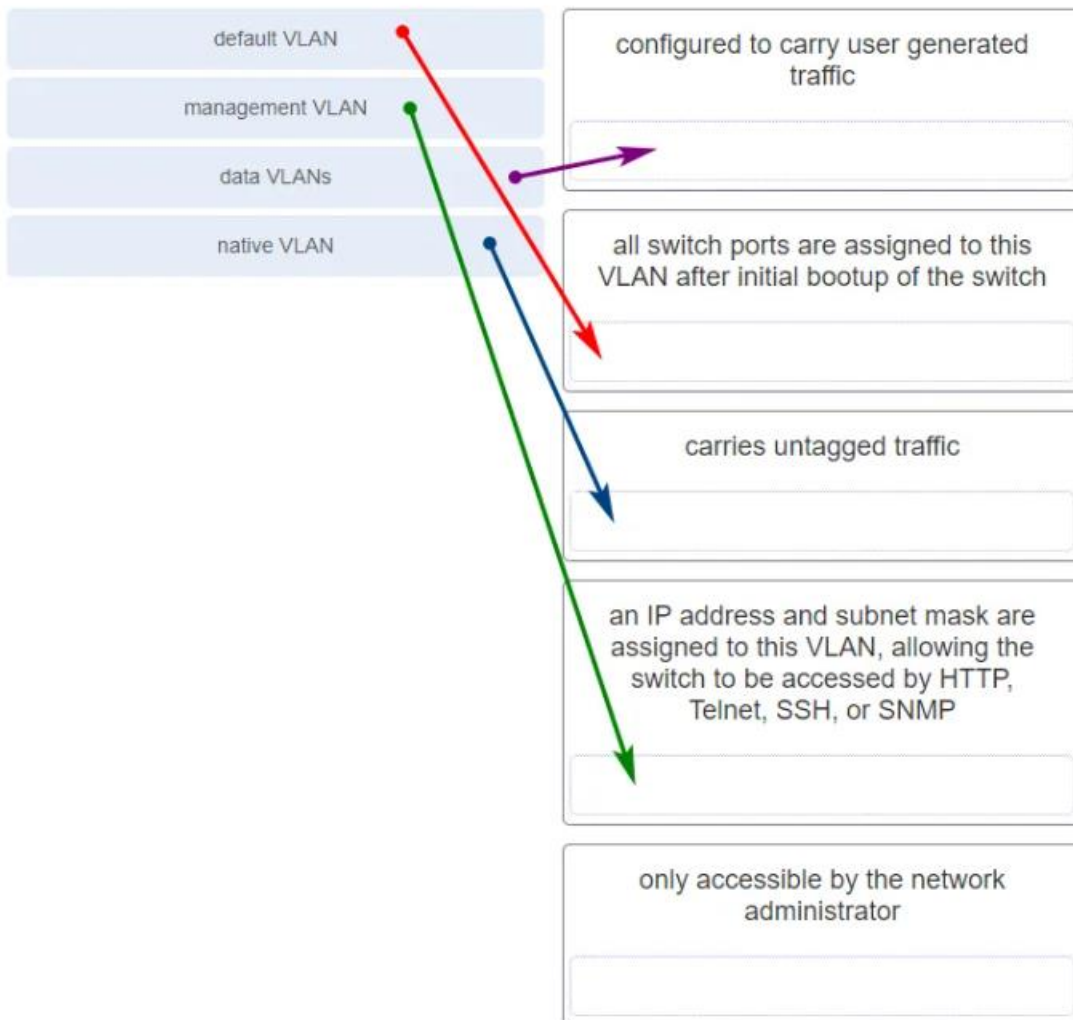
15. An administrator is trying to remove configurations from a switch. After using the command `erase startup-config` and reloading the switch, the administrator finds that VLANs 10 and 100 still exist on the switch. Why were these VLANs not removed?

- **Because these VLANs are stored in a file that is called `vlan.dat` that is located in flash memory, this file must be manually deleted.**
- These VLANs cannot be deleted unless the switch is in VTP client mode.
- These VLANs are default VLANs that cannot be removed.

- These VLANs can only be removed from the switch by using the no vlan 10 and no vlan 100 commands.

Explanation: Standard range VLANs (1-1005) are stored in a file that is called vlan.dat that is located in flash memory. Erasing the startup configuration and reloading a switch does not automatically remove these VLANs. The vlan.dat file must be manually deleted from flash memory and then the switch must be reloaded.

16. Match the description to the correct VLAN type. (Not all options are used.)



Explanation: A data VLAN is configured to carry user-generated traffic. A default VLAN is the VLAN where all switch ports belong after the initial boot up of a switch loading the default configuration. A native VLAN is assigned to an 802.1Q trunk port, and untagged traffic is placed on it. A management VLAN is any VLAN that is configured to access the management capabilities of a switch. An IP address and subnet mask are assigned to it, allowing the switch to be managed via HTTP, Telnet, SSH, or SNMP.

17. Refer to the exhibit. A network administrator has connected two switches together using EtherChannel technology. If STP is running, what will be the end result?

- **STP will block one of the redundant links.**
- The switches will load balance and utilize both EtherChannels to forward packets.
- The resulting loop will create a broadcast storm.
- Both port channels will shutdown.

Explanation: Cisco switches support two protocols for negotiating a channel between two switches: LACP and PAgP. PAgP is Cisco-proprietary. In the topology shown, the switches are connected to each other using redundant links. By default, STP is enabled on switch devices. STP will block redundant links to prevent loops.

18. What is a secure configuration option for remote access to a network device?

- Configure an ACL and apply it to the VTY lines.
- Configure 802.1x.
- **Configure SSH.**
- Configure Telnet.

19. Which wireless encryption method is the most secure?

- **WPA2 with AES**
- WPA2 with TKIP
- WEP
- WPA

20. After attaching four PCs to the switch ports, configuring the SSID and setting authentication properties for a small office network, a technician successfully tests the connectivity of all PCs that are connected to the switch and WLAN. A firewall is then configured on the device prior to connecting it to the Internet. What type of network device includes all of the described features?

- firewall appliance
- **wireless router**
- switch
- standalone wireless access point

21. Refer to the exhibit. Host A has sent a packet to host B. What will be the source MAC and IP addresses on the packet when it arrives at host B?

CCNA 2 v7 Switching Routing and Wireless Essentials-Version-Final-Answers-21

- **Source MAC: 00E0.FE91.7799**
Source IP: 10.1.1.10
- Source MAC: 00E0.FE10.17A3
Source IP: 10.1.1.10
- Source MAC: 00E0.FE10.17A3
Source IP: 192.168.1.1
- Source MAC: 00E0.FE91.7799
Source IP: 10.1.1.1
- Source MAC: 00E0.FE91.7799
Source IP: 192.168.1.1

Explanation: As a packet traverses the network, the Layer 2 addresses will change at every hop as the packet is de-encapsulated and re-encapsulated, but the Layer 3 addresses will remain the same.

23. Refer to the exhibit. In addition to static routes directing traffic to networks 10.10.0.0/16 and 10.20.0.0/16, Router HQ is also configured with the following command:

```
ip route 0.0.0.0 0.0.0.0 serial 0/1/1
```

What is the purpose of this command?

CCNA 2 v7 Switching Routing and Wireless Essentials-Version-Final-Answers-23

- Packets that are received from the Internet will be forwarded to one of the LANs connected to R1 or R2.
- **Packets with a destination network that is not 10.10.0.0/16 or is not 10.20.0.0/16 or is not a directly connected network will be forwarded to the Internet.**
- Packets from the 10.10.0.0/16 network will be forwarded to network 10.20.0.0/16, and packets from the 10.20.0.0/16 network will be forwarded to network 10.10.0.0/16.
- Packets that are destined for networks that are not in the routing table of HQ will be dropped.

24. What protocol or technology disables redundant paths to eliminate Layer 2 loops?

- VTP
- **STP**
- EtherChannel
- DTP

25. Refer to the exhibit. Based on the exhibited configuration and output, why is VLAN 99 missing?

CCNA 2 v7 Switching Routing and Wireless Essentials-Version-Final-Answers-25

- because VLAN 99 is not a valid management VLAN
- because there is a cabling problem on VLAN 99
- because VLAN 1 is up and there can only be one management VLAN on the switch
- **because VLAN 99 has not yet been created**

26. Which two VTP modes allow for the creation, modification, and deletion of VLANs on the local switch? (Choose two.)

- client
- master
- distribution
- slave
- **server**
- **transparent**

27. Which three steps should be taken before moving a Cisco switch to a new VTP management domain? (Choose three.)

- **Configure the switch with the name of the new management domain.**

- Reset the VTP counters to allow the switch to synchronize with the other switches in the domain.
- Configure the VTP server in the domain to recognize the BID of the new switch.
- Download the VTP database from the VTP server in the new domain.
- **Select the correct VTP mode and version.**
- **Reboot the switch.**

Explanation: When adding a new switch to a VTP domain, it is critical to configure the switch with a new domain name, the correct VTP mode, VTP version number, and password. A switch with a higher revision number can propagate invalid VLANs and erase valid VLANs thus preventing connectivity for multiple devices on the valid VLANs.

28. A network administrator is preparing the implementation of Rapid PVST+ on a production network. How are the Rapid PVST+ link types determined on the switch interfaces?

- Link types can only be configured on access ports configured with a single VLAN.
- Link types can only be determined if PortFast has been configured.
- **Link types are determined automatically.**
- Link types must be configured with specific port configuration commands.

Explanation: When Rapid PVST+ is being implemented, link types are automatically determined but can be specified manually. Link types can be either point-to-point, shared, or edge.

29. Refer to the exhibit. All the displayed switches are Cisco 2960 switches with the same default priority and operating at the same bandwidth. Which three ports will be STP designated ports? (Choose three.)

CCNA 2 v7 Switching Routing and Wireless Essentials-Version-Final-Answers-29

- fa0/9
- **fa0/13**
- **fa0/10**
- fa0/20
- **fa0/21**
- fa0/11

30. How will a router handle static routing differently if Cisco Express Forwarding is disabled?

- It will not perform recursive lookups.
- **Ethernet multiaccess interfaces will require fully specified static routes to avoid routing inconsistencies.**
- Static routes that use an exit interface will be unnecessary.
- Serial point-to-point interfaces will require fully specified static routes to avoid routing inconsistencies.

Explanation: In most platforms running IOS 12.0 or later, Cisco Express Forwarding is enabled by default. Cisco Express Forwarding eliminates the need for the recursive lookup. If Cisco Express Forwarding is disabled, multiaccess network interfaces require fully specified static routes in order to avoid inconsistencies in their routing tables. Point-to-point interfaces do not have this problem, because multiple end points are not present. With or without Cisco Express Forwarding enabled, using an exit interface when configuring a static route is a viable option.

31. Compared with dynamic routes, what are two advantages of using static routes on a router? (Choose two.)

- **They improve network security.**
- They take less time to converge when the network topology changes.
- They improve the efficiency of discovering neighboring networks.
- **They use fewer router resources.**

Explanation: Static routes are manually configured on a router. Static routes are not automatically updated and must be manually reconfigured if the network topology changes. Thus static routing improves network security because it does not make route updates among neighboring routers. Static routes also improve resource efficiency by using less bandwidth, and no CPU cycles are used to calculate and communicate routes.

32. Refer to the exhibit. Which route was configured as a static route to a specific network using the next-hop address?

- **S 10.17.2.0/24 [1/0] via 10.16.2.2**
- S 0.0.0.0/0 [1/0] via 10.16.2.2
- S 10.17.2.0/24 is directly connected, Serial 0/0/0
- C 10.16.2.0/24 is directly connected, Serial0/0/0

Explanation: The C in a routing table indicates an interface that is up and has an IP address assigned. The S in a routing table signifies that a route was installed using the ip route command. Two of the routing table entries shown are static routes to a specific destination (the 192.168.2.0 network). The entry that has the S denoting a static route and [1/0] was configured using the next-hop address. The other entry (S 192.168.2.0/24 is directly connected, Serial 0/0/0) is a static route configured using the exit interface. The entry with the 0.0.0.0 route is a default static route which is used to send packets to any destination network that is not specifically listed in the routing table.

33. What is the effect of entering the spanning-tree portfast configuration command on a switch?

- It disables an unused port.
- It disables all trunk ports.
- **It enables portfast on a specific switch interface.**

- It checks the source L2 address in the Ethernet header against the sender L2 address in the ARP body.

34. What is the IPv6 prefix that is used for link-local addresses?

- FF01::/8
- 2001::/3
- FC00::/7
- **FE80::/10**

Explanation: The IPv6 link-local prefix is FE80::/10 and is used to create a link-local IPv6 address on an interface.

35. Which two statements are characteristics of routed ports on a multilayer switch? (Choose two.)

- **In a switched network, they are mostly configured between switches at the core and distribution layers.**
- The interface vlan command has to be entered to create a VLAN on routed ports.
- They support subinterfaces, like interfaces on the Cisco IOS routers.
- They are used for point-to-multipoint links.
- **They are not associated with a particular VLAN.**

36. Successful inter-VLAN routing has been operating on a network with multiple VLANs across multiple switches for some time. When an inter-switch trunk link fails and Spanning Tree Protocol brings up a backup trunk link, it is reported that hosts on two VLANs can access some, but not all the network resources that could be accessed previously. Hosts on all other VLANs do not have this problem. What is the most likely cause of this problem?

- **The protected edge port function on the backup trunk interfaces has been disabled.**
- The allowed VLANs on the backup link were not configured correctly.
- Dynamic Trunking Protocol on the link has failed.
- Inter-VLAN routing also failed when the trunk link failed.

37. Which command will start the process to bundle two physical interfaces to create an EtherChannel group via LACP?

- interface port-channel 2
- channel-group 1 mode desirable
- **interface range GigabitEthernet 0/4 – 5**
- channel-group 2 mode auto

38. What action takes place when a frame entering a switch has a multicast destination MAC address?

- **The switch will forward the frame out all ports except the incoming port.**
- The switch forwards the frame out of the specified port.
- The switch adds a MAC address table entry mapping for the destination MAC address and the ingress port.

- The switch replaces the old entry and uses the more current port.

Explanation: If the destination MAC address is a broadcast or a multicast, the frame is also flooded out all ports except the incoming port.

39. A junior technician was adding a route to a LAN router. A traceroute to a device on the new network revealed a wrong path and unreachable status. What should be done or checked?

- Verify that there is not a default route in any of the edge router routing tables.
- Check the configuration on the floating static route and adjust the AD.
- Create a floating static route to that network.
- **Check the configuration of the exit interface on the new static route.**

40. Select the three PAgP channel establishment modes. (Choose three.)

- **auto**
- default
- passive
- **desirable**
- extended
- **on**

41. A static route has been configured on a router. However, the destination network no longer exists. What should an administrator do to remove the static route from the routing table?

- **Remove the route using the no ip route command.**
- Change the administrative distance for that route.
- Change the routing metric for that route.
- Nothing. The static route will go away on its own.

Explanation: When the destination network specified in a static route does not exist anymore, the static route stays in the routing table until it is manually removed by using the **no ip route** command.

42. Refer to the exhibit. What can be concluded about the configuration shown on R1?

- **R1 is configured as a DHCPv4 relay agent.**
- R1 is operating as a DHCPv4 server.

- R1 will broadcast DHCPv4 requests on behalf of local DHCPv4 clients.
- R1 will send a message to a local DHCPv4 client to contact a DHCPv4 server at 10.10.10.8.

43. Match the step to each switch boot sequence description. (Not all options are used.)

step 1	perform low-level CPU initialization
step 2	step 3
step 3	enter global configuration mode
step 4	IT ExamAnswers .net
step 5	
step 6	execute POST
	step 1
	flash file system initialization
	step 4
	load the boot loader from ROM
	step 2
	load the IOS
	step 5
	transfer switch control to the IOS
	step 6

Explanation: The steps are:

1. execute POST
2. load the boot loader from ROM

3. CPU register initializations
4. flash file system initialization
5. load the IOS
6. transfer switch control to the IOS

44. Refer to the exhibit. R1 has been configured as shown. However, PC1 is not able to receive an IPv4 address. What is the problem?

- **The ip helper-address command was applied on the wrong interface.**
- R1 is not configured as a DHCPv4 server.
- A DHCP server must be installed on the same LAN as the host that is receiving the IP address.
- The ip address dhcp command was not issued on the interface Gi0/1.

Explanation: The ip helper-address command has to be applied on interface Gi0/0. This command must be present on the interface of the LAN that contains the DHCPv4 client PC1 and must be directed to the correct DHCPv4 server.

45. What two default wireless router settings can affect network security? (Choose two.)

- **The SSID is broadcast.**
- MAC address filtering is enabled.
- WEP encryption is enabled.
- The wireless channel is automatically selected.
- **A well-known administrator password is set.**

Explanation: Default settings on wireless routers often include broadcasting the SSID and using a well-known administrative password. Both of these pose a security risk to wireless networks. WEP encryption and MAC address filtering are not set by default. The automatic selection of the wireless channel poses no security risks.

46. What is the common term given to SNMP log messages that are generated by network devices and sent to the SNMP server?

- **traps**
- acknowledgments
- auditing
- warnings

47. A network administrator is adding a new WLAN on a Cisco 3500 series WLC. Which tab should the administrator use to create a new VLAN interface to be used for the new WLAN?

- WIRELESS
- MANAGEMENT
- **CONTROLLER**
- WLANs

48. A network administrator is configuring a WLAN. Why would the administrator change the default DHCP IPv4 addresses on an AP?

- to restrict access to the WLAN by authorized, authenticated users only
- to monitor the operation of the wireless network

- **to reduce outsiders intercepting data or accessing the wireless network by using a well-known address range**
- to reduce the risk of interference by external devices such as microwave ovens

49. Which two functions are performed by a WLC when using split media access control (MAC)? (Choose two.)

- packet acknowledgments and retransmissions
- frame queuing and packet prioritization
- beacons and probe responses
- **frame translation to other protocols**
- **association and re-association of roaming clients**

50. On what switch ports should BPDU guard be enabled to enhance STP stability?

- **all PortFast-enabled ports**
- only ports that are elected as designated ports
- only ports that attach to a neighboring switch
- all trunk ports that are not root ports

51. Which network attack is mitigated by enabling BPDU guard?

- **rogue switches on a network**
- CAM table overflow attacks
- MAC address spoofing
- rogue DHCP servers on a network

Explanation: There are several recommended STP stability mechanisms to help mitigate STP manipulation attacks:

PortFast – used to immediately bring an interface configured as an access or trunk port to the forwarding state from a blocking state. Applied to all end-user ports.

BPDU guard – immediately error-disables a port that receives a BPDU. Applied to all end-user ports. The receipt of BPDUs may be part of an unauthorized attempt to add a switch to the network.

Root guard – prevents a switch from becoming the root switch. Applied to all ports where the root switch should not be located.

Loop guard – detects unidirectional links to prevent alternate or root ports from becoming designated ports. Applied to all ports that are or can become nondesignated.

52. Why is DHCP snooping required when using the Dynamic ARP Inspection feature?

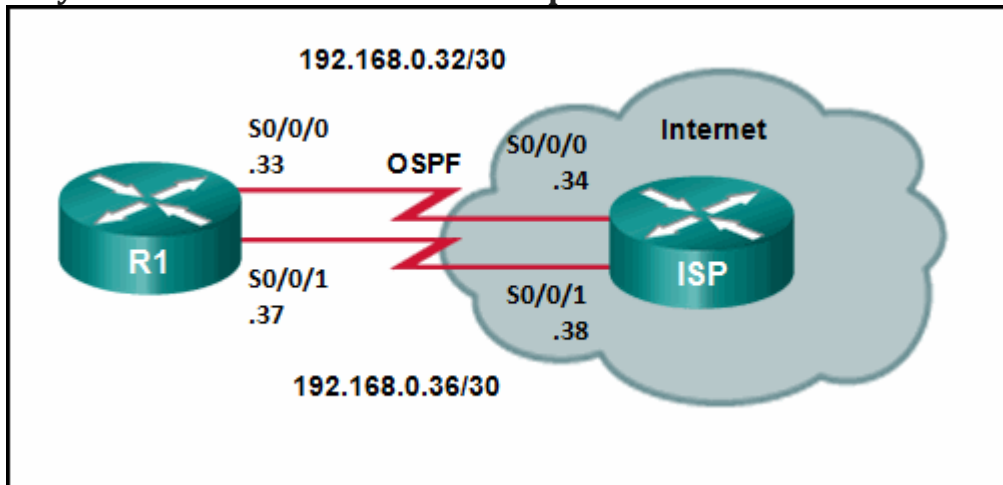
- It relies on the settings of trusted and untrusted ports set by DHCP snooping.
- It uses the MAC address table to verify the default gateway IP address.
- It redirects ARP requests to the DHCP server for verification.

- **It uses the MAC-address-to-IP-address binding database to validate an ARP packet.**

Explain: DAI relies on DHCP snooping. DHCP snooping listens to DHCP message exchanges and builds a bindings database of valid tuples (MAC address, IP address, VLAN interface).

When DAI is enabled, the switch drops ARP packet if the sender MAC address and sender IP address do not match an entry in the DHCP snooping bindings database. However, it can be overcome through static mappings. Static mappings are useful when hosts configure static IP addresses, DHCP snooping cannot be run, or other switches in the network do not run dynamic ARP inspection. A static mapping associates an IP address to a MAC address on a VLAN.

53. Refer to the exhibit. Router R1 has an OSPF neighbor relationship with the ISP router over the 192.168.0.32 network. The 192.168.0.36 network link should serve as a backup when the OSPF link goes down. The floating static route command `ip route 0.0.0.0 0.0.0.0 S0/0/1 100` was issued on R1 and now traffic is using the backup link even when the OSPF link is up and functioning. Which change should be made to the static route command so that traffic will only use the OSPF link when it is up?



- **Change the administrative distance to 120.**
- Add the next hop neighbor address of 192.168.0.36.
- Change the destination network to 192.168.0.34.
- Change the administrative distance to 1.

Explain: The problem with the current floating static route is that the administrative distance is set too low. The administrative distance will need to be higher than that of OSPF, which is 110, so that the router will only use the OSPF link when it is up.

54. Refer to the exhibit. What is the metric to forward a data packet with the IPv6 destination address 2001:DB8:ACAD:E:240:BFF:FED4:9DD2?

- 90
- 128
- 2170112
- 2681856
- **2682112**
- 3193856

Explain: The IPv6 destination address 2001:DB8:ACAD:E:240:BFF:FED4:9DD2 belongs to the network of 2001:DB8:ACAD:E::/64. In the routing table, the route to forward the packet has Serial 0/0/1 as an exit interface and 2682112 as the cost.

55. A network administrator is configuring a new Cisco switch for remote management access. Which three items must be configured on the switch for the task? (Choose three.)

- **IP address**
- VTP domain
- **vtty lines**
- default VLAN
- **default gateway**
- loopback address

Explain: To enable the remote management access, the Cisco switch must be configured with an IP address and a default gateway. In addition, vty lines must be configured to enable either Telnet or SSH connections. A loopback address, default VLAN, and VTP domain configurations are not necessary for the purpose of remote switch management.

56. Refer to the exhibit. Which statement shown in the output allows router R1 to respond to stateless DHCPv6 requests?

- **ipv6 nd other-config-flag**
- prefix-delegation 2001:DB8:8::/48 00030001000E84244E70
- ipv6 dhcp server LAN1
- ipv6 unicast-routing
- dns-server 2001:DB8:8::8

Explain: The interface command `ipv6 nd other-config-flag` allows RA messages to be sent on this interface, indicating that additional information is available from a stateless DHCPv6 server.

57. Refer to the exhibit. A Layer 3 switch routes for three VLANs and connects to a router for Internet connectivity. Which two configurations would be applied to the switch? (Choose two.)

CCNA-2-v7-exam-answers-57

```
(config)# interface gigabitethernet1/1  
(config-if)# switchport mode trunk
```

```
(config)# interface gigabitethernet 1/1  
(config-if)# no switchport  
(config-if)# ip address 192.168.1.2 255.255.255.252  
(config)# interface vlan 1  
(config-if)# ip address 192.168.1.2 255.255.255.0  
(config-if)# no shutdown
```

```
(config)# ip routing  
(config)# interface fastethernet0/4  
(config-if)# switchport mode trunk
```

58. A technician is troubleshooting a slow WLAN and decides to use the split-the-traffic approach. Which two parameters would have to be configured to do this? (Choose two.)

- **Configure the 5 GHz band for streaming multimedia and time sensitive traffic.**
- Configure the security mode to WPA Personal TKIP/AES for one network and WPA2 Personal AES for the other network
- **Configure the 2.4 GHz band for basic internet traffic that is not time sensitive.**
- Configure the security mode to WPA Personal TKIP/AES for both networks.

- Configure a common SSID for both split networks.

59. A company has just switched to a new ISP. The ISP has completed and checked the connection from its site to the company. However, employees at the company are not able to access the internet. What should be done or checked?

- Verify that the static route to the server is present in the routing table.
- Check the configuration on the floating static route and adjust the AD.
- **Ensure that the old default route has been removed from the company edge routers.**
- Create a floating static route to that network.

60. Which information does a switch use to populate the MAC address table?

- the destination MAC address and the incoming port
- the destination MAC address and the outgoing port
- the source and destination MAC addresses and the incoming port
- the source and destination MAC addresses and the outgoing port
- **the source MAC address and the incoming port**
- the source MAC address and the outgoing port

Explain: To maintain the MAC address table, the switch uses the source MAC address of the incoming packets and the port that the packets enter. The destination address is used to select the outgoing port.

61. Refer to the exhibit. A network administrator is reviewing the configuration of switch S1. Which protocol has been implemented to group multiple physical ports into one logical link?

- **PAgP**
- DTP
- LACP
- STP

62. Which type of static route is configured with a greater administrative distance to provide a backup route to a route learned from a dynamic routing protocol?

- **floating static route**
- default static route
- summary static route
- standard static route

Explain: There are four basic types of static routes. Floating static routes are backup routes that are placed into the routing table if a primary route is lost. A summary static route aggregates several routes into one, reducing the size of the routing table. Standard static routes are manually entered routes into the routing table. Default static routes create a gateway of last resort.

63. What action takes place when a frame entering a switch has a unicast destination MAC address appearing in the MAC address table?

- The switch updates the refresh timer for the entry.
- **The switch forwards the frame out of the specified port.**
- The switch purges the entire MAC address table.
- The switch replaces the old entry and uses the more current port.

64. The exhibit shows two PCs called PC A and PC B, two routes called R1 and R2, and two switches. PC A has the address 172.16.1.1/24 and is connected to a switch and into an interface on R1 that has the IP address 172.16.1.254. PC B has the address 172.16.2.1/24 and is connected to a switch that is connected to another interface on R1 with the IP address 172.16.2.254. The serial interface on R1 has the address 172.16.3.1 and is connected to the serial interface on R2 that has the address 172.16.3.2/24. R2 is connected to the internet cloud. Which command will create a static route on R2 in order to reach PC B?

- R2(config)# ip route 172.16.2.1 255.255.255.0 172.16.3.1
- R2(config)# ip route 172.16.2.0 255.255.255.0 172.16.2.254
- **R2(config)# ip route 172.16.2.0 255.255.255.0 172.16.3.1**
- R2(config)# ip route 172.16.3.0 255.255.255.0 172.16.2.254

Explain: The correct syntax is:

router(config)# ip route destination-network destination-mask {next-hop-ip-address | exit-interface}

If the local exit interface instead of the next-hop IP address is used then the route will be displayed as a directly connected route instead of a static route in the routing table. Because the network to be reached is 172.16.2.0 and the next-hop IP address is 172.16.3.1, the command is R2(config)# ip route 172.16.2.0 255.255.255.0 172.16.3.1

65. What protocol or technology allows data to transmit over redundant switch links?

- EtherChannel
- DTP
- **STP**
- VTP

66. Refer to the exhibit. Which three hosts will receive ARP requests from host A, assuming that port Fa0/4 on both switches is configured to carry traffic for multiple VLANs? (Choose three.)

- host B
- **host C**
- **host D**
- host E
- **host F**
- host G

Explain: ARP requests are sent out as broadcasts. That means the ARP request is sent only throughout a specific VLAN. VLAN 1 hosts will only hear ARP requests from hosts on VLAN 1. VLAN 2 hosts will only hear ARP requests from hosts on VLAN 2.

67. Refer to the exhibit. The network administrator configures both switches as displayed. However, host C is unable to ping host D and host E is unable to ping host F. What action should the administrator take to enable this communication?

- Associate hosts A and B with VLAN 10 instead of VLAN 1.
- **Configure either trunk port in the dynamic desirable mode.**
- Include a router in the topology.
- Remove the native VLAN from the trunk.
- Add the switchport nonegotiate command to the configuration of SW2.

68. What is the effect of entering the shutdown configuration command on a switch?

- It enables BPDU guard on a specific port.
- **It disables an unused port.**
- It enables portfast on a specific switch interface.
- It disables DTP on a non-trunking interface.

69. What would be the primary reason an attacker would launch a MAC address overflow attack?

- so that the switch stops forwarding traffic
- so that legitimate hosts cannot obtain a MAC address
- **so that the attacker can see frames that are destined for other hosts**
- so that the attacker can execute arbitrary code on the switch

70. During the AAA process, when will authorization be implemented?

- **Immediately after successful authentication against an AAA data source**
- Immediately after AAA accounting and auditing receives detailed reports
- Immediately after an AAA client sends authentication information to a centralized server
- Immediately after the determination of which resources a user can access

Explain: A. AAA authorization is implemented immediately after the user is authenticated against a specific AAA data source.

71. A company security policy requires that all MAC addressing be dynamically learned and added to both the MAC address table and the running configuration on each switch. Which port security configuration will accomplish this?

- auto secure MAC addresses
- dynamic secure MAC addresses
- static secure MAC addresses
- **sticky secure MAC addresses**

Explain: With sticky secure MAC addressing, the MAC addresses can be either dynamically learned or manually configured and then stored in the address table and added to the running configuration file. In contrast, dynamic secure MAC addressing provides for dynamically learned MAC addressing that is stored only in the address table.

72. Which three Wi-Fi standards operate in the 2.4GHz range of frequencies? (Choose three.)

- 802.11a

- **802.11b**
- **802.11g**
- **802.11n**
- 802.11ac

Explanation: 802.11b and 802.11g operate in the 2.4GHz range, and 802.11n can operate in either the 2.4GHz or the 5GHz range. 802.11a and 802.11ac operate only in the 5GHz range of frequencies.

73. To obtain an overview of the spanning tree status of a switched network, a network engineer issues the show spanning-tree command on a switch. Which two items of information will this command display? (Choose two.)

- **The root bridge BID.**
- **The role of the ports in all VLANs.**
- The status of native VLAN ports.
- The number of broadcasts received on each root port.
- The IP address of the management VLAN interface.

74. Refer to the exhibit. Which trunk link will not forward any traffic after the root bridge election process is complete?

- Trunk1
- **Trunk2**
- Trunk3
- Trunk4

75. Which method of IPv6 prefix assignment relies on the prefix contained in RA messages?

- EUI-64
- **SLAAC**
- static
- stateful DHCPv6

76. Which two protocols are used to provide server-based AAA authentication? (Choose two.)

- 802.1x
- SSH
- SNMP
- **TACACS+**
- **RADIUS**

Explanation: Server-based AAA authentication uses an external TACACS or RADIUS authentication server to maintain a username and password database. When a client establishes a connection with an AAA enabled device, the device authenticates the client by querying the authentication servers.

77. A network administrator is configuring a WLAN. Why would the administrator disable the broadcast feature for the SSID?

- **to eliminate outsiders scanning for available SSIDs in the area**
- to reduce the risk of interference by external devices such as microwave ovens
- to reduce the risk of unauthorized APs being added to the network
- to provide privacy and integrity to wireless traffic by using encryption

78. Which mitigation technique would prevent rogue servers from providing false IP configuration parameters to clients?

- implementing port security
- **turning on DHCP snooping**
- disabling CDP on edge ports
- implementing port-security on edge ports

Explanation: Like Dynamic ARP Inspection (DAI), IP Source Guard (IPSG) needs to determine the validity of MAC-address-to-IP-address bindings. To do this IPSG uses the bindings database built by DHCP snooping.

79. A network administrator configures the port security feature on a switch. The security policy specifies that each access port should allow up to two MAC addresses. When the maximum number of MAC addresses is reached, a frame with the unknown source MAC address is dropped and a notification is sent to the syslog server. Which security violation mode should be configured for each access port?

- shutdown
- **restrict**
- warning
- protect

80. What protocol or technology defines a group of routers, one of them defined as active and another one as standby?

- EtherChannel
- VTP
- **HSRP**
- DTP

81. Refer to the exhibit. After attempting to enter the configuration that is shown in router RTA, an administrator receives an error and users on VLAN 20 report that they are unable to reach users on VLAN 30. What is causing the problem?

- There is no address on Fa0/0 to use as a default gateway.
- **RTA is using the same subnet for VLAN 20 and VLAN 30.**
- Dot1q does not support subinterfaces.
- The no shutdown command should have been issued on Fa0/0.20 and Fa0/0.30.

82. Which three pairs of trunking modes will establish a functional trunk link between two Cisco switches? (Choose three.)

dynamic auto - dynamic auto

access - trunk

dynamic desirable - trunk

access - dynamic auto

dynamic desirable - dynamic desirable

dynamic desirable - dynamic auto

83. A technician is configuring a router for a small company with multiple WLANs and doesn't need the complexity of a dynamic routing protocol. What should be done or checked?

- Verify that there is not a default route in any of the edge router routing tables.
- **Create static routes to all internal networks and a default route to the internet.**
- Create extra static routes to the same location with an AD of 1.
- Check the statistics on the default route for oversaturation.

84. A company is deploying a wireless network in the distribution facility in a Boston suburb. The warehouse is quite large and it requires multiple access points to be used. Because some of the company devices still operate at 2.4GHz, the network administrator decides to deploy the 802.11g standard. Which channel assignments on the multiple access points will make sure that the wireless channels are not overlapping?

- channels 1, 5, and 9
- **channels 1, 6, and 11**
- channels 1, 7, and 13
- channels 2, 6, and 10

Explanation: In the North America domain, 11 channels are allowed for 2.4GHz wireless networking. Among these 11 channels, the combination of channels 1, 6, and 11 are the only non-overlapping channel combination.

85. A network administrator of a small advertising company is configuring WLAN security by using the WPA2 PSK method. Which credential do office users need in order to connect their laptops to the WLAN?

- the company username and password through Active Directory service
- a key that matches the key on the AP
- **a user passphrase**
- a username and password configured on the AP

86. Refer to the exhibit. What are the possible port roles for ports A, B, C, and D in this RSTP-enabled network?

- **alternate, designated, root, root**
- designated, alternate, root, root
- alternate, root, designated, root
- designated, root, alternate, root

Explanation: Because S1 is the root bridge, B is a designated port, and C and D root ports. RSTP supports a new port type, alternate port in discarding state, that can be port A in this scenario.

87. Refer to the exhibit. Which static route would an IT technician enter to create a backup route to the 172.16.1.0 network that is only used if the

primary RIP learned route fails?

- ip route 172.16.1.0 255.255.255.0 s0/0/0
- **ip route 172.16.1.0 255.255.255.0 s0/0/0 121**
- ip route 172.16.1.0 255.255.255.0 s0/0/0 111
- ip route 172.16.1.0 255.255.255.0 s0/0/0 91

Explanation: A backup static route is called a floating static route. A floating static route has an administrative distance greater than the administrative distance of another static route or dynamic route.

88. What mitigation plan is best for thwarting a DoS attack that is creating a MAC address table overflow?

- Disable DTP.
- Disable STP.
- **Enable port security.**
- Place unused ports in an unused VLAN.

Explanation: A MAC address (CAM) table overflow attack, buffer overflow, and MAC address spoofing can all be mitigated by configuring port security. A network administrator would typically not want to disable STP because it prevents Layer 2 loops. DTP is disabled to prevent VLAN hopping. Placing unused ports in an unused VLAN prevents unauthorized wired connectivity.

89. A network engineer is troubleshooting a newly deployed wireless network that is using the latest 802.11 standards. When users access high bandwidth services such as streaming video, the wireless network performance is poor. To improve performance the network engineer decides to configure a 5 Ghz frequency band SSID and train users to use that SSID for streaming media services. Why might this solution improve the wireless network performance for that type of service?

- Requiring the users to switch to the 5 GHz band for streaming media is inconvenient and will result in fewer users accessing these services.
- **The 5 GHz band has more channels and is less crowded than the 2.4 GHz band, which makes it more suited to streaming multimedia.**
- The 5 GHz band has a greater range and is therefore likely to be interference-free.
- The only users that can switch to the 5 GHz band will be those with the latest wireless NICs, which will reduce usage.

Explanation: Wireless range is determined by the access point antenna and output power, not the frequency band that is used. In this scenario it is stated that all users have wireless NICs that comply with the latest standard, and so all can access the 5 GHz band. Although some users may find it inconvenient to switch to the 5 GHz band to access streaming services, it is the greater number of channels, not just fewer users, that will improve network performance.

90. Which DHCPv4 message will a client send to accept an IPv4 address that is offered by a DHCP server?

- broadcast DHCPACK
- **broadcast DHCPREQUEST**
- unicast DHCPACK
- unicast DHCPREQUEST

Explanation: When a DHCP client receives DHCPOFFER messages, it will send a broadcast DHCPREQUEST message for two purposes. First, it indicates to the offering DHCP server that it would like to accept the offer and bind the IP address. Second, it notifies any other responding DHCP servers that their offers are declined.

91. Refer to the exhibit. Which destination MAC address is used when frames are sent from the workstation to the default gateway?

- **MAC address of the virtual router**
- MAC address of the standby router
- MAC addresses of both the forwarding and standby routers
- MAC address of the forwarding router

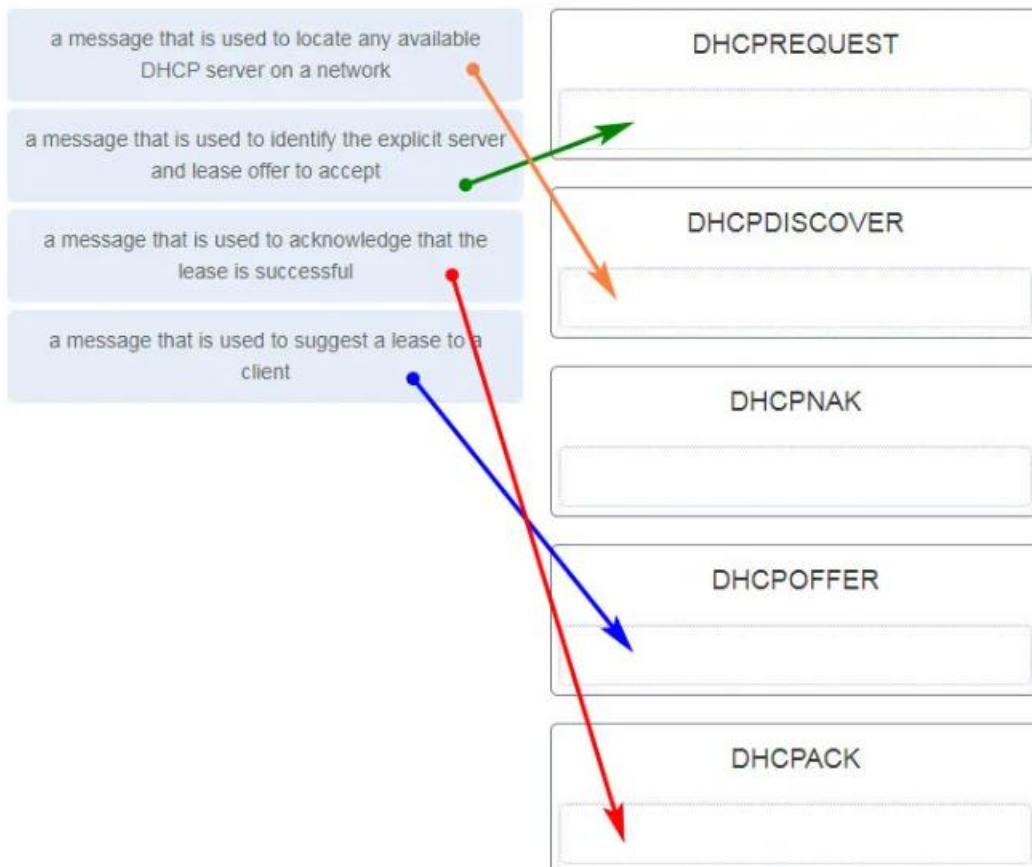
Explanation: The IP address of the virtual router acts as the default gateway for all the workstations. Therefore, the MAC address that is returned by the Address Resolution Protocol to the workstation will be the MAC address of the virtual router.

92. After a host has generated an IPv6 address by using the DHCPv6 or SLAAC process, how does the host verify that the address is unique and therefore usable?

- The host sends an ICMPv6 echo request message to the DHCPv6 or SLAAC-learned address and if no reply is returned, the address is considered unique.
- **The host sends an ICMPv6 neighbor solicitation message to the DHCP or SLAAC-learned address and if no neighbor advertisement is returned, the address is considered unique.**
- The host checks the local neighbor cache for the learned address and if the address is not cached, it is considered unique.
- The host sends an ARP broadcast to the local link and if no hosts send a reply, the address is considered unique.

Explanation: Before a host can actually configure and use an IPv6 address learned through SLAAC or DHCP, the host must verify that no other host is already using that address. To verify that the address is indeed unique, the host sends an ICMPv6 neighbor solicitation to the address. If no neighbor advertisement is returned, the host considers the address to be unique and configures it on the interface.

93. Match the purpose with its DHCP message type. (Not all options are used.)



94. Which protocol adds security to remote connections?

- FTP
- HTTP
- NetBEUI
- POP
- **SSH**

Explanation: SSH allows a technician to securely connect to a remote network device for monitoring and troubleshooting. HTTP establishes web page requests. FTP manages file transfer. NetBEUI is not routed on the Internet. POP downloads email messages from email servers.

95. Refer to the exhibit. A network administrator is verifying the configuration of inter-VLAN routing. Users complain that PC2 cannot communicate with PC1.

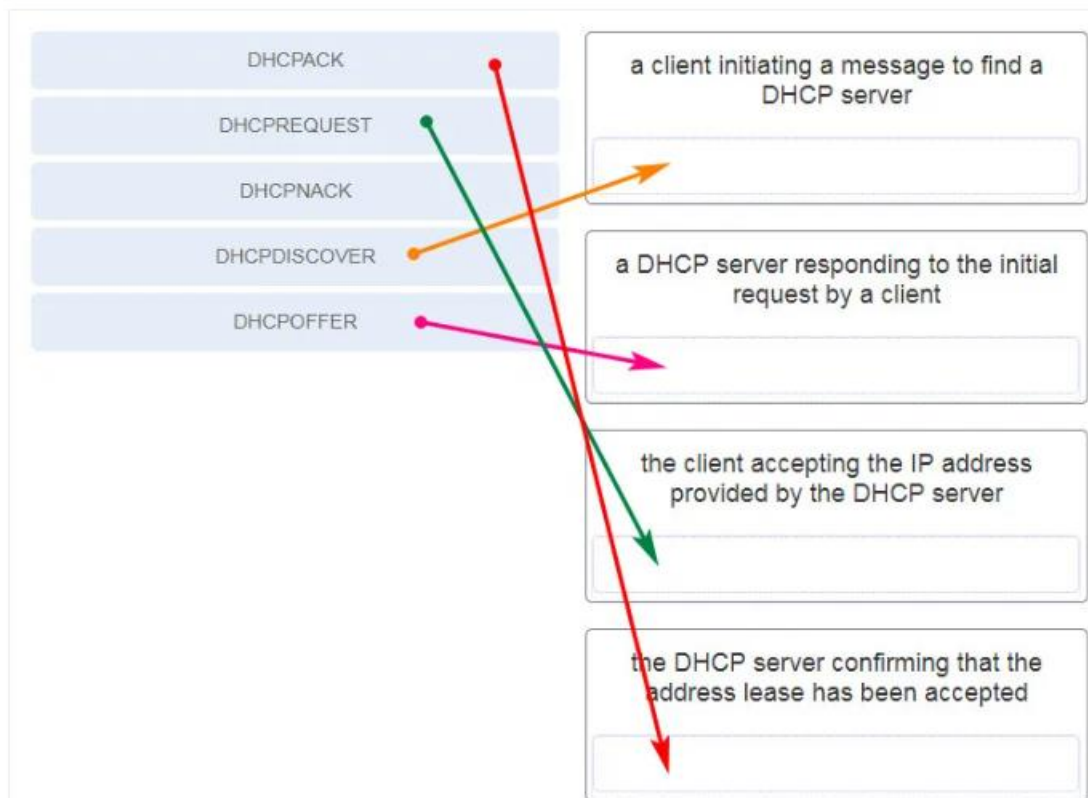
Based on the output, what is the possible cause of the problem?

- Gi0/0 is not configured as a trunk port.
- The command interface GigabitEthernet0/0.5 was entered incorrectly.
- There is no IP address configured on the interface Gi0/0.
- The no shutdown command is not entered on subinterfaces.
- **The encapsulation dot1Q 5 command contains the wrong VLAN.**

96. Refer to the exhibit. A network administrator is configuring inter-VLAN routing on a network. For now, only one VLAN is being used, but more will be added soon. What is the missing parameter that is shown as the highlighted question mark in the graphic?

- It identifies the subinterface.
- **It identifies the VLAN number.**
- It identifies the native VLAN number.
- It identifies the type of encapsulation that is used.
- It identifies the number of hosts that are allowed on the interface.

97. Match each DHCP message type with its description. (Not all options are used.)



CCNA 2 v7 Modules 1 – 4: Switching Concepts, VLANs, and InterVLAN Routing Exam Answers

Explanation: Place the options in the following order:

- a client initiating a message to find a DHCP server – DHCPDISCOVER
- a DHCP server responding to the initial request by a client – DHCPOFFER
- the client accepting the IP address provided by the DHCP server – DHCPREQUEST
- the DHCP server confirming that the lease has been accepted – DHCPACK

98. What network attack seeks to create a DoS for clients by preventing them from being able to obtain a DHCP lease?

- IP address spoofing
- **DHCP starvation**
- CAM table attack
- DHCP spoofing

Explanation: DHCP starvation attacks are launched by an attacker with the intent to create a DoS for DHCP clients. To accomplish this goal, the attacker uses a

tool that sends many DHCPDISCOVER messages in order to lease the entire pool of available IP addresses, thus denying them to legitimate hosts.

99. Refer to the exhibit. If the IP addresses of the default gateway router and the DNS server are correct, what is the configuration problem?

- The DNS server and the default gateway router should be in the same subnet.
- **The IP address of the default gateway router is not contained in the excluded address list.**
- The default-router and dns-server commands need to be configured with subnet masks.
- The IP address of the DNS server is not contained in the excluded address list.

Explanation: In this configuration, the excluded address list should include the address that is assigned to the default gateway router. So the command should be `ip dhcp excluded-address 192.168.10.1 192.168.10.9`.

100. Refer to the exhibit. A network administrator has added a new subnet to the network and needs hosts on that subnet to receive IPv4 addresses from the DHCPv4 server.

What two commands will allow hosts on the new subnet to receive addresses from the DHCP4 server? (Choose two.)

- **R1(config-if)# ip helper-address 10.2.0.250**
- R1(config)# interface G0/1
- **R1(config)# interface G0/0**
- R2(config-if)# ip helper-address 10.2.0.250
- R2(config)# interface G0/0
- R1(config-if)# ip helper-address 10.1.0.254

Explanation: You need the router interface that is connected to the new subnet and the dhcp server address.

The `ip helper-address` command is used to configure a router to be a DHCPv4 relay. The command should be placed on the interface facing the DHCPv4 clients. When the command is applied on the router interface, the interface will receive DHCPv4 broadcast messages and forward them as unicast to the IP address of the DHCPv4 server.

101. What protocol or technology uses source IP to destination IP as a load-balancing mechanism?

- VTP
- **EtherChannel**

- DTP
- STP

102. What protocol should be disabled to help mitigate VLAN attacks?

- CDP
- ARP
- STP
- **DTP**

103. What protocol or technology requires switches to be in server mode or client mode?

- EtherChannel
- STP
- **VTP**
- DTP

104. What are two reasons a network administrator would segment a network with a Layer 2 switch? (Choose two.)

- to create fewer collision domains
- **to enhance user bandwidth**
- to create more broadcast domains
- to eliminate virtual circuits
- **to isolate traffic between segments**
- to isolate ARP request messages from the rest of the network

Explanation: A switch has the ability of creating temporary point-to-point connections between the directly-attached transmitting and receiving network devices. The two devices have full-bandwidth full-duplex connectivity during the transmission.

105. What command will enable a router to begin sending messages that allow it to configure a link-local address without using an IPv6 DHCP server?

- a static route
- the ipv6 route ::/0 command
- **the ipv6 unicast-routing command**
- the ip routing command

106. A network administrator is using the router-on-a-stick model to configure a switch and a router for inter-VLAN routing. What configuration should be made on the switch port that connects to the router?

- Configure it as a trunk port and allow only untagged traffic.
- Configure the port as an access port and a member of VLAN1.
- **Configure the port as an 802.1q trunk port.**
- Configure the port as a trunk port and assign it to VLAN1.

107. What are three techniques for mitigating VLAN attacks? (Choose three.)

- Use private VLANs.
- Enable BPDU guard.
- **Enable trunking manually**

- Enable Source Guard.
- **Disable DTP.**
- **Set the native VLAN to an unused VLAN.**

108. Match the DHCP message types to the order of the DHCPv4 process. (Not all options are used.)

Step 1	DHCPACK
Step 2	Step 4
Step 3	DHCPREQUEST
Step 4	Step 3
	DHCPDISCOVER
	Step 1
	DHCPREPLY
	DHCPINFORMATION-REQUEST
	DHCPOFFER
	Step 2

Explanation: The broadcast DHCPDISCOVER message finds DHCPv4 servers on the network. When the DHCPv4 server receives a DHCPDISCOVER message, it reserves an available IPv4 address to lease to the client and sends the unicast DHCPOFFER message to the requesting client. When the client receives the DHCPOFFER from the server, it sends back a DHCPREQUEST. On receiving the DHCPREQUEST message the server replies with a unicast DHCPACK message. DHCPREPLY and DHCPINFORMATION-REQUEST are DHCPv6 messages.

109. In which situation would a technician use the show interfaces switch command?

- to determine if remote access is enabled
- **when packets are being dropped from a particular directly attached host**
- when an end device can reach local devices, but not remote devices
- to determine the MAC address of a directly attached network device on a particular interface

Explanation: The show interfaces command is useful to detect media errors, to see if packets are being sent and received, and to determine if any runts, giants, CRCs, interface resets, or other errors have occurred. Problems with reachability to a remote network would likely be caused by a misconfigured default gateway or other routing issue, not a switch issue. The show mac address-table command shows the MAC address of a directly attached device.

110. What is a drawback of the local database method of securing device access that can be solved by using AAA with centralized servers?

- There is no ability to provide accountability.
- **User accounts must be configured locally on each device, which is an unscalable authentication solution.**
- It is very susceptible to brute-force attacks because there is no username.
- The passwords can only be stored in plain text in the running configuration.

Explanation: The local database method of securing device access utilizes usernames and passwords that are configured locally on the router. This allows administrators to keep track of who logged in to the device and when. The passwords can also be encrypted in the configuration. However, the account information must be configured on each device where that account should have access, making this solution very difficult to scale.

111. What action does a DHCPv4 client take if it receives more than one DHCPOFFER from multiple DHCP servers?

- **It sends a DHCPREQUEST that identifies which lease offer the client is accepting.**
- It sends a DHCPNAK and begins the DHCP process over again.
- It discards both offers and sends a new DHCPDISCOVER.
- It accepts both DHCPOFFER messages and sends a DHCPACK.

112. Refer to the exhibit. The network administrator is configuring the port security feature on switch SWC. The administrator issued the command show port-security interface fa 0/2 to verify the configuration. What can be concluded from the output that is shown? (Choose three.)

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- Three security violations have been detected on this interface.
- **This port is currently up.**
- The port is configured as a trunk link.
- **Security violations will cause this port to shut down immediately.**
- There is no device currently connected to this port.
- **The switch port mode for this interface is access mode.**

Explanation: Because the security violation count is at 0, no violation has occurred. The system shows that 3 MAC addresses are allowed on port fa0/2, but only one has been configured and no sticky MAC addresses have been learned. The port is up because of the port status of secure-up. The violation mode is what happens when an unauthorized device is attached to the port. A port must be in access mode in order to activate and use port security.

113. What method of wireless authentication is dependent on a RADIUS authentication server?

- WEP
- WPA Personal
- WPA2 Personal
- **WPA2 Enterprise**

114. A network administrator has found a user sending a double-tagged 802.1Q frame to a switch. What is the best solution to prevent this type of attack?

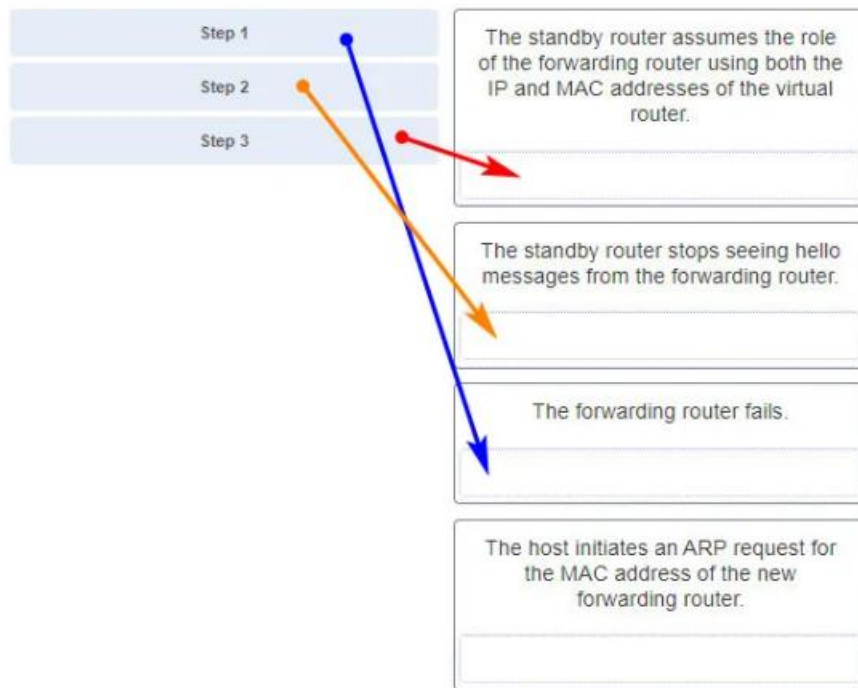
- The native VLAN number used on any trunk should be one of the active data VLANs.
- **The VLANs for user access ports should be different VLANs than any native VLANs used on trunk ports.**
- Trunk ports should be configured with port security.

- Trunk ports should use the default VLAN as the native VLAN number.

115. Refer to the exhibit. Which two conclusions can be drawn from the output? (Choose two.)

- **The EtherChannel is down.**
- **The port channel ID is 2.**
- The port channel is a Layer 3 channel.
- The bundle is fully operational.
- The load-balancing method used is source port to destination port.

116. Match the step number to the sequence of stages that occur during the HSRP failover process. (Not all options are used.)



Explanation: Hot Standby Router Protocol (HSRP) is a Cisco-proprietary protocol that is designed to allow for transparent failover of a first-hop IPv4 device.

117. On a Cisco 3504 WLC Summary page (Advanced > Summary), which tab allows a network administrator to configure a particular WLAN with a WPA2 policy?

- **WLANs**
- SECURITY
- WIRELESS
- MANAGEMENT

Explanation: The **WLANs** tab in the Cisco 3504 WLC advanced **Summary** page allows a user to access the configuration of WLANs including security, QoS, and policy-mapping.

118. Refer to the exhibit. A network engineer is configuring IPv6 routing on the network. Which command issued on router HQ will configure a default route to the Internet to forward packets to an IPv6 destination network that is

not listed in the routing table?

- ipv6 route ::/0 serial 0/0/0
- ip route 0.0.0.0 0.0.0.0 serial 0/1/1
- ipv6 route ::1/0 serial 0/1/1
- **ipv6 route ::/0 serial 0/1/1**

119. Users are complaining of sporadic access to the internet every afternoon. What should be done or checked?

- Create static routes to all internal networks and a default route to the internet.
- Verify that there is not a default route in any of the edge router routing tables.
- Create a floating static route to that network.
- **Check the statistics on the default route for oversaturation.**

120. What action takes place when the source MAC address of a frame entering a switch appears in the MAC address table associated with a different port?

- The switch purges the entire MAC address table.
- **The switch replaces the old entry and uses the more current port.**
- The switch updates the refresh timer for the entry.
- The switch forwards the frame out of the specified port.

121. A network administrator is configuring a WLAN. Why would the administrator use a WLAN controller?

- to centralize management of multiple WLANs

- to provide privacy and integrity to wireless traffic by using encryption
- **to facilitate group configuration and management of multiple WLANs through a WLC**
- to provide prioritized service for time-sensitive applications

122. A new Layer 3 switch is connected to a router and is being configured for interVLAN routing. What are three of the five steps required for the configuration? (Choose three.)

Case 1:

- installing a static route
- assigning the ports to the native VLAN
- **entering “no switchport” on the port connected to the router**
- modifying the default VLAN
- **assigning ports to VLANs**
- **enabling IP routing**
- adjusting the route metric

Case 2:

- establishing adjacencies
- adjusting the route metric
- **assigning ports to VLANs**
- implementing a routing protocol
- **creating SVI interfaces**
- installing a static route
- **creating VLANs**

Case 3:

- **assigning ports to VLANs**
- assigning the ports to the native VLAN
- modifying the default VLAN
- deleting the default VLAN
- **enabling IP routing**
- installing a static route
- **entering “no switchport” on the port connected to the router**

Case 4:

- installing a static route
- **enabling IP routing**
- modifying the default VLAN
- implementing a routing protocol
- **assigning ports to VLANs**
- assigning the ports to the native VLAN
- **creating SVI interfaces**

Case 5:

- **assigning ports to VLANs**
- assigning the ports to the native VLAN

- **enabling IP routing**
- modifying the default VLAN
- installing a static route
- implementing a routing protocol
- **creating SVI interfaces**

Case 6:

- establishing adjacencies
- **enabling IP routing**
- assigning the ports to the native VLAN
- adjusting the route metric
- modifying the default VLAN
- **entering “no switchport” on the port connected to the router**
- **assigning ports to VLANs**

Explanation: Steps to configure Layer 3 switch to route with a router:

Step 1. Configure the routed port.

Step 2. Enable routing.

Step 3. Configure routing.

Step 4. Verify routing.

Step 5. Verify connectivity.

Reference: [4.3.8 Packet Tracer Configure Layer 3 Switching and inter VLAN Routing](#)

123. Which three statements accurately describe duplex and speed settings on Cisco 2960 switches? (Choose three.)

- **An autonegotiation failure can result in connectivity issues.**
- **When the speed is set to 1000 Mb/s, the switch ports will operate in full-duplex mode.**
- **The duplex and speed settings of each switch port can be manually configured.**
- Enabling autonegotiation on a hub will prevent mismatched port speeds when connecting the hub to the switch.
- By default, the speed is set to 100 Mb/s and the duplex mode is set to autonegotiation.
- By default, the autonegotiation feature is disabled.

124. Refer to the exhibit. A network administrator configures R1 for inter-VLAN routing between VLAN 10 and VLAN 20. However, the devices in VLAN 10 and VLAN 20 cannot communicate. Based on the configuration in the

exhibit, what is a possible cause for the problem?

- A. The port Gi0/0 should be configured as trunk port.
- B. The encapsulation is misconfigured on a subinterface.
- C. A no shutdown command should be added in each subinterface configuration.
- **D. The command interface gigabitEthernet 0/0.1 is wrong.**

125. A network administrator uses the spanning-tree portfast bpduguard default global configuration command to enable BPDU guard on a switch. However, BPDU guard is not activated on all access ports. What is the cause of the issue?

- BPDU guard needs to be activated in the interface configuration command mode.
- Access ports configured with root guard cannot be configured with BPDU guard.
- Access ports belong to different VLANs.
- **PortFast is not configured on all access ports.**

126. Which two types of spanning tree protocols can cause suboptimal traffic flows because they assume only one spanning-tree instance for the entire bridged network? (Choose two.)

- MSTP
- **RSTP**
- Rapid PVST+
- PVST+
- **STP**

127. Refer to the exhibit. A network administrator is configuring the router R1 for IPv6 address assignment. Based on the partial configuration, which IPv6 global unicast address assignment scheme does the administrator intend to

implement?

- **stateful**
- stateless
- manual configuration
- SLAAC

128. A WLAN engineer deploys a WLC and five wireless APs using the CAPWAP protocol with the DTLS feature to secure the control plane of the network devices. While testing the wireless network, the WLAN engineer notices that data traffic is being exchanged between the WLC and the APs in plain-text and is not being encrypted. What is the most likely reason for this?

- DTLS only provides data security through authentication and does not provide encryption for data moving between a wireless LAN controller (WLC) and an access point (AP).
- **Although DTLS is enabled by default to secure the CAPWAP control channel, it is disabled by default for the data channel.**
- DTLS is a protocol that only provides security between the access point (AP) and the wireless client.
- Data encryption requires a DTLS license to be installed on each access point (AP) prior to being enabled on the wireless LAN controller (WLC).

Explanation: DTLS is a protocol which provides security between the AP and the WLC. It allows them to communicate using encryption and prevents eavesdropping or tampering.

DTLS is enabled by default to secure the CAPWAP control channel but is disabled by default for the data channel. All CAPWAP management and control traffic exchanged between an AP and WLC is encrypted and secured by default to provide control plane privacy and prevent Man-In-the-Middle (MITM) attacks.

129. A new switch is to be added to an existing network in a remote office. The network administrator does not want the technicians in the remote office to be able to add new VLANs to the switch, but the switch should receive VLAN

updates from the VTP domain. Which two steps must be performed to configure VTP on the new switch to meet these conditions? (Choose two.)

- **Configure the new switch as a VTP client.**
- **Configure the existing VTP domain name on the new switch.**
- Configure an IP address on the new switch.
- Configure all ports of both switches to access mode.
- Enable VTP pruning.

Explanation: Before the switch is put in the correct VTP domain and in client mode, the switch must be connected to any other switch in the VTP domain through a trunk in order to receive/transmit VTP information.

130. Refer to the exhibit. Consider that the main power has just been restored. PC3 issues a broadcast IPv4 DHCP request. To which port will SW1 forward this request?

- **to Fa0/1, Fa0/2, and Fa0/3 only**
- to Fa0/1, Fa0/2, Fa0/3, and Fa0/4
- to Fa0/1 only
- to Fa0/1, Fa0/2, and Fa0/4 only
- to Fa0/1 and Fa0/2 only

131. What action takes place when the source MAC address of a frame entering a switch is not in the MAC address table?

- The switch adds a MAC address table entry for the destination MAC address and the egress port.

- **The switch adds the MAC address and incoming port number to the table.**

- The switch replaces the old entry and uses the more current port.
- The switch updates the refresh timer for the entry.

132. Employees are unable to connect to servers on one of the internal networks. What should be done or checked?

- **Use the “show ip interface brief” command to see if an interface is down.**
- Verify that there is not a default route in any of the edge router routing tables.
- Create static routes to all internal networks and a default route to the internet.
- Check the statistics on the default route for oversaturation.

133. What is the effect of entering the ip dhcp snooping configuration command on a switch?

- **It enables DHCP snooping globally on a switch.**
- It enables PortFast globally on a switch.
- It disables DTP negotiations on trunking ports.
- It manually enables a trunk link.

134. An administrator notices that large numbers of packets are being dropped on one of the branch routers. What should be done or checked?

- Create static routes to all internal networks and a default route to the internet.
- Create extra static routes to the same location with an AD of 1.
- Check the statistics on the default route for oversaturation.
- **Check the routing table for a missing static route.**

135. What are two switch characteristics that could help alleviate network congestion? (Choose two.)

- **fast internal switching**
- **large frame buffers**
- store-and-forward switching
- low port density
- frame check sequence (FCS) check

136. What is a result of connecting two or more switches together?

- The number of broadcast domains is increased.
- **The size of the broadcast domain is increased.**
- The number of collision domains is reduced.
- The size of the collision domain is increased.

Explanation:: When two or more switches are connected together, the size of the broadcast domain is increased and so is the number of collision domains. The number of broadcast domains is increased only when routers are added.

138. Branch users were able to access a site in the morning but have had no connectivity with the site since lunch time. What should be done or checked?

- Verify that the static route to the server is present in the routing table.
- **Use the “show ip interface brief” command to see if an interface is down.**
- Check the configuration on the floating static route and adjust the AD.
- Create a floating static route to that network.

139. What is the effect of entering the switchport port-security configuration command on a switch?

- It dynamically learns the L2 address and copies it to the running configuration.
- **It enables port security on an interface.**
- It enables port security globally on the switch.
- It restricts the number of discovery messages, per second, to be received on the interface.

140. A network administrator is configuring a WLAN. Why would the administrator use multiple lightweight APs?

- to centralize management of multiple WLANs
- to monitor the operation of the wireless network
- to provide prioritized service for time-sensitive applications
- **to facilitate group configuration and management of multiple WLANs through a WLC**

141. Refer to the exhibit. PC-A and PC-B are both in VLAN 60. PC-A is unable to communicate with PC-B. What is the problem?

- The native VLAN should be VLAN 60.
- The native VLAN is being pruned from the link.
- The trunk has been configured with the switchport nonegotiate command.

- The VLAN that is used by PC-A is not in the list of allowed VLANs on the trunk.

Explanation: Because PC-A and PC-B are connected to different switches, traffic between them must flow over the trunk link. Trunks can be configured so that they only allow traffic for particular VLANs to cross the link. In this scenario, VLAN 60, the VLAN that is associated with PC-A and PC-B, has not been allowed across the link, as shown by the output of show interfaces trunk.

142. A network administrator is configuring a WLAN. Why would the administrator use RADIUS servers on the network?

- to centralize management of multiple WLANs
- **to restrict access to the WLAN by authorized, authenticated users only**
- to facilitate group configuration and management of multiple WLANs through a WLC
- to monitor the operation of the wireless network

143. What is the effect of entering the switchport mode access configuration command on a switch?

- It enables BPDU guard on a specific port.
- It manually enables a trunk link.
- It disables an unused port.
- **It disables DTP on a non-trunking interface.**

144. A network administrator has configured a router for stateless DHCPv6 operation. However, users report that workstations are not receiving DNS server information. Which two router configuration lines should be verified to ensure that stateless DHCPv6 service is properly configured? (Choose two.)

- The domain-name line is included in the `ipv6 dhcp pool` section.
- **The dns-server line is included in the `ipv6 dhcp pool` section.**
- **The `ipv6 nd other-config-flag` is entered for the interface that faces the LAN segment.**
- The address prefix line is included in the `ipv6 dhcp pool` section.
- The `ipv6 nd managed-config-flag` is entered for the interface that faces the LAN segment.

Explanation: To use the stateless DHCPv6 method, the router must inform DHCPv6 clients to configure a SLAAC IPv6 address and contact the DHCPv6 server for additional configuration parameters, such as the DNS server address. This is done through the command `ipv6 nd other-config-flag` entered at the interface configuration mode. The DNS server address is indicated in the `ipv6 dhcp pool` configuration.

145. A network administrator is configuring a WLAN. Why would the administrator disable the broadcast feature for the SSID?

- **to eliminate outsiders scanning for available SSIDs in the area**
- to centralize management of multiple WLANs

- to facilitate group configuration and management of multiple WLANs through a WLC
- to provide prioritized service for time-sensitive applications

146. Refer to the exhibit. An administrator is attempting to install an IPv6 static route on router R1 to reach the network attached to router R2. After the static route command is entered, connectivity to the network is still failing. What error has been made in the static route configuration?

- The next hop address is incorrect.
- **The interface is incorrect.**
- The destination network is incorrect.
- The network prefix is incorrect.

Explanation: In this example the interface in the static route is incorrect. The interface should be the exit interface on R1, which is s0/0/0.

147. What action takes place when a frame entering a switch has a unicast destination MAC address that is not in the MAC address table?

- The switch updates the refresh timer for the entry.
- The switch resets the refresh timer on all MAC address table entries.
- The switch replaces the old entry and uses the more current port.
- **The switch will forward the frame out all ports except the incoming port.**

148. A junior technician was adding a route to a LAN router. A traceroute to a device on the new network revealed a wrong path and unreachable status.

What should be done or checked?

- Create a floating static route to that network.
- Check the configuration on the floating static route and adjust the AD.
- **Check the configuration of the exit interface on the new static route.**
- Verify that the static route to the server is present in the routing table.

149. What is the effect of entering the ip arp inspection vlan 10 configuration command on a switch?

- It specifies the maximum number of L2 addresses allowed on a port.
- **It enables DAI on specific switch interfaces previously configured with DHCP snooping.**
- It enables DHCP snooping globally on a switch.
- It globally enables BPDU guard on all PortFast-enabled ports.

150. What protocol or technology manages trunk negotiations between switches?

- VTP
- EtherChannel
- **DTP**
- STP

151. A network administrator is configuring a WLAN. Why would the administrator apply WPA2 with AES to the WLAN?

- to reduce the risk of unauthorized APs being added to the network
- to centralize management of multiple WLANs
- to provide prioritized service for time-sensitive applications
- **to provide privacy and integrity to wireless traffic by using encryption**

152. Users on a LAN are unable to get to a company web server but are able to get elsewhere. What should be done or checked?

- Ensure that the old default route has been removed from the company edge routers.
- **Verify that the static route to the server is present in the routing table.**
- Check the configuration on the floating static route and adjust the AD.
- Create a floating static route to that network.

153. What IPv6 prefix is designed for link-local communication?

- 2001::/3
- ff00::/8
- fc::/07
- **fe80::/10**

154. What is the effect of entering the `ip dhcp snooping limit rate 6` configuration command on a switch?

- It displays the IP-to-MAC address associations for switch interfaces.
- It enables port security globally on the switch.
- **It restricts the number of discovery messages, per second, to be received on the interface.**
- It dynamically learns the L2 address and copies it to the running configuration.

155. A network administrator is configuring a WLAN. Why would the administrator change the default DHCP IPv4 addresses on an AP?

- to eliminate outsiders scanning for available SSIDs in the area
- to reduce the risk of unauthorized APs being added to the network
- **to reduce outsiders intercepting data or accessing the wireless network by using a well-known address range**
- to reduce the risk of interference by external devices such as microwave ovens

156. What is the effect of entering the `ip arp inspection validate src-mac` configuration command on a switch?

- **It checks the source L2 address in the Ethernet header against the sender L2 address in the ARP body.**
- It disables all trunk ports.
- It displays the IP-to-MAC address associations for switch interfaces.
- It enables portfast on a specific switch interface.

157. What protocol or technology is a Cisco proprietary protocol that is automatically enabled on 2960 switches?

- **DTP**
- STP
- VTP
- EtherChannel

158. What address and prefix length is used when configuring an IPv6 default static route?

- **::/0**
- FF02::1/8
- 0.0.0.0/0
- ::1/128

159. What are two characteristics of Cisco Express Forwarding (CEF)? (Choose two.)

- When a packet arrives on a router interface, it is forwarded to the control plane where the CPU matches the destination address with a matching routing table entry.
- **This is the fastest forwarding mechanism on Cisco routers and multilayer switches.**
- With this switching method, flow information for a packet is stored in the fast-switching cache to forward future packets to the same destination without CPU intervention.
- **Packets are forwarded based on information in the FIB and an adjacency table.**
- When a packet arrives on a router interface, it is forwarded to the control plane where the CPU searches for a match in the fast-switching cache.

160. Which term describes the role of a Cisco switch in the 802.1X port-based access control?

- agent
- supplicant
- **authenticator**
- authentication server

161. Which Cisco solution helps prevent ARP spoofing and ARP poisoning attacks?

- **Dynamic ARP Inspection**
- IP Source Guard
- DHCP Snooping
- Port Security

162. What is an advantage of PVST+?

- PVST+ optimizes performance on the network through autoselection of the root bridge.

- PVST+ reduces bandwidth consumption compared to traditional implementations of STP that use CST.
- PVST+ requires fewer CPU cycles for all the switches in the network.
- **PVST+ optimizes performance on the network through load sharing.**

PVST+ results in optimum load balancing. However, this is accomplished by manually configuring switches to be elected as root bridges for different VLANs on the network. The root bridges are not automatically selected. Furthermore, having spanning-tree instances for each VLAN actually consumes more bandwidth and it increases the CPU cycles for all the switches in the network.

163. What protocol or technology uses a standby router to assume packet-forwarding responsibility if the active router fails?

- EtherChannel
- DTP
- **HSRP**
- VTP

164. What is the effect of entering the show ip dhcp snooping binding configuration command on a switch?

- It switches a trunk port to access mode.
- It checks the source L2 address in the Ethernet header against the sender L2 address in the ARP body.
- It restricts the number of discovery messages, per second, to be received on the interface.
- **It displays the IP-to-MAC address associations for switch interfaces.**

165. What action takes place when the source MAC address of a frame entering a switch is in the MAC address table?

- The switch forwards the frame out of the specified port.
- **The switch updates the refresh timer for the entry.**
- The switch replaces the old entry and uses the more current port.
- The switch adds a MAC address table entry for the destination MAC address and the egress port.

166. A small publishing company has a network design such that when a broadcast is sent on the LAN, 200 devices receive the transmitted broadcast. How can the network administrator reduce the number of devices that receive broadcast traffic?

- Add more switches so that fewer devices are on a particular switch.
- Replace the switches with switches that have more ports per switch. This will allow more devices on a particular switch.
- **Segment the LAN into smaller LANs and route between them.***
- Replace at least half of the switches with hubs to reduce the size of the broadcast domain.

Explain: By dividing the one big network into two smaller network, the network administrator has created two smaller broadcast domains. When a broadcast is

sent on the network now, the broadcast will only be sent to the devices on the same Ethernet LAN. The other LAN will not receive the broadcast.

167. What defines a host route on a Cisco router?

- The link-local address is added automatically to the routing table as an IPv6 host route.
- **An IPv4 static host route configuration uses a destination IP address of a specific device and a /32 subnet mask.**
- A host route is designated with a C in the routing table.
- A static IPv6 host route must include the interface type and the interface number of the next hop router.

168. What else is required when configuring an IPv6 static route using a next-hop link-local address?

- administrative distance
- ip address of the neighbor router
- network number and subnet mask on the interface of the neighbor router
- **interface number and type**

169. A technician is configuring a wireless network for a small business using a SOHO wireless router. Which two authentication methods are used, if the router is configured with WPA2? (Choose two.)

- **personal**
- AES
- TKIP
- WEP
- **enterprise**

170. Which mitigation technique would prevent rogue servers from providing false IPv6 configuration parameters to clients?

- **enabling DHCPv6 Guard**
- enabling RA Guard
- implementing port security on edge ports
- disabling CDP on edge ports

Explanation: DHCPv6 Guard is a feature designed to ensure that rogue DHCPv6 servers are not able to hand out addresses to clients, redirect client traffic, or starve out the DHCPv6 server and cause a DoS attack. DHCPv6 Guard requires a policy to be configured in DHCP Guard configuration mode, and DHCPv6 Guard is enabled on an interface-by-interface basis.

171. A PC has sent an RS message to an IPv6 router attached to the same network. Which two pieces of information will the router send to the client? (Choose two.)

- **prefix length**
- subnet mask in dotted decimal notation
- domain name

- administrative distance
- **prefix**
- DNS server IP address

Explanation: Router is part of the IPv6 all-routers group and received the RS message. It generates an RA containing the local network prefix and prefix length (e.g., 2001:db8:acad:1::/64)

172. While attending a conference, participants are using laptops for network connectivity. When a guest speaker attempts to connect to the network, the laptop fails to display any available wireless networks. The access point must be operating in which mode?

- mixed
- passive
- **active**
- open

Explanation: Active is a mode used to configure an access point so that clients must know the SSID to connect to the access point. APs and wireless routers can operate in a mixed mode meaning that that multiple wireless standards are supported. Open is an authentication mode for an access point that has no impact on the listing of available wireless networks for a client. When an access point is configured in passive mode, the SSID is broadcast so that the name of wireless network will appear in the listing of available networks for clients.

173. Which three components are combined to form a bridge ID?

- **extended system ID**
- cost
- IP address
- **bridge priority**
- **MAC address**
- port ID

CCNA 3 v7.0 Final Exam Answers Full – Enterprise Networking, Security, and Automation

[CCNA 3 Final Exam Answers](#)

1. Which design feature will limit the size of a failure domain in an enterprise network?

- the purchase of enterprise equipment that is designed for large traffic volume
- the installation of redundant power supplies
- the use of a collapsed core design
- **the use of the building switch block approach**

2. Which two things should a network administrator modify on a router to perform password recovery? (Choose two.)

- the system image file
- the NVRAM file system
- **the configuration register value**
- **the startup configuration file**
- system ROM

3. What type of network uses one common infrastructure to carry voice, data, and video signals?

- borderless
- **converged**
- managed
- switched

4. What are the three advantages of using private IP addresses and NAT? (Choose three.)

- **hides private LAN addressing from outside devices that are connected to the Internet**
- **permits LAN expansion without additional public IP addresses**
- reduces CPU usage on customer routers
- creates multiple public IP addresses
- improves the performance of the router that is connected to the Internet
- **conserves registered public IP addresses**

5. Which two scenarios are examples of remote access VPNs? (Choose two.)

- All users at a large branch office can access company resources through a single VPN connection.
- A small branch office with three employees has a Cisco ASA that is used to create a VPN connection to the HQ.
- A toy manufacturer has a permanent VPN connection to one of its parts suppliers.
- **A mobile sales agent is connecting to the company network via the Internet connection at a hotel.**
- **An employee who is working from home uses VPN client software on a laptop in order to connect to the company network.**

6. What are the three benefits of cloud computing? (Choose three.)

- It utilizes end-user clients to do a substantial amount of data preprocessing and storage.
- It uses open-source software for distributed processing of large datasets.
- **It streamlines the IT operations of an organization by subscribing only to needed services.**
- **It enables access to organizational data anywhere and at any time.**
- It turns raw data into meaningful information by discovering patterns and relationships.
- **It eliminates or reduces the need for onsite IT equipment, maintenance, and management.**

7. What is a characteristic of a single-area OSPF network?

- All routers share a common forwarding database.
- All routers have the same neighbor table.
- **All routers are in the backbone area.**
- All routers have the same routing table.

8. What is a WAN?

- a network infrastructure that spans a limited physical area such as a city
- **a network infrastructure that provides access to other networks over a large geographic area**
- a network infrastructure that provides access in a small geographic area
- a network infrastructure designed to provide data storage, retrieval, and replication

9. A network administrator has been tasked with creating a disaster recovery plan. As part of this plan, the administrator is looking for a backup site for all of the data on the company servers. What service or technology would support this requirement?

- **data center**
- virtualization
- dedicated servers
- software defined networking

10. Which type of OSPF packet is used by a router to discover neighbor routers and establish neighbor adjacency?

- link-state update
- **hello**
- database description
- link-state request

11. Which two statements are characteristics of a virus? (Choose two.)

- A virus has an enabling vulnerability, a propagation mechanism, and a payload.
- **A virus can be dormant and then activate at a specific time or date.**
- A virus provides the attacker with sensitive data, such as passwords.

- A virus replicates itself by independently exploiting vulnerabilities in networks.
- **A virus typically requires end-user activation.**

12. Which public WAN access technology utilizes copper telephone lines to provide access to subscribers that are multiplexed into a single T3 link connection?

- ISDN
- **DSL**
- cable
- dialup

13. A customer needs a metropolitan area WAN connection that provides high-speed, dedicated bandwidth between two sites. Which type of WAN connection would best fulfill this need?

- packet-switched network
- **Ethernet WAN**
- circuit-switched network
- MPLS

14. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use debuggers?

- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- **to reverse engineer binary files when writing exploits and when analyzing malware**
- to obtain specially designed operating systems preloaded with tools optimized for hacking
- to detect any evidence of a hack or malware in a computer or network

15. Consider the following output for an ACL that has been applied to a router via the access-class in command. What can a network administrator determine from the output that is shown?

```
R1#
Standard IP access list 2
10 permit 192.168.10.0, wildcard bits 0.0.0.255 (2 matches)
20 deny any (1 match)
```

- Two devices connected to the router have IP addresses of 192.168.10. x .
- **Two devices were able to use SSH or Telnet to gain access to the router.**
- Traffic from one device was not allowed to come into one router port and be routed outbound a different router port.

- Traffic from two devices was allowed to enter one router port and be routed outbound to a different router port.

16. What command would be used as part of configuring NAT or PAT to clear dynamic entries before the timeout has expired?

- clear ip dhcp
- **clear ip nat translation**
- clear access-list counters
- clear ip pat statistics

17. What are two characteristics of video traffic? (Choose two.)

- Video traffic consumes less network resources than voice traffic consumes.
- **Video traffic latency should not exceed 400 ms.**
- Video traffic is more resilient to loss than voice traffic is.
- Video traffic requires a minimum of 30 kbs of bandwidth.
- **Video traffic is unpredictable and inconsistent.**

18. Refer to the exhibit. A technician is configuring R2 for static NAT to allow the client to access the web server. What is a possible reason that the client PC cannot access the web server?

- The IP NAT statement is incorrect.
- Interface Fa0/1 should be identified as the outside NAT interface.
- **Interface S0/0/0 should be identified as the outside NAT interface.**
- The configuration is missing a valid access control list.

19. In setting up a small office network, the network administrator decides to assign private IP addresses dynamically to workstations and mobile devices. Which feature must be enabled on the company router in order for office devices to access the internet?

- UPnP
- MAC filtering
- **NAT**

- QoS

20. A data center has recently updated a physical server to host multiple operating systems on a single CPU. The data center can now provide each customer with a separate web server without having to allocate an actual discrete server for each customer. What is the networking trend that is being implemented by the data center in this situation?

- online collaboration
- BYOD
- **virtualization**
- maintaining communication integrity

21. Refer to the exhibit. Which address or addresses represent the inside global address?

- 192.168.0.100
- 10.1.1.2
- any address in the 10.1.1.0 network
- **209.165.20.25**

22. Which two IPsec protocols are used to provide data integrity?

- **MD5**
- DH
- AES
- **SHA**
- RSA

23. If an outside host does not have the Cisco AnyConnect client preinstalled, how would the host gain access to the client image?

- The Cisco AnyConnect client is installed by default on most major operating systems.
- **The host initiates a clientless VPN connection using a compliant web browser to download the client.**
- The host initiates a clientless connection to a TFTP server to download the client.
- The host initiates a clientless connection to an FTP server to download the client.

24. A company is considering updating the campus WAN connection. Which two WAN options are examples of the private WAN architecture? (Choose two.)

- **leased line**
- cable
- digital subscriber line
- **Ethernet WAN**
- municipal Wi-Fi

25. Which type of QoS marking is applied to Ethernet frames?

- IP precedence
- DSCP
- ToS
- **CoS**

26. Refer to the exhibit. Routers R1 and R2 are connected via a serial link. One router is configured as the NTP master, and the other is an NTP client. Which two pieces of information can be obtained from the partial output of the show ntp associations detail command on R2? (Choose two.)

- Both routers are configured to use NTPv2.
- **Router R1 is the master, and R2 is the client**
- The IP address of R2 is 192.168.1.2.
- Router R2 is the master, and R1 is the client
- **The IP address of R1 is 192.168.1.2**

Explanation: With the show NTP associations command, the IP address of the NTP master is given.

27. Refer to the exhibit. The network administrator that has the IP address of 10.0.70.23/25 needs to have access to the corporate FTP server (10.0.54.5/28). The FTP server is also a web server that is accessible to all internal employees on networks within the 10.x.x.x address. No other traffic should be allowed to this server. Which extended ACL would be used to filter this traffic, and how would this ACL be applied? (Choose two.)

```
R1(config)# interface s0/0/0
R1(config-if)# ip access-group 105 out
R2(config)# interface gi0/0
R2(config-if)# ip access-group 105 in
```

```
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 20
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 21
access-list 105 permit tcp 10.0.0.0 0.255.255.255 host 10.0.54.5 eq www
access-list 105 deny ip any host 10.0.54.5
access-list 105 permit ip any any
access-list 105 permit ip host 10.0.70.23 host 10.0.54.5
access-list 105 permit tcp any host 10.0.54.5 eq www
access-list 105 permit ip any any
```

```
R1(config)# interface gi0/0
R1(config-if)# ip access-group 105 out
access-list 105 permit tcp host 10.0.54.5 any eq www
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 20
access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 21
```

28. Refer to the exhibit. If the network administrator created a standard ACL that allows only devices that connect to the R2 G0/0 network access to the devices on the R1 G0/1 interface, how should the ACL be applied?

- inbound on the R2 G0/0 interface
- **outbound on the R1 G0/1 interface**
- inbound on the R1 G0/1 interface
- outbound on the R2 S0/0/1 interface

29. Which is a characteristic of a Type 2 hypervisor?

- **does not require management console software**
- has direct access to server hardware resources
- best suited for enterprise environments
- installs directly on hardware

30. What are the two types of VPN connections? (Choose two.)

- PPPoE
- Frame Relay
- **site-to-site**
- **remote access**
- leased line

31. Refer to the exhibit. What three conclusions can be drawn from the displayed output? (Choose three.)

- **The DR can be reached through the GigabitEthernet 0/0 interface.**
- **There have been 9 seconds since the last hello packet sent.**
- This interface is using the default priority.
- **The router ID values were not the criteria used to select the DR and the BDR.**
- The router ID on the DR router is 3.3.3.3
- The BDR has three neighbors.

32. Refer to the exhibit. A network administrator is configuring an ACL to limit the connection to R1 vty lines to only the IT group workstations in the network 192.168.22.0/28. The administrator verifies the successful Telnet connections from a workstation with IP 192.168.22.5 to R1 before the ACL is applied. However, after the ACL is applied to the interface Fa0/0, Telnet connections are denied. What is the cause of the connection failure?

- The enable secret password is not configured on R1.
- **The IT group network is included in the deny statement.**
- The permit ACE specifies a wrong port number.
- The permit ACE should specify protocol ip instead of tcp.
- The login command has not been entered for vty lines.

33. What functionality does mGRE provide to the DMVPN technology?

- **It allows the creation of dynamically allocated tunnels through a permanent tunnel source at the hub and dynamically allocated tunnel destinations at the spokes.**
- It provides secure transport of private information over public networks, such as the Internet.
- It is a Cisco software solution for building multiple VPNs in an easy, dynamic, and scalable manner.
- It creates a distributed mapping database of public IP addresses for all VPN tunnel spokes.

34. What is used to pre-populate the adjacency table on Cisco devices that use CEF to process packets?

- the FIB
- the routing table
- **the ARP table**
- the DSP

35. What command would be used as part of configuring NAT or PAT to display information about NAT configuration parameters and the number of addresses in the pool?

- show running-config
- **show IP nat statistics**
- show IP cache
- show version

36. What is the purpose of establishing a network baseline?

- It provides a statistical average for network performance.
- **It creates a point of reference for future network evaluations.**
- It manages the performance of network devices.
- It checks the security configuration of network devices.

37. Match the type of WAN device or service to the description. (Not all options are used.)

CPE —> devices and inside wiring that are located on the enterprise edge and connect to a carrier link

DCE —> devices that provide an interface for customers to connect to within the WAN cloud

DTE —> customer devices that pass the data from a customer network for transmission over the WAN

local loop —> a physical connection from the customer to the service provider POP

38. Which statement describes a characteristic of standard IPv4 ACLs?

- **They filter traffic based on source IP addresses only.**
- They can be created with a number but not with a name.
- They are configured in the interface configuration mode.
- They can be configured to filter traffic based on both source IP addresses and source ports.

39. Refer to the exhibit. R1 is configured for NAT as displayed. What is wrong with the configuration?

- **NAT-POOL2 is not bound to ACL 1.**
- Interface Fa0/0 should be identified as an outside NAT interface.
- The NAT pool is incorrect.
- Access-list 1 is misconfigured.

Explanation: R1 has to have NAT-POOL2 bound to ACL 1. This is accomplished with the command R1(config)#ip nat inside source list 1 pool NAT-POOL2. This would enable the router to check for all interesting traffic and if it matches ACL 1 it would be translated by use of the addresses in NAT-POOL2.

40. Refer to the exhibit. What method can be used to enable an OSPF router to advertise a default route to neighboring OSPF routers?

- Use a static route pointing to the ISP and redistribute it.
- Use the redistribute static command on R0-A.
- Use the default-information originate command on ISP.
- **Use the default-information originate command on R0-A.**

41. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use applications such as John the Ripper, THC Hydra, RainbowCrack, and Medusa?

- to capture and analyze packets within traditional Ethernet LANs or WLANs
- to probe and test the robustness of a firewall by using specially created forged packets
- **to make repeated guesses in order to crack a password**

42. What are two syntax rules for writing a JSON array? (Choose two.)

- **Each value in the array is separated by a comma.**

- The array can include only one value type.
- A space must separate each value in the array.
- A semicolon separates the key and list of values.
- **Values are enclosed in square brackets.**

43. What is a characteristic of a Trojan horse as it relates to network security?

- An electronic dictionary is used to obtain a password to be used to infiltrate a key network device.
- **Malware is contained in a seemingly legitimate executable program.**
- Extreme quantities of data are sent to a particular network device interface.
- Too much information is destined for a particular memory block, causing additional memory areas to be affected

44. An attacker is redirecting traffic to a false default gateway in an attempt to intercept the data traffic of a switched network. What type of attack could achieve this?

- TCP SYN flood
- DNS tunneling
- **DHCP spoofing**
- ARP cache poisoning

45. A company is developing a security policy for secure communication. In the exchange of critical messages between a headquarters office and a branch office, a hash value should only be recalculated with a predetermined code, thus ensuring the validity of the data source. Which aspect of secure communications is addressed?

- data integrity
- non-repudiation
- **origin authentication**
- data confidentiality

46. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use packet sniffers?

- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- to detect any evidence of a hack or malware in a computer or network
- to probe and test the robustness of a firewall by using specially created forged packets
- **to capture and analyze packets within traditional Ethernet LANs or WLANs**

47. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 172.20.0.0 255.255.252.0. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.15.255

- **0.0.3.255**
- 0.0.7.255
- 0.0.1.255

48. Match the HTTP method with the RESTful operation.

ANS:

POST ->> Create

GET ->> Read

PUT/PATCH ->> Update/Replace? Modify

Delete ->> Delete

49. Refer to the exhibit. What is the OSPF cost to reach the West LAN 172.16.2.0/24 from East?

- 782
- 74
- 128
- **65**

50. What is one reason to use the IP OSPF priority command when the OSPF routing protocol is in use?

- to activate the OSPF neighboring process
- **to influence the DR/BDR election process**
- to provide a backdoor for connectivity during the convergence process
- to streamline and speed up the convergence process

51. An ACL is applied inbound on a router interface. The ACL consists of a single entry:


```
access-list 210 permit TCP 172.18.20.0 0.0.0.31 172.18.20.32 0.0.0.31 eq FTP
.
```

If a packet with a source address of 172.18.20.14, a destination address of 172.18.20.40, and a protocol of 21 is received on the interface, is the packet permitted or denied?

- **permitted**

52. What is a characteristic of the two-tier spine-leaf topology of the Cisco ACI fabric architecture?

- The spine and leaf switches are always linked through core switches.
- The spine switches attach to the leaf switches and attach to each other for redundancy.
- The leaf switches always attach to the spines and they are interlinked through a trunk line.
- **The leaf switches always attach to the spines, but they never attach to each other.**

53. Which two scenarios would result in a duplex mismatch? (Choose two.)

- **connecting a device with auto-negotiation to another that is manually set to full-duplex**
- starting and stopping a router interface during a normal operation
- connecting a device with an interface running at 100 Mbps to another with an interface running at 1000 Mbps
- configuring dynamic routing incorrectly
- **manually setting the two connected devices to different duplex modes**

54. A network technician is configuring SNMPv3 and has set a security level of auth. What is the effect of this setting?

- authenticates a packet by a string match of the username or community string
- **authenticates a packet by using either the HMAC with MD5 method or the SHA method**
- authenticates a packet by using either the HMAC MD5 or 3.HMAC SHA algorithms and encrypts the packet with either the DES, 3DES or AES algorithms
- authenticates a packet by using the SHA algorithm only

55. What are two types of attacks used on DNS open resolvers? (Choose two.)

- **amplification and reflection**
- **resource utilization**
- fast flux
- ARP poisoning
- cushioning

56. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit udp 192.168.100.0 0.0.2.255 64.100.40.0 0.0.0.15 eq
telnet .
```

If a packet with a source address of 192.168.101.45, a destination address of 64.100.40.4, and a protocol of 23 is received on the interface, is the packet permitted or denied?

- **denied**
- permitted

Case 2:

```
access-list 101 permit udp 192.168.100.0 0.0.2.255 64.100.40.0 0.0.0.0.15 eq
telnet .
```

If a packet with a source address of 192.168.100.219, a destination address of 64.100.40.10, and a protocol of 54 are received on the interface, is the packet permitted or denied?

- **denied**
- permitted

57. Which type of resources is required for a Type 1 hypervisor?

- a dedicated VLAN
- **a management console**
- a host operating system

58. In JSON, what is held within square brackets []?

- nested values
- key/value pairs
- an object
- **an array**

59. What are the three components used in the query portion of a typical RESTful API request? (Choose three.)

- resources
- protocol
- API server
- **format**
- **key**
- **parameters**

60. A user reports that when the corporate web page URL is entered on a web browser, an error message indicates that the page cannot be displayed. The help desk technician asks the user to enter the IP address of the webserver to see if the page can be displayed. Which troubleshooting method is being used by the technician?

- top-down
- bottom-up
- **divide-and-conquer**

- substitution

61. Which protocol provides authentication, integrity, and confidentiality services, and is a type of VPN?

- MD5
- AES
- **IPsec**
- ESP

62. Which statement describes a characteristic of Cisco Catalyst 2960 switches?

- They are best used as distribution layer switches.
- **New Cisco Catalyst 2960-C switches support PoE pass-through.**
- They are modular switches.
- They do not support an active switched virtual interface (SVI) with IOS versions prior to 15.x.

63. Which component of the ACI architecture translates application policies into network programming?

- the hypervisor
- **the Application Policy Infrastructure Controller**
- the Nexus 9000 switch
- the Application Network Profile endpoints

64. Which two pieces of information should be included in a logical topology diagram of a network? (Choose two.)

- device type
- cable specification
- **interface identifier**
- OS/IOS version
- **connection type**
- cable type and identifier

65. Refer to the exhibit. A PC at address 10.1.1.45 is unable to access the Internet. What is the most likely cause of the problem?

- **The NAT pool has been exhausted.**
- The wrong net mask was used on the NAT pool.
- Access-list 1 has not been configured properly.
- The inside and outside interfaces have been configured backward.

66. What are the two benefits of using SNMP traps? (Choose two.)

- **They eliminate the need for some periodic polling requests.**
- **They reduce the load on network and agent resources.**
- They limit access for management systems only.
- They can provide statistics on TCP/IP packets that flow through Cisco devices.
- They can passively listen for exported NetFlow datagrams.

67. Which statement accurately describes a characteristic of IPsec?

- IPsec works at the application layer and protects all application data.
- IPsec is a framework of standards developed by Cisco that relies on OSI algorithms.
- IPsec is a framework of proprietary standards that depend on Cisco-specific algorithms.
- IPsec works at the transport layer and protects data at the network layer.
- **IPsec is a framework of open standards that relies on existing algorithms.**

68. In a large enterprise network, which two functions are performed by routers at the distribution layer? (Choose two.)

- connect users to the network
- provide a high-speed network backbone
- **connect remote networks**
- provide Power over Ethernet to devices
- **provide data traffic security**

69. Which two statements describe the use of asymmetric algorithms? (Choose two.)

- Public and private keys may be used interchangeably.
- If a public key is used to encrypt the data, a public key must be used to decrypt the data.
- **If a private key is used to encrypt the data, a public key must be used to decrypt the data.**
- **If a public key is used to encrypt the data, a private key must be used to decrypt the data.**
- If a private key is used to encrypt the data, a private key must be used to decrypt the data.

70. Refer to the exhibit. A network administrator has deployed QoS and has configured the network to mark traffic on the VoIP phones as well as the Layer 2 and Layer 3 switches. Where should initial marking occur to establish the trust boundary?

- Trust Boundary 4
- Trust Boundary 3
- **Trust Boundary 1**
- Trust Boundary 2

71. What are the 1 AZXZ two benefits of extending access layer connectivity to users through a wireless medium? (Choose two.)

- **reduced costs**
- decreased number of critical points of failure
- **increased flexibility**
- increased bandwidth availability
- increased network management options

72. What are the two purposes of launching a reconnaissance attack on a network? (Choose two.)

- **to scan for accessibility**
- to retrieve and modify data
- **to gather information about the network and devices**
- to prevent other users from accessing the system
- to escalate access privileges

73. A group of users on the same network are all complaining about their computers running slowly. After investigating, the technician determines that these computers are part of a zombie network. Which type of malware is used to control these computers?

- **botnet**
- spyware
- virus
- rootkit

74. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit tcp 10.1.1.0 0.0.0.255 host 192.31.7.45 eq dns .
```

If a packet with a source address of 10.1.1.201, a destination address of 192.31.7.45, and a protocol of 23 is received on the interface, is the packet permitted or denied?

- permitted
- **denied**

75. Refer to the exhibit. From which location did this router load the IOS?

- **flash memory**
- NVRAM?
- RAM
- ROM
- a TFTP server?

76. Refer to the exhibit. Which data format is used to represent the data for network automation applications?

- XML
- YAML
- HTML
- **JSON**

77. What QoS step must occur before packets can be marked?

- **classifying**
- shaping
- queuing
- policing

78. What is the main function of a hypervisor?

- **It is used to create and manage multiple VM instances on a host machine.**

- It is a device that filters and checks security credentials.
- It is a device that synchronizes a group of sensors.
- It is software used to coordinate and prepare data for analysis.
- It is used by ISPs to monitor cloud computing resources.

79. A company needs to interconnect several branch offices across a metropolitan area. The network engineer is seeking a solution that provides high-speed converged traffic, including voice, video, and data on the same network infrastructure. The company also wants easy integration to their existing LAN infrastructure in their office locations. Which technology should be recommended?

- Frame Relay
- **Ethernet WAN**
- VSAT
- ISDN

80. Refer to the exhibit. As traffic is forwarded out an egress interface with QoS treatment, which congestion avoidance technique is used?

- traffic shaping
- weighted random early detection
- classification and marking
- **traffic policing**

81. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit TCP 10.1.1.0 0.0.0.255 host 10.1.3.8 eq DNS .
```

If a packet with a source address of 10.1.3.8, a destination address of 10.10.3.8, and a protocol of 53 is received on the interface, is the packet permitted or denied?

- **denied**
- permitted

82. Refer to the exhibit. What is the purpose of the command marked with an arrow shown in the partial configuration output of a Cisco broadband router?

- defines which addresses are allowed into the router
- **defines which addresses can be translated**
- defines which addresses are assigned to a NAT pool
- defines which addresses are allowed out of the router

83. If a router has two interfaces and is routing both IPv4 and IPv6 traffic, how many ACLs could be created and applied to it?

- 12
- 4
- **8**
- 16
- 6

84. Refer to the exhibit. An administrator first configured an extended ACL as shown by the output of the show access-lists command. The administrator then edited this access-list by issuing the commands below.

```
Router(config)# ip access-list extended 101
```

```
Router(config-ext-nacl)# no 20
```

```
Router(config-ext-nacl)# 5 permit tcp any any eq 22
```

```
Router(config-ext-nacl)# 20 deny udp any any
```

Which two conclusions can be drawn from this new configuration? (Choose two.)

- TFTP packets will be permitted.
- **Ping packets will be permitted.**
- Telnet packets will be permitted.
- **SSH packets will be permitted.**
- All TCP and UDP packets will be denied.

85. Which troubleshooting approach is more appropriate for a seasoned network administrator rather than a less-experienced network administrator?

- **a less-structured approach based on an educated guess**
- an approach comparing working and nonworking components to spot significant differences
- a structured approach starting with the physical layer and moving up through the layers of the OSI model until the cause of the problem is identified
- an approach that starts with the end-user applications and moves down through the layers of the OSI model until the cause of the problem has been identified

86. Refer to the exhibit. Many employees are wasting company time accessing social media on their work computers. The company wants to stop this access. What is the best ACL type and placement to use in this situation?

- extended ACL outbound on R2 WAN interface towards the internet
- standard ACL outbound on R2 WAN interface towards the internet
- standard ACL outbound on R2 S0/0/0
- **extended ACLs inbound on R1 G0/0 and G0/1**

87. Refer to the exhibit. An administrator is trying to configure PAT on R1, but PC-A is unable to access the Internet. The administrator tries to ping a server on the Internet from PC-A and collects the debugs that are shown in the

exhibit. Based on this output, what is most likely the cause of the problem?

- The inside and outside NAT interfaces have been configured backwards
- **The inside global address is not on the same subnet as the ISP**
- The address on Fa0/0 should be 64.100.0.1.
- The NAT source access list matches the wrong address range.

88. Why is QoS an important issue in a converged network that combines voice, video, and data communications?

- Data communications must be given the first priority.
- **Voice and video communications are more sensitive to latency.**
- Legacy equipment is unable to transmit voice and video without QoS.
- Data communications are sensitive to jitter.

89. Which statement describes a VPN?

- VPNs use logical connections to create public networks through the Internet.
- VPNs use open source virtualization software to create the tunnel through the Internet.
- VPNs use dedicated physical connections to transfer data between remote users.
- **VPNs use virtual connections to create a private network through a public network.**

90. In which OSPF state is the DR/BDR election conducted?

- ExStart
- Init
- **Two-Way**
- Exchange

91. Two corporations have just completed a merger. The network engineer has been asked to connect the two corporate networks without the expense of leased lines. Which solution would be the most cost effective method of providing a proper and secure connection between the two corporate networks?

- Cisco Secure Mobility Clientless SSL VPN
- Frame Relay
- remote access VPN using IPsec
- Cisco AnyConnect Secure Mobility Client with SSL
- **site-to-site VPN**

92. What is the final operational state that will form between an OSPF DR and a DROTHER once the routers reach convergence?

- loading
- established
- **full**
- two-way

93. Refer to the exhibit. If the switch reboots and all routers have to re-establish OSPF adjacencies, which routers will become the new DR and BDR?

- **Router R3 will become the DR and router R1 will become the BDR.**
- Router R4 will become the DR and router R3 will become the BDR.
- Router R1 will become the DR and router R2 will become the BDR.
- Router R3 will become the DR and router R2 will become the BDR.

Case 2:

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- Router R2 will become the DR and router R4 will become the BDR.
- **Router R1 will become the DR and router R3 will become the BDR.**
- Router R4 will become the DR and router R3 will become the BDR.
- Router R3 will become the DR and router R2 will become the BDR.

94. Which type of server would be used to keep a historical record of messages from monitored network devices?

- DNS
- print
- DHCP
- **syslog**
- authentication

95. When QoS is implemented in a converged network, which two factors can be controlled to improve network performance for real-time traffic? (Choose two.)

- packet addressing
- **delay**
- **jitter**
- packet routing
- link speed

96. In which step of gathering symptoms does the network engineer determine if the problem is at the core, distribution, or access layer of the network?

- Determine ownership.
- Determine the symptoms.
- **Narrow the scope.**
- Document the symptoms.
- Gather information.

97. What protocol sends periodic advertisements between connected Cisco devices in order to learn device name, IOS version, and the number and type of interfaces?

- **CDP**
- SNMP
- NTP
- LLDP

98. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 192.168.0.0 255.255.252.0. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.0.127
- 0.0.0.31
- **0.0.3.255**
- 0.0.0.63

99. Refer to the exhibit. An administrator configures the following ACL in order to prevent devices on the 192.168.1.0 subnet from accessing the server at 10.1.1.5:

```
access-list 100 deny ip 192.168.1.0 0.0.0.255 host 10.1.1.5  
  
access-list 100 permit ip any any
```

Where should the administrator place this ACL for the most efficient use of network resources?

- **inbound on router A Fa0/0**
- outbound on router B Fa0/0
- outbound on router A Fa0/1
- inbound on router B Fa0/1

100. Which type of OSPFv2 packet is used to forward OSPF link change information?

- link-state acknowledgment
- **link-state update**
- hello
- database description

101. What protocol synchronizes with a private master clock or with a publicly available server on the internet?

- MPLS
- CBWFQ
- TFTP
- **NTP**

102. Which type of VPN allows multicast and broadcast traffic over a secure site-to-site VPN?

- dynamic multipoint VPN
- SSL VPN
- IPsec virtual tunnel interface
- **GRE over IPsec**

103. An OSPF router has three directly connected networks; 10.0.0.0/16, 10.1.0.0/16, and 10.2.0.0/16. Which OSPF network command would advertise only the 10.1.0.0 network to neighbors?

- **router(config-router)# network 10.1.0.0 0.0.255.255 area 0**
- router(config-router)# network 10.1.0.0 0.0.15.255 area 0
- router(config-router)# network 10.1.0.0 255.255.255.0 area 0
- router(config-router)# network 10.1.0.0 0.0.0.0 area 0

104. Refer to the exhibit. Which sequence of commands should be used to configure router A for OSPF?

i386046n1v2.gif

```
router ospf 1
network 192.168.10.0 area 0
```

```
router ospf 1
network 192.168.10.0
```

```
router ospf 1
network 192.168.10.64 255.255.255.192
network 192.168.10.192 255.255.255.252
```

router ospf 1

network 192.168.10.64 0.0.0.63 area 0

network 192.168.10.192 0.0.0.3 area 0

105. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 192.168.0.0 255.255.254.0. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.7.255
- **0.0.1.255**
- 0.0.3.255
- 0.0.15.255

106. How does virtualization help with disaster recovery within a data center?

- improvement of business practices
- supply of consistent air flow
- **support of live migration**
- guarantee of power

Case 2:

- Less energy is consumed.

- Server provisioning is faster.
- **Hardware at the recovery site does not have to be identical to production equipment.**
- Power is always provided.

107. How does virtualization help with disaster recovery within a data center?

- **Hardware does not have to be identical.**
- **(Other case) Hardware at the recovery site does not have to be identical to production equipment.**
- Power is always provided.
- Less energy is consumed.
- Server provisioning is faster.

108. Refer to the exhibit. Which devices exist in the failure domain when switch S3 loses power?

- S4 and PC_2
- **PC_3 and AP_2**
- AP_2 and AP_1
- PC_3 and PC_2
- S1 and S4

109. Which set of access control entries would allow all users on the 192.168.10.0/24 network to access a web server that is located at 172.17.80.1, but would not allow them to use Telnet?

access-list 103 deny tcp host 192.168.10.0 any eq 23
access-list 103 permit tcp host 192.168.10.1 eq 80

access-list 103 permit tcp 192.168.10.0 0.0.0.255 host 172.17.80.1 eq 80
access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq 23

access-list 103 permit tcp 192.168.10.0 0.0.0.255 any eq 80
access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq 23

access-list 103 permit 192.168.10.0 0.0.0.255 host 172.17.80.1
access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq telnet

110. Refer to the exhibit. A network administrator needs to add an ACE to the TRAFFIC-CONTROL ACL that will deny IP traffic from the subnet

172.23.16.0/20. Which ACE will meet this requirement?

- **5 deny 172.23.16.0 0.0.15.255**
- 5 deny 172.23.16.0 0.0.255.255
- 15 deny 172.23.16.0 0.0.15.255
- 30 deny 172.23.16.0 0.0.15.255

111. Which step in the link-state routing process is described by a router building a link-state database based on received LSAs?

- executing the SPF algorithm
- **building the topology table**
- selecting the router ID
- declaring a neighbor to be inaccessible

112. What protocol uses agents, that reside on managed devices, to collect and store information about the device and its operation?

- SYSLOG
- TFTP
- CBWFQ
- **SNMP**

113. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 10.27.27.0 255.255.255.0. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.0.63
- **0.0.0.255**
- 0.0.0.31
- 0.0.0.15

114. When will an OSPF-enabled router transition from the Down state to the Init state?

- when an OSPF-enabled interface becomes active
- as soon as the router starts
- **when the router receives a hello packet from a neighbor router**
- as soon as the DR/BDR election process is complete

115. What type of traffic is described as having a high volume of data per packet?

- data
- **video**
- voice

116. What protocol is a vendor-neutral Layer 2 protocol that advertises the identity and capabilities of the host device to other connected network devices?

- **LLDP**
- NTP
- TFTP
- SNMP

117. Which step in the link-state routing process is described by a router running an algorithm to determine the best path to each destination?

- building the topology table
- selecting the router ID
- declaring a neighbor to be inaccessible
- **executing the SPF algorithm**

118. Refer to the exhibit. Which conclusion can be drawn from this OSPF multiaccess network?

- If the DR stops producing Hello packets, a BDR will be elected, and then it promotes itself to assume the role of DR.
- **With an election of the DR, the number of adjacencies is reduced from 6 to 3.**
- When a DR is elected all other non-DR routers become DROTHER.
- All DROTHER routers will send LSAs to the DR and BDR to multicast 224.0.0.5.

119. Refer to the exhibit. The network administrator has an IP address of 192.168.11.10 and needs access to manage R1. What is the best ACL type and placement to use in this situation?

- extended ACL outbound on R2 WAN interface towards the internet
- **standard ACL inbound on R1 vty lines**
- extended ACLs inbound on R1 G0/0 and G0/1
- extended ACL outbound on R2 S0/0/1

120. Which type of VPN connects using the Transport Layer Security (TLS) feature?

- **SSL VPN**
- IPsec virtual tunnel interface
- GRE over IPsec
- dynamic multipoint VPN

121. Which group of APIs are used by an SDN controller to communicate with various applications?

- eastbound APIs
- westbound APIs
- **northbound APIs**
- southbound APIs

122. A company has consolidated a number of servers and it is looking for a program or firmware to create and control virtual machines which have access to all the hardware of the consolidated servers. What service or technology would support this requirement?

- Cisco ACI
- software defined networking
- **Type-1 hypervisor**
- APIC-EM

123. What command would be used as part of configuring NAT or PAT to identify inside local addresses that are to be translated?

- ip nat inside source list 24 interface serial 0/1/0 overload
- ip nat inside source list 14 pool POOL-STAT overload
- **access-list 10 permit 172.19.89.0 0.0.0.255**
- ip nat inside source list ACCTNG pool POOL-STAT

124. Any company has decided to reduce its environmental footprint by reducing energy costs, moving to a smaller facility, and promoting telecommuting, what service or technology would support requirement?

- **-Cloud services**
- Data center
- APIC-EM
- Cisco ACI

125. Refer to the exhibit. An administrator is trying to back up the current running configuration of the router to a USB drive, and enters the command `copy usbflash0:/R1-config running-config` on the router command line. After removing the USB drive and connecting it to a PC, the administrator discovers that the running configuration was not properly backed up to the R1-config file. What is the problem?

- The file already exists on the USB drive and cannot be overwritten.
- The drive was not properly formatted with the FAT16 file system.
- There is no space left on the USB drive.
- The USB drive is not recognized by the router.
- **The command that the administrator used was incorrect.**

126. Which three types of VPNs are examples of enterprise-managed site-to-site VPNs? (Choose three.)

- Layer 3 MPLS VPN
- **IPsec VPN**
- **Cisco Dynamic Multipoint VPN**
- **GRE over IPsec VPN**
- clientless SSL VPN
- client-based IPsec VPN

127. Refer to the exhibit. Employees on 192.168.11.0/24 work on critically sensitive information and are not allowed access off their network. What is the best ACL type and placement to use in this situation?

- standard ACL inbound on R1 vty lines
- extended ACL inbound on R1 G0/0
- **standard ACL inbound on R1 G0/1**
- extended ACL inbound on R3 S0/0/1

128. In an OSPF network which two statements describe the link-state database (LSDB)? (Choose two.)

- **It can be viewed by using the `show ip ospf database` command.**
- A neighbor table is created based on the LSDB.
- It contains a list of only the best routes to a particular network.
- It contains a list of all neighbor routers to which a router has established bidirectional communication.
- **All routers within an area have an identical link-state database.**

129. In an OSPF network which OSPF structure is used to create the neighbor table on a router?

- **adjacency database**
- link-state database
- routing table
- forwarding database

130. What protocol is used in a system that consists of `three elements--a manager, agents, and an information database?`

- MPLS

- SYSLOG
- **SNMP**
- TFTP

131. What type of traffic is described as not resilient to loss?

- data
- **video**
- voice

132. Refer to the exhibit. Router R1 is configured with static NAT. Addressing on the router and the web server are correctly configured, but there is no connectivity between the web server and users on the Internet. What is a possible reason for this lack of connectivity?

- Interface Fa0/0 should be configured with the command ip nat outside .
- The inside global address is incorrect.
- **The router NAT configuration has an incorrect inside local address.**
- The NAT configuration on interface S0/0/1 is incorrect.

133. Which type of API would be used to allow authorized salespeople of an organization access to internal sales data from their mobile devices?

- open
- partner
- public
- **private**

134. Refer to the exhibit. Which data format is used to represent the data for network automation applications?

- **XML**
- HTML
- YAML
- JSON

135. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 101 permit udp 192.168.100.32 0.0.0.7 host 198.133.219.76 eq telnet .
```

If a packet with a source address of 198.133.219.100, a destination address of 198.133.219.170, and a protocol of 23 is received on the interface, is the packet permitted or denied?

- **denied**
- permitted

136. Refer to the exhibit. If no router ID was manually configured, what would router R1 use as its OSPF router ID?

- 10.0.0.1
- 10.1.0.1
- **192.168.1.100**
- 209.165.201.1

137. What protocol is a vendor-neutral Layer 2 protocol that advertises the identity and capabilities of the host device to other connected network devices?

- NTP
- **LLDP**
- SNMP
- MPLS

138. Which type of VPN uses a hub-and-spoke configuration to establish a full mesh topology?

- MPLS VPN
- GRE over IPsec
- IPsec virtual tunnel interface
- **dynamic multipoint VPN**

139. What is a characteristic of the REST API?

- evolved into what became SOAP
- used for exchanging XML structured information over HTTP or SMTP
- considered slow, complex, and rigid

- **most widely used API for web services**

141. A student, doing a summer semester of study overseas, has taken hundreds of pictures on a smartphone and wants to back them up in case of loss. What service or technology would support this requirement?

- Cisco ACI
- **cloud services**
- software defined networking
- dedicated servers

142. Consider the following access list that allows IP phone configuration file transfers from a particular host to a TFTP server:

```
R1(config)# access-list 105 permit udp host 10.0.70.23 host 10.0.54.5 range
1024 5000

R1(config)# access-list 105 deny ip any any

R1(config)# interface gi0/0

R1(config-if)# ip access-group 105 out
```

Which method would allow the network administrator to modify the ACL and include FTP transfers from any source IP address?

```
R1(config)# interface gi0/0
R1(config-if)# no ip access-group 105 out
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
R1(config)# interface gi0/0
R1(config-if)# ip access-group 105 out

R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
```

```
R1(config)# interface gi0/0
R1(config-if)# no ip access-group 105 out
R1(config)# no access-list 105
R1(config)# access-list 105 permit udp host 10.0.70.23 host 10.0.54.5 range
1024 5000
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
R1(config)# access-list 105 deny ip any any
R1(config)# interface gi0/0
R1(config-if)# ip access-group 105 out
R1(config)# access-list 105 permit udp host 10.0.70.23 host 10.0.54.5 range
1024 5000
```

```
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 20
R1(config)# access-list 105 permit tcp any host 10.0.54.5 eq 21
R1(config)# access-list 105 deny ip any any
```

143. Which three statements are generally considered to be best practices in the placement of ACLs? (Choose three.)

- **Filter unwanted traffic before it travels onto a low-bandwidth link.**
- **Place standard ACLs close to the destination IP address of the traffic.**
- Place standard ACLs close to the source IP address of the traffic.
- Place extended ACLs close to the destination IP address of the traffic.
- **Place extended ACLs close to the source IP address of the traffic.**
- For every inbound ACL placed on an interface, there should be a matching outbound ACL.

144. Match the term to the web link

<http://www.buycarsfromus.com/2020models/ford/suv.html#Escape> component. (Not all options are used.)

145. What command would be used as part of configuring NAT or PAT to display all static translations that have been configured?

- **show ip nat translations**
- show ip pat translations
- show ip cache
- show running-config

146. A network administrator modified an OSPF-enabled router to have a hello timer setting of 20 seconds. What is the new dead interval time setting by default?

- 40 seconds
- 60 seconds
- **80 seconds**
- 100 seconds

147. Which type of VPN is the preferred choice for support and ease of deployment for remote access?

- **SSL VPN**
- GRE over IPsec
- dynamic multipoint VPN
- IPsec virtual tunnel interface

148. What type of traffic is described as predictable and smooth?

- video

- data
- **voice**

149. Which queuing mechanism has no provision for prioritizing or buffering but simply forwards packets in the order they arrive?

- **FIFO**
- LLQ
- CBWFQ
- WFQ

150. Refer to the exhibit. A network administrator has configured OSPFv2 on the two Cisco routers. The routers are unable to form a neighbor adjacency. What should be done to fix the problem on router R2?

- **Implement the command no passive-interface Serial0/1.**
- Implement the command network 192.168.2.6 0.0.0.0 area 0 on router R2.
- Change the router-id of router R2 to 2.2.2.2.
- Implement the command network 192.168.3.1 0.0.0.0 area 0 on router R2.

151. A network administrator is troubleshooting an OSPF problem that involves neighbor adjacency. What should the administrator do?

- Make sure that the router priority is unique on each router.
- Make sure that the DR/BDR election is complete.
- Make sure that the router ID is included in the hello packet.
- **Make sure that the hello and dead interval timers are the same on all routers.**

152. Refer to the exhibit. Internet privileges for an employee have been revoked because of abuse but the employee still needs access to company resources. What is the best ACL type and placement to use in this situation?

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- standard ACL inbound on R2 WAN interface connecting to the internet
- **standard ACL outbound on R2 WAN interface towards the internet**

- standard ACL inbound on R1 G0/0
- standard ACL outbound on R1 G0/0

153. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 100 permit tcp 192.168.10.0 0.0.0.255 172.17.200.0 0.0.0.255 eq
www .
```

If a packet with a source address of 192.168.10.244, a destination address of 172.17.200.56, and a protocol of 80 is received on the interface, is the packet permitted or denied?

- denied
- **permitted**

154. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use applications such as Nmap, SuperScan, and Angry IP Scanner?

- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- to detect any evidence of a hack or malware in a computer or network
- to reverse engineer binary files when writing exploits and when analyzing malware
- **to probe network devices, servers, and hosts for open TCP or UDP ports**

155. What command would be used as part of configuring NAT or PAT to display any dynamic PAT translations that have been created by traffic?

- show ip pat translations
- show ip cache
- show running-config
- **show ip nat translations**

156. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 172.16.91.0 255.255.255.192. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.31.255
- **0.0.0.63**
- 0.0.15.255
- 0.0.7.255

157. What type of traffic is described as requiring latency to be no more than 400 milliseconds (ms)?

- **video**
- data
- voice

158. Refer to the exhibit. Which two configurations would be used to create and apply a standard access list on R1, so that only the 10.0.70.0/25 network

devices are allowed to access the internal database server? (Choose two.)

A.

R1(config)# interface GigabitEthernet0/0

R1(config-if)# ip access-group 5 out

B.

R1(config)# access-list 5 permit 10.0.54.0 0.0.1.255

C.

R1(config)# interface Serial0/0/0

R1(config-if)# ip access-group 5 in

D.

R1(config)# access-list 5 permit 10.0.70.0 0.0.0.127

E.

R1(config)# access-list 5 permit any

159. A network administrator is writing a standard ACL that will deny any traffic from the 172.16.0.0/16 network, but permit all other traffic. Which two commands should be used? (Choose two.)

- Router(config)# access-list 95 deny 172.16.0.0 255.255.0.0
- **Router(config)# access-list 95 permit any**
- Router(config)# access-list 95 host 172.16.0.0
- **Router(config)# access-list 95 deny 172.16.0.0 0.0.255.255**
- Router(config)# access-list 95 172.16.0.0 255.255.255.255
- Router(config)# access-list 95 deny any

160. Refer to the exhibit. The company has decided that no traffic initiating from any other existing or future network can be transmitted to the Research and Development network. Furthermore, no traffic that originates from the Research and Development network can be transmitted to any other existing or future networks in the company. The network administrator has decided that extended ACLs are better suited for these requirements. Based on the

information given, what will the network administrator do?

- One ACL will be placed on the R1 Gi0/0 interface and one ACL will be placed on the R2 Gi0/0 interface.
- Only a numbered ACL will work for this situation.
- One ACL will be placed on the R2 Gi0/0 interface and one ACL will be placed on the R2 S0/0/0 interface.
- **Two ACLs (one in each direction) will be placed on the R2 Gi0/0 interface.**

161. What protocol uses smaller stratum numbers to indicate that the server is closer to the authorized time source than larger stratum numbers?

- TFTP
- SYSLOG
- **NTP**
- MPLS

162. Refer to the exhibit. If no router ID was manually configured, what would router Branch1 use as its OSPF router ID?

- 10.0.0.1
- 10.1.0.1
- **192.168.1.100**
- 209.165.201.1

163. Match the HTTP method with the RESTful operation.

164. Refer to the exhibit. A web designer calls to report that the web server web-s1.cisco.com is not reachable through a web browser. The technician uses command line utilities to verify the problem and to begin the troubleshooting process. Which two things can be determined about the problem? (Choose two.)

- **The web server at 192.168.0.10 is reachable from the source host.**
- **DNS cannot resolve the IP address for the server web-s1.cisco.com.**
- A router is down between the source host and the server web-s1.cisco.com.
- There is a problem with the web server software on web-s1.cisco.com.

- The default gateway between the source host and the server at 192.168.0.10 is down.

165. What type of traffic is described as tending to be unpredictable, inconsistent, and bursty?

- **video**
- voice
- data

166. Match the functions to the corresponding layers. (Not all options are used.)

167. What type of traffic is described as consisting of traffic that requires a higher priority if interactive?

- voice
- **data**
- video

168. Which type of VPN provides a flexible option to connect a central site with branch sites?

- IPsec virtual tunnel interface
- MPLS VPN
- **dynamic multipoint VPN**
- GRE over IPsec

169. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use fuzzers?

- **to discover security vulnerabilities of a computer**
- to detect any evidence of a hack or malware in a computer or network
- to reverse engineer binary files when writing exploits and when analyzing malware

- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network

170. Refer to the exhibit. A network administrator has configured a standard ACL to permit only the two LAN networks attached to R1 to access the network that connects to R2 G0/1 interface, but not the G0/0 interface. When following the best practices, in what location should the standard ACL be applied?

- R1 S0/0/0 outbound
- **R2 G0/0 outbound**
- R2 S0/0/1 outbound
- R1 S0/0/0 inbound
- R2 G0/1 inbound

171. Two OSPF-enabled routers are connected over a point-to-point link. During the ExStart state, which router will be chosen as the first one to send DBD packets?

- **the router with the highest router ID**
- the router with the lowest IP address on the connecting interface
- the router with the highest IP address on the connecting interface
- the router with the lowest router ID

172. Which step in the link-state routing process is described by a router sending Hello packets out all of the OSPF-enabled interfaces?

- exchanging link-state advertisements
- electing the designated router
- injecting the default route
- **establishing neighbor adjacencies**

173. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use forensic tools?

- to obtain specially designed operating systems preloaded with tools optimized for hacking
- **to detect any evidence of a hack or malware in a computer or network**
- to detect installed tools within files and directories that provide threat actors remote access and control over a computer or network
- to reverse engineer binary files when writing exploits and when analyzing malware

174. Refer to the exhibit. A network administrator has configured OSPFv2 on the two Cisco routers but PC1 is unable to connect to PC2. What is the most likely problem?

- **Interface Fa0/0 has not been activated for OSPFv2 on router R2.**
- Interface Fa0/0 is configured as a passive-interface on router R2.
- Interface S0/0 is configured as a passive-interface on router R2.
- Interface s0/0 has not been activated for OSPFv2 on router R2.

175. ABCTech is investigating the use of automation for some of its products. In order to control and test these products, the programmers require Windows, Linux, and MAC OS on their computers. What service or technology would support this requirement?

- dedicated servers
- software defined networking
- **virtualization**
- Cisco ACI

176. A network engineer has noted that some expected network route entries are not displayed in the routing table. Which two commands will provide additional information about the state of router adjacencies, timer intervals, and the area ID? (Choose two.)

- show ip protocols
- **show ip ospf neighbor**
- show running-configuration
- **show ip ospf interface**
- show ip route ospf

177. Which type of VPN involves the forwarding of traffic over the backbone through the use of labels distributed among core routers?

- **MPLS VPN**
- GRE over IPsec
- IPsec virtual tunnel interface
- dynamic multipoint VPN

178. Which type of VPN involves a nonsecure tunneling protocol being encapsulated by IPsec?

- SSL VPN
- dynamic multipoint VPN
- **GRE over IPsec**
- IPsec virtual tunnel interface

179. A company has contracted with a network security firm to help identify the vulnerabilities of the corporate network. The firm sends a team to perform penetration tests to the company network. Why would the team use hacking operation systems?

- to detect any evidence of a hack or malware in a computer or network
- **to obtain specially designed operating systems preloaded with tools optimized for hacking**
- to encode data, using algorithm schemes, to prevent unauthorized access to the encrypted data
- to reverse engineer binary files when writing exploits and when analyzing malware

180. What command would be used as part of configuring NAT or PAT to identify an interface as part of the external global network?

- ip pat inside
- access-list 10 permit 172.19.89.0 0.0.0.255
- ip nat inside
- **ip nat outside**

181. To avoid purchasing new hardware, a company wants to take advantage of idle system resources and consolidate the number of servers while allowing for multiple operating systems on a single hardware platform. What service or technology would support this requirement?

- data center
- cloud services
- **virtualization**
- dedicated servers

182. Which type of VPN routes packets through virtual tunnel interfaces for encryption and forwarding?

- MPLS VPN
- **IPsec virtual tunnel interface**
- dynamic multipoint VPN

- GRE over IPsec

183. Which step in the link-state routing process is described by a router flooding link-state and cost information about each directly connected link?

- building the topology table
- selecting the router ID
- **exchanging link-state advertisements**
- injecting the default route

184. What type of traffic is described as using either TCP or UDP depending on the need for error recovery?

- video
- voice
- **data**

185. Refer to the exhibit. The company CEO demands that one ACL be created to permit email traffic to the internet and deny FTP access. What is the best ACL type and placement to use in this situation?

- **extended ACL outbound on R2 WAN interface towards the internet**
- standard ACL outbound on R2 S0/0/0
- extended ACL inbound on R2 S0/0/0
- standard ACL inbound on R2 WAN interface connecting to the internet

186. What command would be used as part of configuring NAT or PAT to define a pool of addresses for translation?

- ip nat inside source static 172.19.89.13 198.133.219.65
- ip nat inside source list 24 interface serial 0/1/0 overload
- **ip nat pool POOL-STAT 64.100.14.17 64.100.14.30 netmask 255.255.255.240**
- ip nat outside

187. What is the name of the layer in the Cisco borderless switched network design that is considered to be the backbone used for high-speed connectivity and fault isolation?

- data link
- access
- **core**

- network
- network access

188. An ACL is applied inbound on router interface. The ACL consists of a single entry:

```
access-list 210 permit tcp 172.18.20.0 0.0.0.47 any eq ftp
```

If a packet with a source address of 172.18.20.40, a destination address of 10.33.19.2, and a protocol of 21 is received on the interface, is the packet permitted or denied?

- **permitted**
- denied

189. What type of traffic is described as consisting of traffic that gets a lower priority if it is not mission-critical?

- video
- **data**
- voice

190. Which OSPF table is identical on all converged routers within the same OSPF area?

- routing
- neighbor
- adjacency
- **topology**

191. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 100 permit tcp 192.168.10.0 0.0.0.255 any eq www .
```

If a packet with a source address of 192.168.10.45, a destination address of 10.10.3.27, and a protocol of 80 is received on the interface, is the packet permitted or denied?

- **permitted**
- denied

192. What protocol allows the manager to poll agents to access information from the agent MIB?

- CBWFQ
- SYSLOG
- TFTP
- **SNMP**

193. Match each component of a WAN connection to its description. (Not all options are used.)

Case 2:

194. What type of traffic is described as being able to tolerate a certain amount of latency, jitter, and loss without any noticeable effects?

- **voice**
- video
- data

195. What term describes adding a value to the packet header, as close to the source as possible, so that the packet matches a defined policy?

- policing
- **traffic marking**
- weighted random early detection (WRED)
- traffic shaping
- tail drop

196. Which three traffic-related factors would influence selecting a particular WAN link type? (Choose three.)

- cost of the link
- **amount of traffic**
- distance between sites
- reliability
- **security needs**
- **type of traffic**

197. What command would be used as part of configuring NAT or PAT to link the inside local addresses to the pool of addresses available for PAT translation?

- ip nat inside source list ACCTNG pool POOL-STAT

- ip nat translation timeout 36000
- **ip nat inside source list 14 pool POOL-STAT overload**
- ip nat inside source static 172.19.89.13 198.133.219.65

198. What protocol is a vendor-neutral Layer 2 discovery protocol that must be configured separately to transmit and receive information packets?

- SNMP
- MPLS
- **LLDP**
- NTP

199. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

```
access-list 210 permit tcp 172.18.20.0 0.0.0.31 172.18.20.32 0.0.0.31 eq ftp
.
```

If a packet with a source address of 172.18.20.55, a destination address of 172.18.20.3, and a protocol of 21 is received on the interface, is the packet permitted or denied?

- permitted
- **denied**

200. Refer to the exhibit. Corporate policy demands that access to the server network be restricted to internal employees only. What is the best ACL type and placement to use in this situation?

Corporate policy demands that access to the server network be restricted to internal employees only. What is the best ACL type and placement to use in this situation

- **extended ACL outbound on R2 S0/0/1**
- standard ACL outbound on R2 S0/0/0
- standard ACL inbound on R2 WAN interface connecting to the internet
- extended ACL inbound on R2 S0/0/0

201. A technician is working on a Layer 2 switch and notices that a %CDP-4-DUPLEX_MISMATCH message keeps appearing for port G0/5. What command should the technician issue on the switch to start the troubleshooting process?

- show cdp neighbors
- show ip interface brief
- **show interface g0/5**
- show cdp

202. Which virtual resource would be installed on a network server to provide direct access to hardware resources?

- VMware Fusion
- a management console
- a dedicated VLAN
- **a Type 1 hypervisor**

203. Refer to the exhibit. A network administrator has configured a standard ACL to permit only the two LAN networks attached to R1 to access the network that connects to R2 G0/1 interface. When following the best practices, in what location should the standard ACL be applied?

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- R2 G0/1 inbound
- R2 S0/0/1 outbound
- R1 S0/0/0 outbound
- **R2 G0/1 outbound**
- R2 G0/0 outbound

204. Which OSPF database is identical on all converged routers within the same OSPF area?

- neighbor
- forwarding
- **link-state**
- adjacency

205. What are two features to consider when creating a named ACL? (Choose two.)

- **Use alphanumeric characters if needed.**
- Use special characters, such as ! or * to show the importance of the ACL.
- Modify the ACL using a text editor.
- **Be descriptive when creating the ACL name.**
- Use a space for ease of reading to separate the name from the description

206. Match the RESTful API method to CRUD function.

Match the RESTful API method to CRUD function.

207. What type of traffic is described as requiring at least 384 Kbps of bandwidth?

- voice
- data
- **video**

208. Which step in the link-state routing process is described by a router inserting best paths into the routing table?

- declaring a neighbor to be inaccessible
- executing the SPF algorithm
- load balancing equal-cost paths
- **choosing the best route**

209. Anycompany has decided to reduce its environmental footprint by reducing energy costs, moving to a smaller facility, and promoting telecommuting. What service or technology would support this requirement?

- data center
- virtualization
- **cloud services**
- dedicated servers

210. Which QoS technique smooths packet output rate?

- policing
- **shaping**
- weighted random early detection
- Integrated Services (IntServ)
- marking

211. Refer to the exhibit. The company has provided IP phones to employees on the 192.168.10.0/24 network and the voice traffic will need priority over

data traffic. What is the best ACL type and placement to use in this situation?

- **extended ACL inbound on R1 G0/0**
- extended ACL outbound on R2 WAN interface towards the internet
- extended ACL outbound on R2 S0/0/1
- extended ACLs inbound on R1 G0/0 and G0/1

212. A network technician is configuring SNMPv3 and has set a security level of SNMPv3 authPriv. What is a feature of using this level?

- authenticates a packet by using the SHA algorithm only
- authenticates a packet by a string match of the username or community string
- **authenticates a packet by using either the HMAC with MD5 method or the SHA method**
- authenticates a packet by using either the HMAC MD5 or HMAC SHA algorithms and a username

1. What functionality does mGRE provide to the DMVPN technology?

- It allows the creation of dynamically allocated tunnels through a permanent tunnel source at the hub and dynamically allocated tunnel destinations at the spokes.
- It provides secure transport of private information over public networks, such as the Internet.
- It creates a distributed mapping database of public IP addresses for all VPN tunnel spokes.
- It is a Cisco software solution for building multiple VPNs in an easy, dynamic, and scalable manner.

2. Which statement accurately describes a characteristic of IPsec?

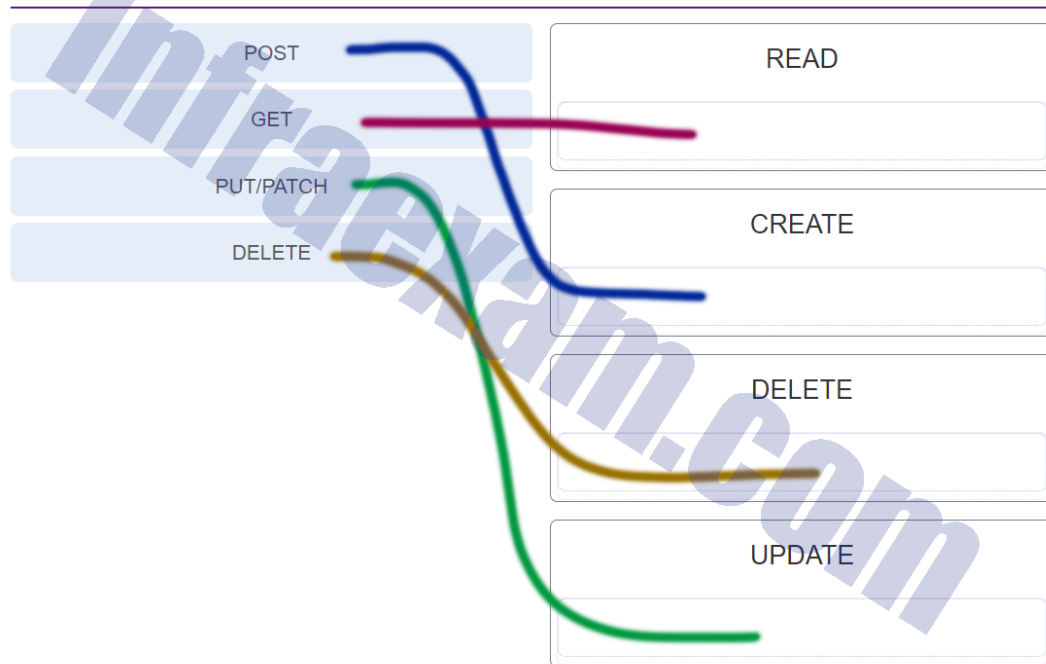
- IPsec works at the transport layer and protects data at the network layer.
- IPsec works at the application layer and protects all application data.
- IPsec is a framework of open standards that relies on existing algorithms.
- IPsec is a framework of standards developed by Cisco that relies on OSI algorithms.
- IPsec is a framework of proprietary standards that depend on Cisco specific algorithms.

3. Which type of API would be used to allow authorized salespeople of an organization access to internal sales data from their mobile devices?

- public
- open
- private
- partner

4. Match the RESTful API method to CRUD function.

Match the RESTful API method to CRUD function.



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5. What are two syntax rules for writing a JSON array? (Choose two.)

- Each value in the array is separated by a comma.
- A semicolon separates the key and list of values.
- The array can include only one value type.
- Values are enclosed in square brackets.
- A space must separate each value in the array.

6. Refer to the exhibit. An administrator is trying to configure PAT on R1, but PC-A is unable to access the Internet. The administrator tries to ping a server on the Internet from PC-A and collects the debugs that are shown in the exhibit. Based on this output, what is most likely the cause of the problem?

```

interface FastEthernet 0/0
ip address 10.10.10.1 255.255.255.0
ip nat inside
no cdp enable
hold-queue 32 in
hold-queue 100 out
!
interface FastEthernet 0/1
ip address dhcp
ip nat outside
no cdp enable
!
ip classless
ip http server
!
ip nat inside source list 102 interface fastethernet 0/1 overload
access-list 102 permit ip 10.10.10.0 0.0.0.255 any
no cdp run
!

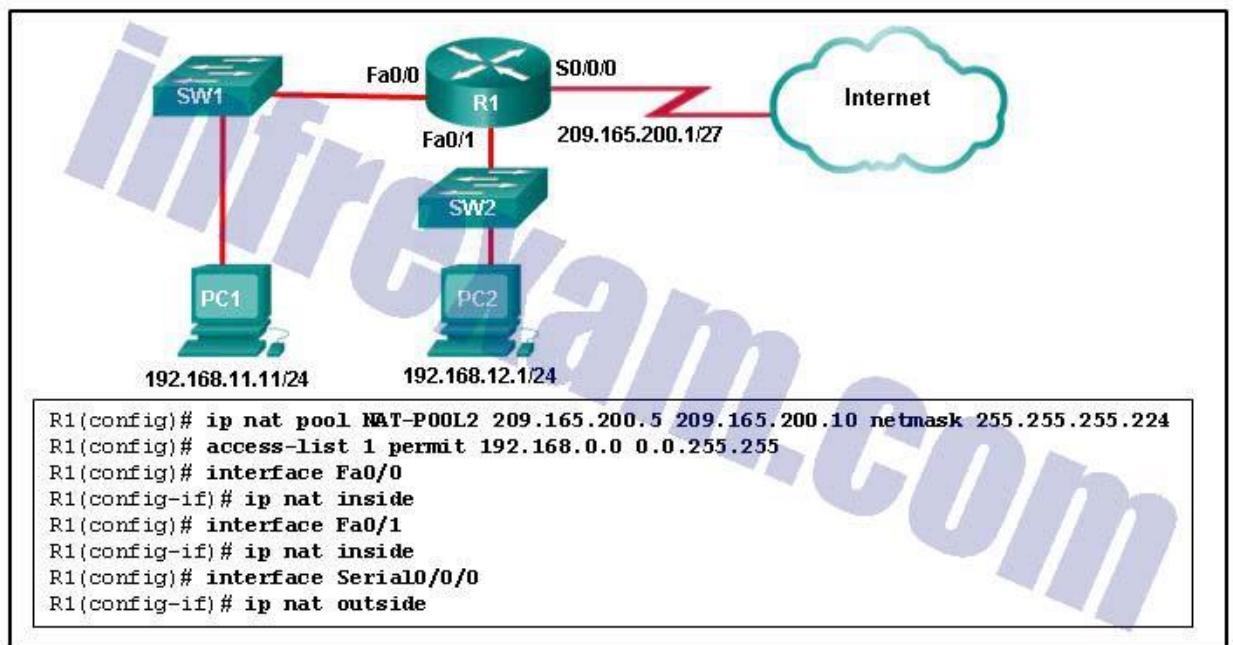
```

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Exam Answers 08

- The address on Fa0/0 should be 64.100.0.1.
- The inside and outside NAT interfaces have been configured backwards.
- The inside global address is not on the same subnet as the ISP.
- The NAT source access list matches the wrong address range.

7. Refer to the exhibit. R1 is configured for NAT as displayed. What is wrong with the configuration?



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- Access-list 1 is misconfigured.
- The NAT pool is incorrect.

- NAT-POOL2 is not bound to ACL 1.
- Interface Fa0/0 should be identified as an outside NAT interface.

8. Refer to the exhibit. What is the purpose of the command marked with an arrow shown in the partial configuration output of a Cisco broadband router?

```
interface FastEthernet 0/0
ip address 10.10.10.1 255.255.255.0
ip nat inside
no cdp enable
hold-queue 32 in
hold-queue 100 out
!
interface FastEthernet 0/1
ip address dhcp
ip nat outside
no cdp enable
!
ip classless
ip http server
!
ip nat inside source list 102 interface fastethernet 0/1 overload
access-list 102 permit ip 10.10.10.0 0.0.0.255 any
no cdp run
!
```

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Exam Answers 08

- defines which addresses are assigned to a NAT pool
- defines which addresses are allowed into the router
- defines which addresses are allowed out of the router
- defines which addresses can be translated

9. A network administrator is writing a standard ACL that will deny any traffic from the 172.16.0.0/16 network, but permit all other traffic. Which two commands should be used? (Choose two.)

- Router(config)# access-list 95 permit any
- Router(config)# access-list 95 host 172.16.0.0
- Router(config)# access-list 95 172.16.0.0 255.255.255.255
- Router(config)# access-list 95 deny 172.16.0.0 0.0.255.255
- Router(config)# access-list 95 deny 172.16.0.0 255.255.0.0
- Router(config)# access-list 95 deny any

10. Refer to the exhibit. A network administrator needs to add an ACE to the TRAFFIC-CONTROL ACL that will deny IP traffic from the subnet 172.23.16.0/20. Which ACE will meet this requirement?

```
Router1# show access-lists
standard IP access list TRAFFIC-CONTROL
 10 permit 172.23.0.0, wildcard bits 0.0.255.255
 20 deny any
```

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ENSA Final Exam Answers 07

- 15 deny 172.23.16.0 0.0.15.255
- 30 deny 172.23.16.0 0.0.15.255
- 5 deny 172.23.16.0 0.0.255.255
- **5 deny 172.23.16.0 0.0.15.255**

11. If a router has two interfaces and is routing both IPv4 and IPv6 traffic, how many ACLs could be created and applied to it?

- 6
- 16
- **8**
- 4
- 12

12. Which three statements are generally considered to be best practices in the placement of ACLs? (Choose three.)

- For every inbound ACL placed on an interface, there should be a matching outbound ACL.
- **Place extended ACLs close to the source IP address of the traffic.**
- **Place standard ACLs close to the destination IP address of the traffic.**
- Place standard ACLs close to the source IP address of the traffic.
- **Filter unwanted traffic before it travels onto a low-bandwidth link.**
- Place extended ACLs close to the destination IP address of the traffic.

13. What is the main function of a hypervisor?

- It is used by ISPs to monitor cloud computing resources.
- It is a device that synchronizes a group of sensors.
- It is software used to coordinate and prepare data for analysis.
- It is a device that filters and checks security credentials.
- **It is used to create and manage multiple VM instances on a host machine.**

14. A data center has recently updated a physical server to host multiple operating systems on a single CPU. The data center can now provide each customer with a separate web server without having to allocate an actual discrete server for each customer. What is the networking trend that is being implemented by the data center in this situation?

- **virtualization**
- maintaining communication integrity
- BYOD

- online collaboration

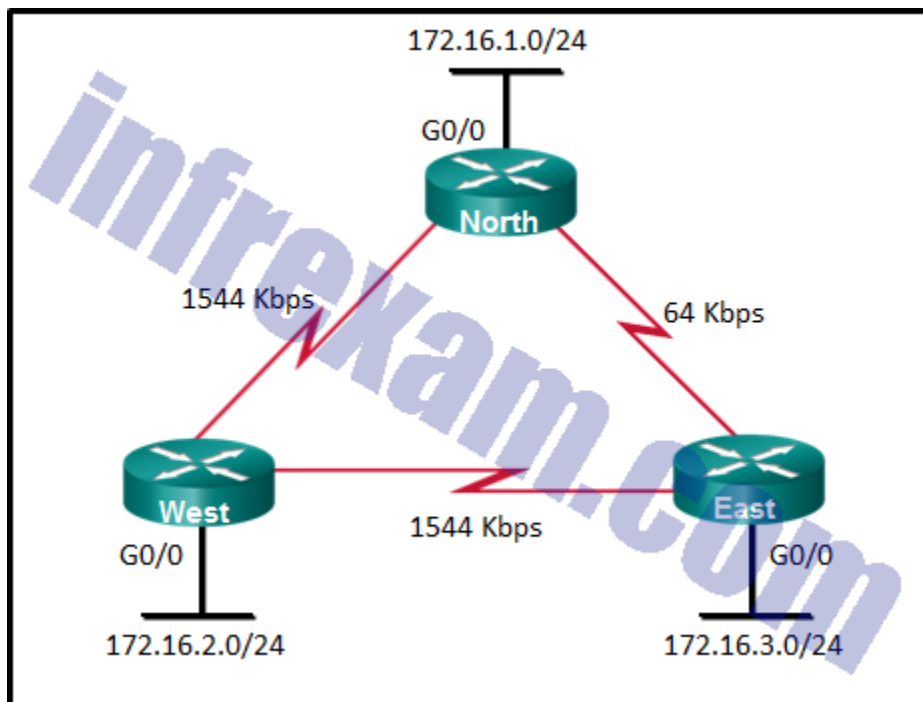
15. What is used to pre-populate the adjacency table on Cisco devices that use CEF to process packets?

- the ARP table
- the DSP
- the FIB
- the routing table

16. Which step in the link-state routing process is described by a router building a link-state database based on received LSAs?

- building the topology table
- selecting the router ID
- injecting the default route
- exchanging link-state advertisements

17. Refer to the exhibit. What is the OSPF cost to reach the West LAN 172.16.2.0/24 from East?



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- 782
- 74
- 128
- 65

18. A network engineer has noted that some expected network route entries are not displayed in the routing table. Which two commands will provide additional information about the state of router adjacencies, timer intervals, and the area ID? (Choose two.)

- ☐ show running-configuration
- ☐ show ip route ospf
- ☐ **show ip ospf interface**
- ☐ show ip protocols
- ☐ **show ip ospf neighbor**

19. What is the final operational state that will form between an OSPF DR and a DROTHER once the routers reach convergence?

- ☐ **full**
- ☐ loading
- ☐ established
- ☐ two-way

20. What protocol allows the manager to poll agents to access information from the agent MIB?

- ☐ SYSLOG
- ☐ CBWFQ
- ☐ **SNMP**
- ☐ TFTP

21. Which set of access control entries would allow all users on the 192.168.10.0/24 network to access a web server that is located at 172.17.80.1, but would not allow them to use Telnet?

- ☐ access-list 103 permit 192.168.10.0 0.0.0.255 host 172.17.80.1
- ☐ access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq telnet
- ☐ access-list 103 deny tcp host 192.168.10.0 any eq 23
- ☐ access-list 103 permit tcp host 192.168.10.1 eq 80
- ☐ **access-list 103 permit tcp 192.168.10.0 0.0.0.255 host 172.17.80.1 eq 80**
- ☐ **access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq 23**
- ☐ access-list 103 permit tcp 192.168.10.0 0.0.0.255 any eq 80
- ☐ access-list 103 deny tcp 192.168.10.0 0.0.0.255 any eq 23

22. Which two things should a network administrator modify on a router to perform password recovery? (Choose two.)

- ☐ **the startup configuration file**
- ☐ system ROM
- ☐ the NVRAM file system
- ☐ the system image file
- ☐ **the configuration register value**

23. Which statement describes a VPN?

- VPNs use logical connections to create public networks through the Internet.
- VPNs use dedicated physical connections to transfer data between remote users.
- VPNs use open source virtualization software to create the tunnel through the Internet.
- **VPNs use virtual connections to create a private network through a public network.**

24. Refer to the exhibit. An administrator first configured an extended ACL as shown by the output of the show access-lists command. The administrator then edited this access-list by issuing the commands below.

```
Router# show access-lists
Extended IP access list 101
 10 deny tcp any any
 20 permit udp any any
 30 permit icmp any any
```

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```
Router(config)# ip access-list extended 101

Router(config-ext-nacl)# no 20

Router(config-ext-nacl)# 5 permit tcp any any eq 22

Router(config-ext-nacl)# 20 deny udp any any
```

Which two conclusions can be drawn from this new configuration? (Choose two.)

- **Ping packets will be permitted.**
- TFTP packets will be permitted.
- Telnet packets will be permitted.
- **SSH packets will be permitted.**
- All TCP and UDP packets will be denied.

25. In which step of gathering symptoms does the network engineer determine if the problem is at the core, distribution, or access layer of the network?

- **Narrow the scope.**
- Document the symptoms.
- Gather information.
- Determine the symptoms.
- Determine ownership.

26. What type of network uses one common infrastructure to carry voice, data, and video signals?

- switched
- **converged**
- borderless
- managed

27. What are three advantages of using private IP addresses and NAT? (Choose three.)

- improves the performance of the router that is connected to the Internet
- reduces CPU usage on customer routers
- **permits LAN expansion without additional public IP addresses**
- creates multiple public IP addresses
- **conserves registered public IP addresses**
- **hides private LAN addressing from outside devices that are connected to the Internet**

28. What is a characteristic of a single-area OSPF network?

- All routers have the same routing table.
- All routers have the same neighbor table.
- All routers share a common forwarding database.
- **All routers are in the backbone area.**

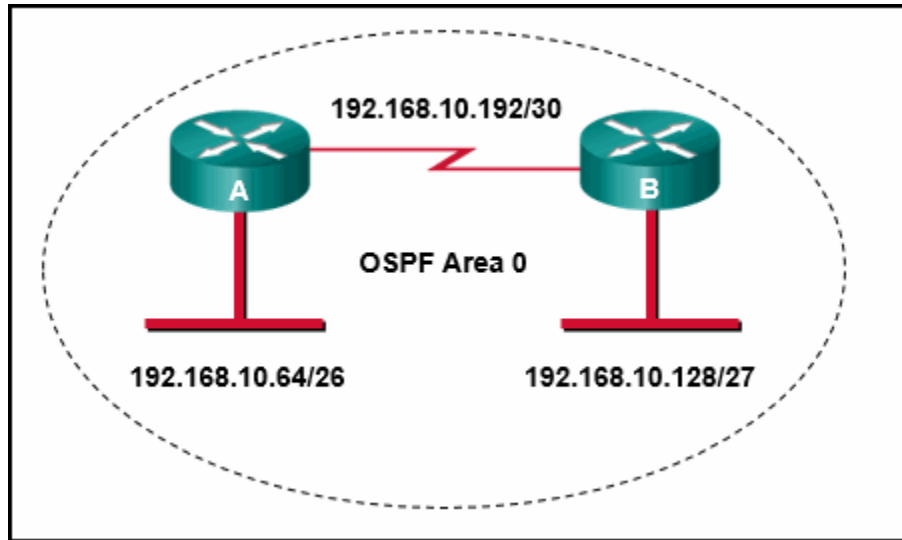
29. Which statement describes a characteristic of standard IPv4 ACLs?

- They can be created with a number but not with a name.
- They can be configured to filter traffic based on both source IP addresses and source ports.
- They are configured in the interface configuration mode.
- **They filter traffic based on source IP addresses only.**

30. Which two statements are characteristics of a virus? (Choose two.)

- A virus has an enabling vulnerability, a propagation mechanism, and a payload.
- **A virus typically requires end-user activation.**
- A virus replicates itself by independently exploiting vulnerabilities in networks.
- **A virus can be dormant and then activate at a specific time or date.**
- A virus provides the attacker with sensitive data, such as passwords.

31. Refer to the exhibit. Which sequence of commands should be used to configure router A for OSPF?



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ENSA Final Exam Answers 10

- router ospf 1
network 192.168.10.64 0.0.0.63 area 0
network 192.168.10.192 0.0.0.3 area 0
- router ospf 1
network 192.168.10.0
- router ospf 1
network 192.168.10.64 255.255.255.192
network 192.168.10.192 255.255.255.252
- router ospf 1
network 192.168.10.0 area 0

32. What are three benefits of cloud computing? (Choose three.)

- It streamlines the IT operations of an organization by subscribing only to needed services.
- It uses open-source software for distributed processing of large datasets.
- It utilizes end-user clients to do a substantial amount of data preprocessing and storage.
- It turns raw data into meaningful information by discovering patterns and relationships.
- It eliminates or reduces the need for onsite IT equipment, maintenance, and management.
- It enables access to organizational data anywhere and at any time.

33. What is a WAN?

- a network infrastructure that provides access in a small geographic area
- a network infrastructure designed to provide data storage, retrieval, and replication
- a network infrastructure that spans a limited physical area such as a city
- a network infrastructure that provides access to other networks over a large geographic area

34. Match the term to the web

link <http://www.buycarsfromus.com/2020models/ford/suv.html#Escape> component. (Not all options are used.)

Match the term to the web link <http://www.buycarsfromus.com/2020models/ford/suv.html#Escape> component. (Not all options are used.)

fragment

Uniform Resource Identifier (URI)

protocol

Uniform Resource Name (URN)

page information

Uniform Resource Locator (URL)

http

www.buycarsfromus.com/2020models/ford/suv.html

http://www.buycarsfromus.com/2020models/ford/suv.html

http://www.buycarsfromus.com/2020models/ford/suv.html#Escape

#Escape

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35. Which two scenarios are examples of remote access VPNs? (Choose two.)

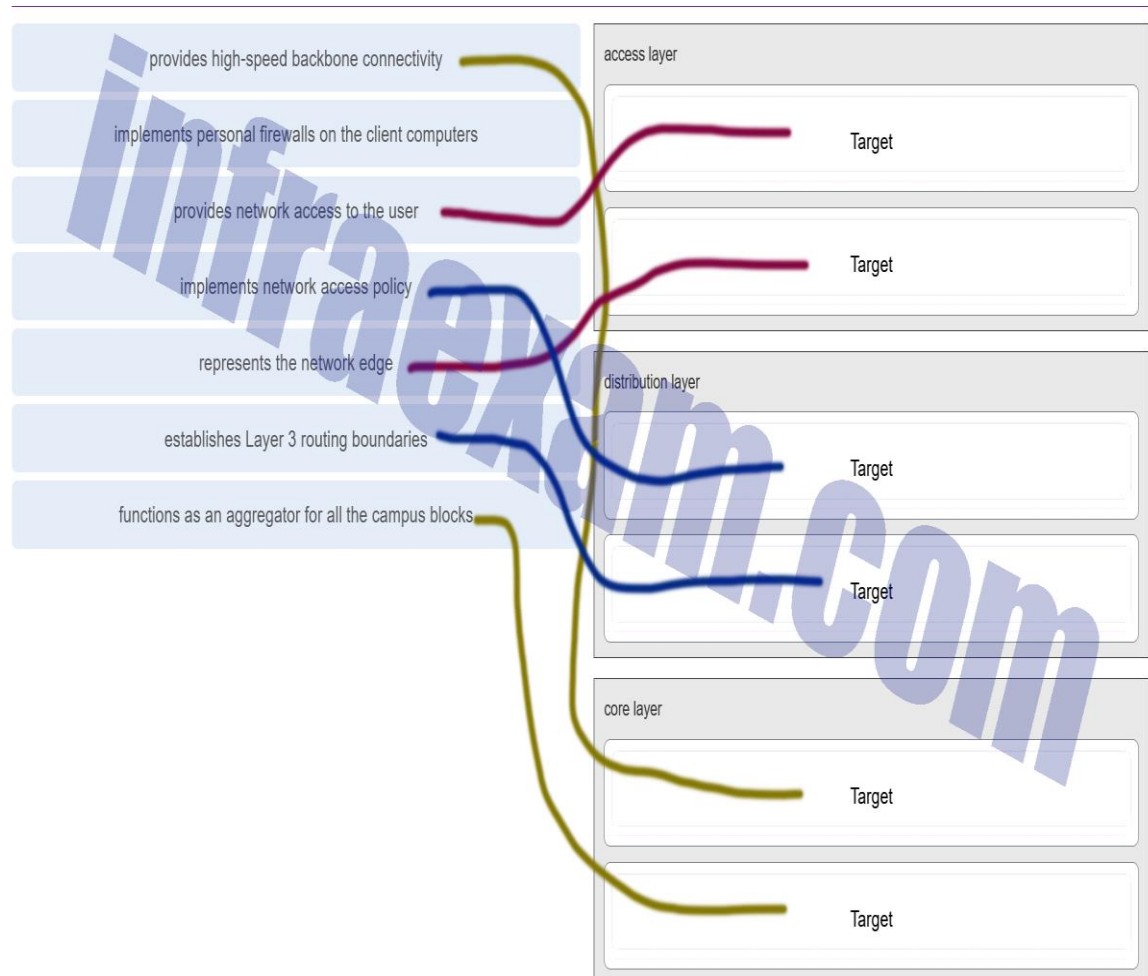
- All users at a large branch office can access company resources through a single VPN connection.
- An employee who is working from home uses VPN client software on a laptop in order to connect to the company network.
- A toy manufacturer has a permanent VPN connection to one of its parts suppliers.
- A small branch office with three employees has a Cisco ASA that is used to create a VPN connection to the HQ.
- A mobile sales agent is connecting to the company network via the Internet connection at a hotel.

36. What is a purpose of establishing a network baseline?

- It creates a point of reference for future network evaluations.
- It provides a statistical average for network performance.
- It checks the security configuration of network devices.
- It manages the performance of network devices.

37. Match the functions to the corresponding layers. (Not all options are used.)

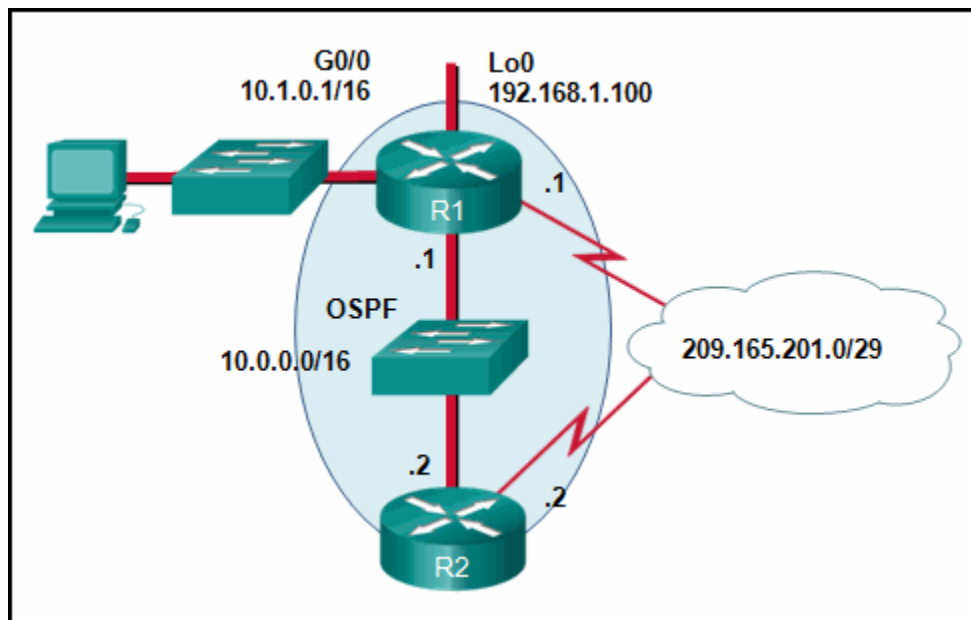
Match the functions to the corresponding layers. (Not all options are used.)



38. Why is QoS an important issue in a converged network that combines voice, video, and data communications?

- Data communications are sensitive to jitter.
- Data communications must be given the first priority.
- Legacy equipment is unable to transmit voice and video without QoS.
- **Voice and video communications are more sensitive to latency.**

39. Refer to the exhibit. If no router ID was manually configured, what would router R1 use as its OSPF router ID?



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- 10.0.0.1
- 10.1.0.1
- **192.168.1.100**
- 209.165.201.1

40. Which type of OSPF packet is used by a router to discover neighbor routers and establish neighbor adjacency?

- link-state request
- **hello**
- database description
- link-state update

41. Which statement describes a characteristic of Cisco Catalyst 2960 switches?

- They are modular switches.
- **New Cisco Catalyst 2960-C switches support PoE pass-through.**
- They do not support an active switched virtual interface (SVI) with IOS versions prior to 15.x.
- They are best used as distribution layer switches.

42. Refer to the exhibit. An administrator is trying to back up the current running configuration of the router to a USB drive, and enters the command `copy usbflash0:/R1-config running-config` on the router command line. After removing the USB drive and connecting it to a PC, the administrator discovers that the running configuration was not properly backed up to the R1-config file. What is the problem?

```
R1# show file systems
File Systems:
```

	Size (b)	Free (b)	Type	Flags	Prefixes
	-	-	opaque	rw	archive:
	-	-	opaque	rw	system:
	-	-	opaque	rw	tmpsys:
	-	-	opaque	rw	null:
	-	-	network	rw	tftp:
*	256487424	184819712	disk	rw	flash0: flash:#
	-	-	disk	rw	flash1:
	262136	249270	nvr	rw	nvr
	-	-	opaque	wo	syslog:
	-	-	opaque	rw	xmodem:
	-	-	opaque	rw	ymodem:
	-	-	network	rw	r
	-	-	network	rw	http:
	-	-	network	rw	ftp:
	-	-	network	rw	scp:
	-	-	opaque	ro	tar:
	-	-	network	rw	https:
	-	-	opaque	ro	cns:
	4050042880	3774152704	usbflash	rw	usbflash0:

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- There is no space left on the USB drive.
- The file already exists on the USB drive and cannot be overwritten.
- The drive was not properly formatted with the FAT16 file system.
- The USB drive is not recognized by the router.
- **The command that the administrator used was incorrect.**

43. Refer to the exhibit. Routers R1 and R2 are connected via a serial link. One router is configured as the NTP master, and the other is an NTP client. Which two pieces of information can be

obtained from the partial output of the show ntp associations detail command on R2? (Choose two.)

```
R2# show ntp associations detail
192.168.1.2 configured, authenticated, our_master, sane, valid,
stratum 3
<output omitted>
```

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- The IP address of R1 is 192.168.1.2.
- Both routers are configured to use NTPv2.
- Router R2 is the master, and R1 is the client.
- Router R1 is the master, and R2 is the client.
- The IP address of R2 is 192.168.1.2.

44. What is a characteristic of a Trojan horse as it relates to network security?

- An electronic dictionary is used to obtain a password to be used to infiltrate a key network device.
- Extreme quantities of data are sent to a particular network device interface.
- Too much information is destined for a particular memory block, causing additional memory areas to be affected.
- Malware is contained in a seemingly legitimate executable program.

45. An attacker is redirecting traffic to a false default gateway in an attempt to intercept the data traffic of a switched network. What type of attack could achieve this?

- DNS tunneling
- DHCP spoofing
- TCP SYN flood
- ARP cache poisoning

46. A company is developing a security policy for secure communication. In the exchange of critical messages between a headquarters office and a branch office, a hash value should only be recalculated with a predetermined code, thus ensuring the validity of data source. Which aspect of secure communications is addressed?

- origin authentication
- data integrity
- data confidentiality
- non-repudiation

47. Which troubleshooting approach is more appropriate for a seasoned network administrator rather than a less-experienced network administrator?

- an approach comparing working and nonworking components to spot significant differences
- a structured approach starting with the physical layer and moving up through the layers of the OSI model until the cause of the problem is identified
- **a less-structured approach based on an educated guess**
- an approach that starts with the end-user applications and moves down through the layers of the OSI model until the cause of the problem has been identified

48. Which two pieces of information should be included in a logical topology diagram of a network? (Choose two.)

- OS/IOS version
- **interface identifier**
- cable type and identifier
- cable specification
- device type
- **connection type**

49. What command would be used as part of configuring NAT or PAT to link the inside local addresses to the pool of addresses available for PAT translation?

- ip nat inside source static 172.19.89.13 198.133.219.65
- ip nat inside source list ACCTNG pool POOL-STAT
- **ip nat inside source list 14 pool POOL-STAT overload**
- ip nat translation timeout 36000

50. Which public WAN access technology utilizes copper telephone lines to provide access to subscribers that are multiplexed into a single T3 link connection?

- cable
- ISDN
- dialup
- **DSL**

51. A company is considering updating the campus WAN connection. Which two WAN options are examples of the private WAN architecture? (Choose two.)

- municipal Wi-Fi
- digital subscriber line
- **Ethernet WAN**
- **leased line**
- cable

52. Which type of VPN routes packets through virtual tunnel interfaces for encryption and forwarding?

- IPsec virtual tunnel interface
- GRE over IPsec
- dynamic multipoint VPN
- MPLS VPN

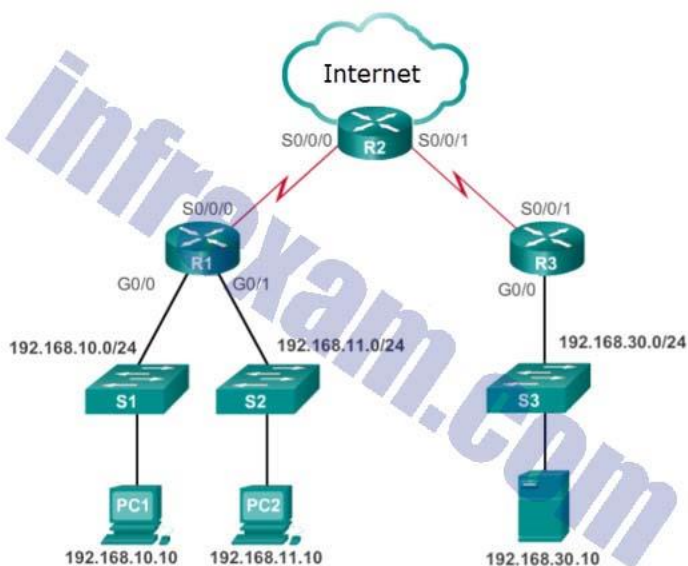
53. What type of traffic is described as requiring at least 384 Kbps of bandwidth?

- data
- voice
- video

54. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 172.16.91.0 255.255.255.192. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.0.15
- 0.0.0.7
- 0.0.0.3
- 0.0.0.63

55. Refer to the exhibit. Internet privileges for an employee have been revoked because of abuse but the employee still needs access to company resources. What is the best ACL type and placement to use in this situation?



- standard ACL inbound on R1 G0/0
- **standard ACL outbound on R2 WAN interface towards the internet**
- standard ACL inbound on R2 WAN interface connecting to the internet
- standard ACL outbound on R1 G0/0

56. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

access-list 100 permit tcp 192.168.10.0 0.0.0.255 any eq www .

If a packet with a source address of 192.168.10.45, a destination address of 10.10.3.27, and a protocol of 80 is received on the interface, is the packet permitted or denied?

- **permitted**
- denied

57. A network administrator modified an OSPF-enabled router to have a hello timer setting of 20 seconds. What is the new dead interval time setting by default?

- 40 seconds
- 60 seconds
- **80 seconds**
- 100 seconds

58. When will an OSPF-enabled router transition from the Down state to the Init state?

- **when the router receives a hello packet from a neighbor router**
- when an OSPF-enabled interface starts sending hello packets
- as soon as the router starts
- as soon as the DR/BDR election process is complete

59. Which queuing mechanism has no provision for prioritizing or buffering but simply forwards packets in the order they arrive?

- LLQ
- CBWFQ
- WFQ
- **FIFO**

60. ABCTech is investigating the use of automation for some of its products. In order to control and test these products, the programmers require Windows, Linux, and MAC OS on their computers. What service or technology would support this requirement?

- software defined networking
- dedicated servers
- Cisco ACI
- **virtualization**

61. What command would be used as part of configuring NAT or PAT to display all static translations that have been configured?

- **show ip nat translations**
- show ip nat statistics
- show ip interfaces
- show ip route

62. When QoS is implemented in a converged network, which two factors can be controlled to improve network performance for real-time traffic? (Choose two.)

- **jitter**
- packet routing
- link speed
- packet addressing
- **delay**

63. What type of traffic is described as predictable and smooth?

- video
- data
- **voice**

64. In an OSPF network which two statements describe the link-state database (LSDB)? (Choose two.)

- **It can be viewed by using the show ip ospf database command.**
- It contains a list of all neighbor routers to which a router has established bidirectional communication.
- **All routers within an area have an identical link-state database.**
- It contains a list of only the best routes to a particular network.
- A neighbor table is created based on the LSDB.

65. A network administrator is troubleshooting an OSPF problem that involves neighbor adjacency. What should the administrator do?

- Make sure that the router ID is included in the hello packet.
- **Make sure that the hello and dead interval timers are the same on all routers.**
- Make sure that the router priority is unique on each router.
- Make sure that the DR/BDR election is complete.

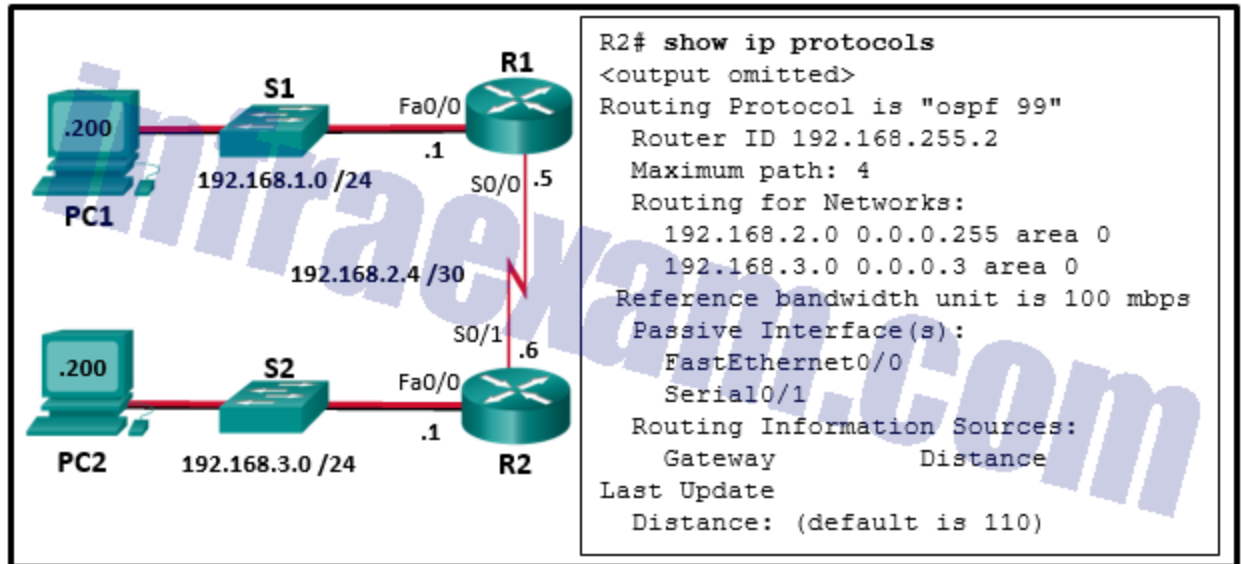
66. Which group of APIs are used by an SDN controller to communicate with various applications?

- westbound APIs
- **northbound APIs**
- southbound APIs
- eastbound APIs

67. Which is a characteristic of a Type 2 hypervisor?

- best suited for enterprise environments
- **does not require management console software**
- has direct access to server hardware resources
- installs directly on hardware

68. Refer to the exhibit. A network administrator has configured OSPFv2 on the two Cisco routers. The routers are unable to form a neighbor adjacency. What should be done to fix the problem on router R2?



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- Change the router-id of router R2 to 2.2.2.2.
- **Implement the command no passive-interface Serial0/1.**
- Implement the command network 192.168.2.6 0.0.0.0 area 0 on router R2.
- Implement the command network 192.168.3.1 0.0.0.0 area 0 on router R2.

69. An OSPF router has three directly connected networks; 10.0.0.0/16, 10.1.0.0/16, and 10.2.0.0/16. Which OSPF network command would advertise only the 10.1.0.0 network to neighbors?

- **router(config-router)# network 10.1.0.0 0.0.255.255 area 0**
- router(config-router)# network 10.1.0.0 0.0.15.255 area 0
- router(config-router)# network 10.1.0.0 255.255.255.0 area 0
- router(config-router)# network 10.1.0.0 0.0.0.0 area 0

70. What are two benefits of extending access layer connectivity to users through a wireless medium? (Choose two.)

- increased network management options
- **increased flexibility**
- **reduced costs**

- increased bandwidth availability
- decreased number of critical points of failure

71. A student, doing a summer semester of study overseas, has taken hundreds of pictures on a smartphone and wants to back them up in case of loss. What service or technology would support this requirement?

- dedicated servers
- **cloud services**
- Cisco ACI
- software defined networking

72. What are the two types of VPN connections? (Choose two.)

- **site-to-site**
- Frame Relay
- PPPoE
- leased line
- **remote access**

73. Which type of VPN connects using the Transport Layer Security (TLS) feature?

- dynamic multipoint VPN
- **SSL VPN**
- IPsec virtual tunnel interface
- GRE over IPsec

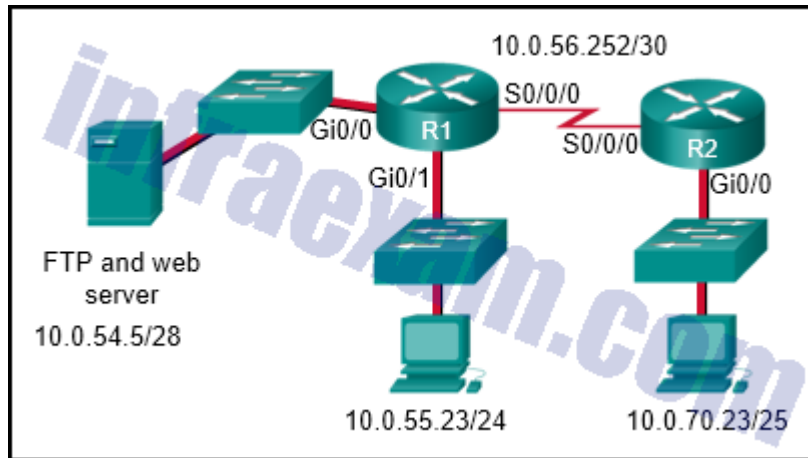
74. Which two scenarios would result in a duplex mismatch? (Choose two.)

- connecting a device with an interface running at 100 Mbps to another with an interface running at 1000 Mbps
- **manually setting the two connected devices to different duplex modes**
- **connecting a device with autonegotiation to another that is manually set to full-duplex**
- starting and stopping a router interface during a normal operation
- configuring dynamic routing incorrectly

75. A company needs to interconnect several branch offices across a metropolitan area. The network engineer is seeking a solution that provides high-speed converged traffic, including voice, video, and data on the same network infrastructure. The company also wants easy integration to their existing LAN infrastructure in their office locations. Which technology should be recommended?

- ISDN
- VSAT
- Frame Relay
- **Ethernet WAN**

76. Refer to the exhibit. The network administrator that has the IP address of 10.0.70.23/25 needs to have access to the corporate FTP server (10.0.54.5/28). The FTP server is also a web server that is accessible to all internal employees on networks within the 10.x.x.x address. No other traffic should be allowed to this server. Which extended ACL would be used to filter this traffic, and how would this ACL be applied? (Choose two.)



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- R2(config)# interface gi0/0
- R2(config-if)# ip access-group 105 in
- access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 20
- access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 21
- access-list 105 permit tcp 10.0.0.0 0.255.255.255 host 10.0.54.5 eq www
- access-list 105 deny ip any host 10.0.54.5
- access-list 105 permit ip any any
- access-list 105 permit ip host 10.0.70.23 host 10.0.54.5
- access-list 105 permit tcp any host 10.0.54.5 eq www
- access-list 105 permit ip any any
- access-list 105 permit tcp host 10.0.54.5 any eq www
- access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 20
- access-list 105 permit tcp host 10.0.70.23 host 10.0.54.5 eq 21
- R1(config)# interface s0/0/0
- R1(config-if)# ip access-group 105 out
- R1(config)# interface gi0/0
- R1(config-if)# ip access-group 105 out

77. In JSON, what is held within square brackets []?

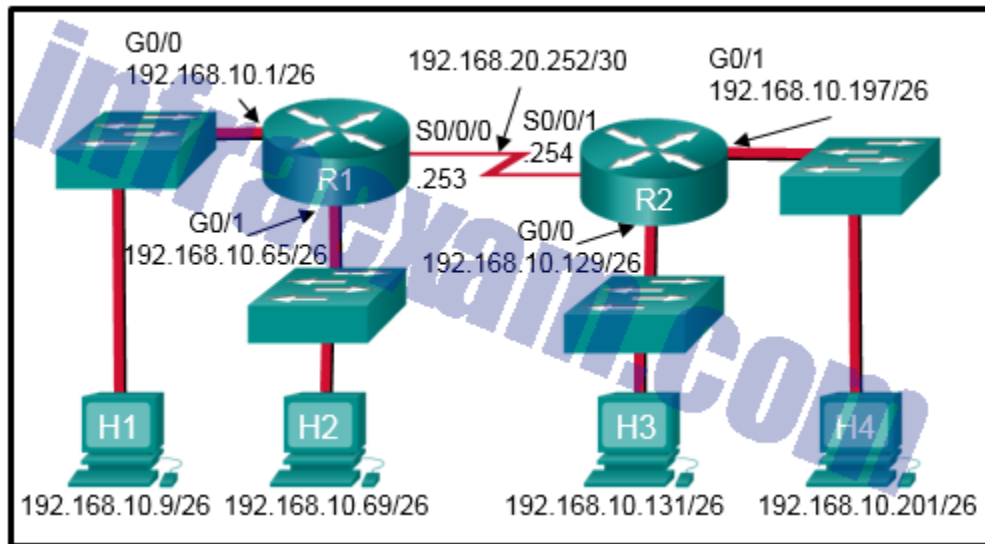
- an array
- an object
- key/value pairs
- nested values

78. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 192.168.0.0

255.255.254.0. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.15.255
- 0.0.3.255
- **0.0.1.255**
- 0.0.7.255

79. Refer to the exhibit. A network administrator has configured a standard ACL to permit only the two LAN networks attached to R1 to access the network that connects to R2 G0/1 interface. When following the best practices, in what location should the standard ACL be applied?



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- R2 G0/1 outbound
- **R2 G0/0 outbound**
- R2 S0/0/1 outbound
- R2 G0/1 inbound
- R1 S0/0/0 outbound

80. What are two features to consider when creating a named ACL? (Choose two.)

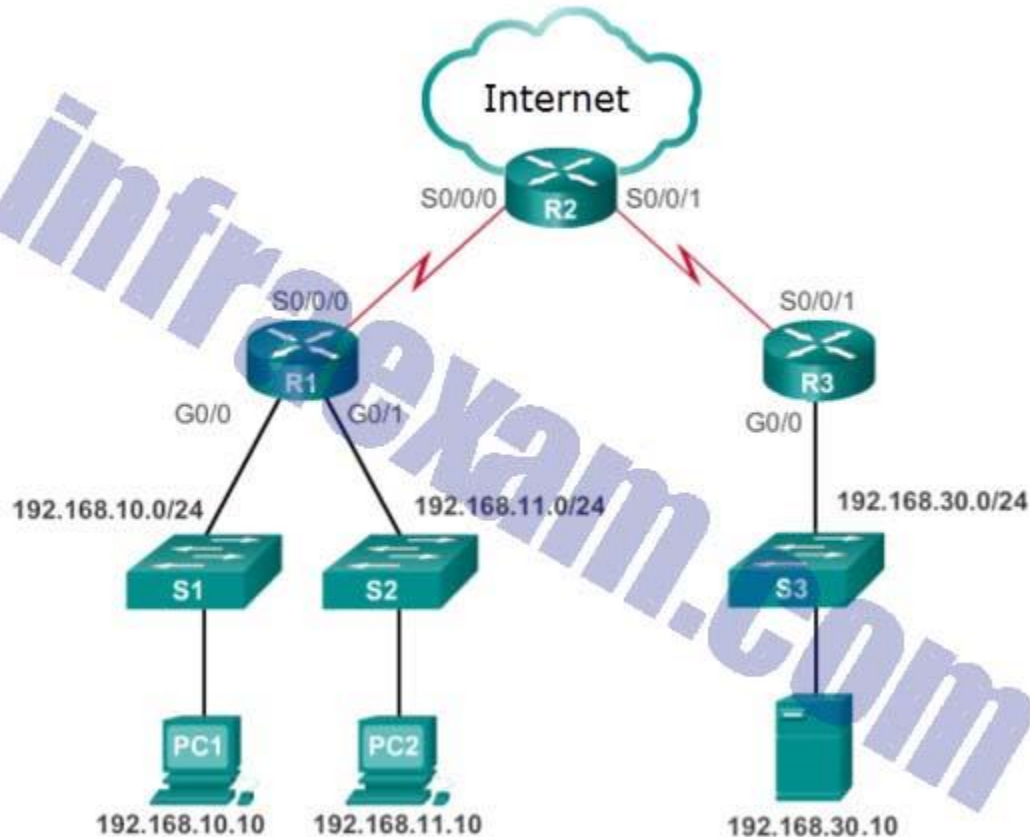
- Use a space for ease of reading to separate the name from the description.
- **Be descriptive when creating the ACL name.**
- **Use alphanumeric characters if needed.**
- Modify the ACL using a text editor.
- Use special characters, such as ! or * to show the importance of the ACL.

81. What are two purposes of launching a reconnaissance attack on a network? (Choose two.)

- to escalate access privileges

- to prevent other users from accessing the system
- to scan for accessibility
- to retrieve and modify data
- to gather information about the network and devices

82. Refer to the exhibit. The company has provided IP phones on the 192.168.10.0/24 network and the voice traffic will need priority over data traffic. What is the best ACL type and placement to use in this situation?



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- extended ACL inbound on R1 G0/0
- standard ACL inbound on R1 vty lines
- standard ACL inbound on R1 G0/1
- extended ACL inbound on R3 G0/0

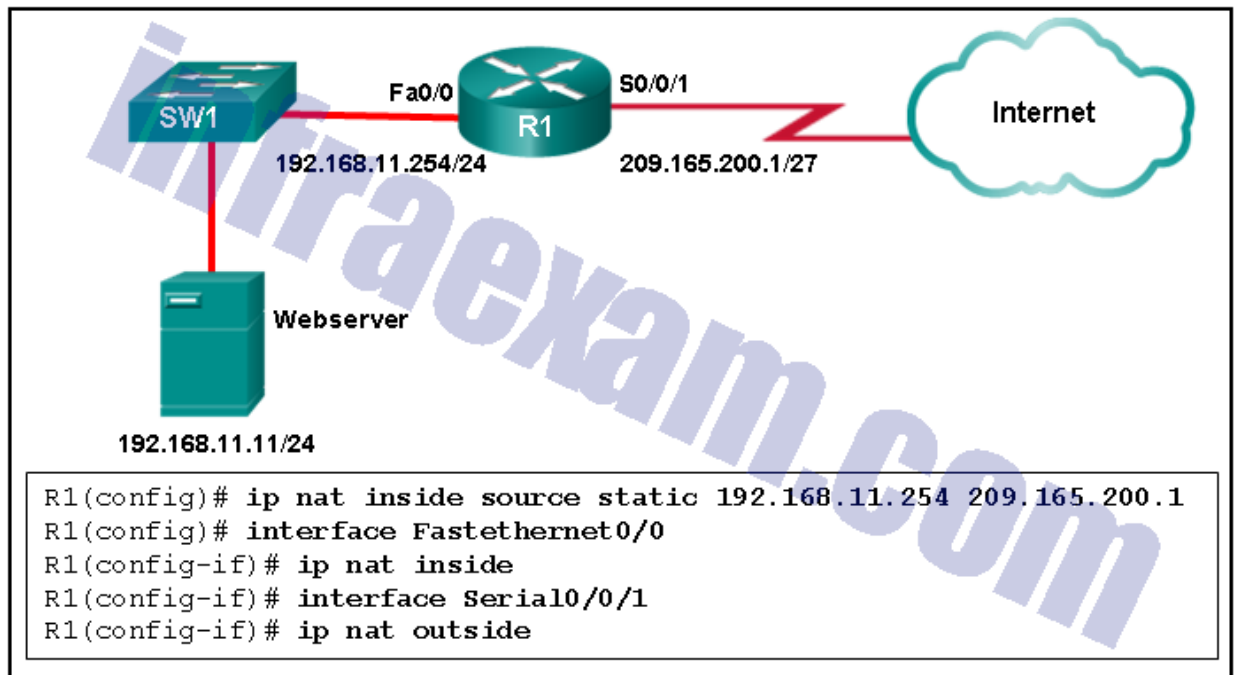
83. An ACL is applied inbound on a router interface. The ACL consists of a single entry:

`access-list 210 permit tcp 172.18.20.0 0.0.0.31 172.18.20.32 0.0.0.31 eq ftp .`

If a packet with a source address of 172.18.20.14, a destination address of 172.18.20.40, and a protocol of 21 is received on the interface, is the packet permitted or denied?

- permitted
- denied

84. Refer to the exhibit. Router R1 is configured with static NAT. Addressing on the router and the web server are correctly configured, but there is no connectivity between the web server and users on the Internet. What is a possible reason for this lack of connectivity?



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- The NAT configuration on interface S0/0/1 is incorrect.
- Interface Fa0/0 should be configured with the command ip nat outside .
- The inside global address is incorrect.
- The router NAT configuration has an incorrect inside local address.

85. Refer to the exhibit. Which address or addresses represent the inside global address?

```

Router1(config)# ip nat inside source static 192.168.0.100 209.165.20.25
Router1(config)# interface serial0/0/0
Router1(config-if)# ip nat inside
Router1(config-if)# ip address 10.1.1.2 255.255.255.0
Router1(config)# interface serial 0/0/2
Router1(config-if)# ip address 209.165.20.25 255.255.255.0
Router1(config-if)# ip nat outside
  
```

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- 10.1.1.2

- 192.168.0.100
- 209.165.20.25
- any address in the 10.1.1.0 network

86. What are two benefits of using SNMP traps? (Choose two.)

- They reduce the load on network and agent resources.
- They limit access for management systems only.
- They eliminate the need for some periodic polling requests.
- They can passively listen for exported NetFlow datagrams.
- They can provide statistics on TCP/IP packets that flow through Cisco devices.

87. Refer to the exhibit. From which location did this router load the IOS?

```
Router# show version
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1,
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

ROM: System Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE (fc1)

System returned to ROM by power-on
System image file is "flash:c1841-advipservicesk9-mz.124-15.T1.bin"

<output omitted>

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0947Z18E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)

Configuration register is 0x2102

Router#
```

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- a TFTP server
- flash memory
- NVRAM
- RAM
- ROM

88. What protocol uses smaller stratum numbers to indicate that the server is closer to the authorized time source than larger stratum numbers?

- NTP
- SYSLOG
- TFTP
- MPLS

89. Which step in the link-state routing process is described by a router flooding link-state and cost information about each directly connected link?

- electing the designated router
- **exchanging link-state advertisements**
- injecting the default route
- building the topology table

90. How does virtualization help with disaster recovery within a data center?

- Server provisioning is faster.
- Power is always provided.
- Less energy is consumed.
- **Hardware at the recovery site does not have to be identical to production equipment.***

91. What is a characteristic of the REST API?

- considered slow, complex, and rigid
- used for exchanging XML structured information over HTTP or SMTP
- evolved into what became SOAP
- **most widely used API for web services**

92. In a large enterprise network, which two functions are performed by routers at the distribution layer? (Choose two.)

- **connect remote networks**
- provide Power over Ethernet to devices
- **provide data traffic security**
- connect users to the network
- provide a high-speed network backbone

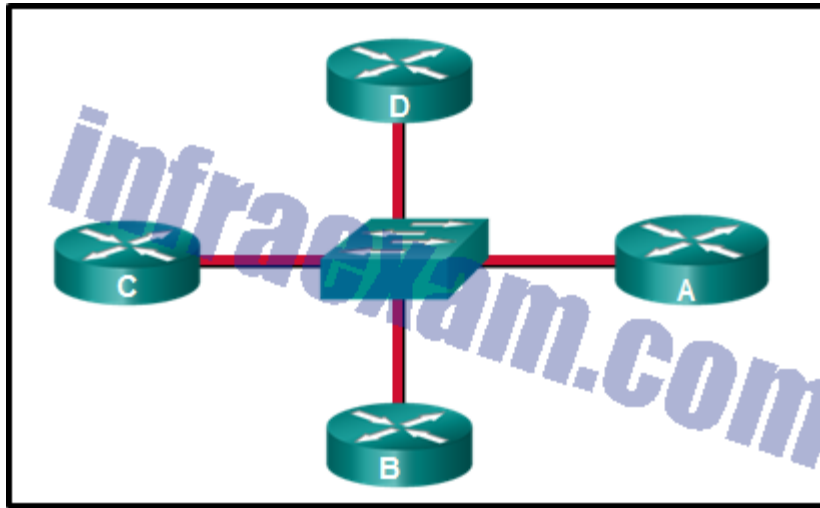
93. A group of users on the same network are all complaining about their computers running slowly. After investigating, the technician determines that these computers are part of a zombie network. Which type of malware is used to control these computers?

- **botnet**
- rootkit
- spyware
- virus

94. What type of traffic is described as using either TCP or UDP depending on the need for error recovery?

- video
- voice
- **data**

95. Refer to the exhibit. Which conclusion can be drawn from this OSPF multiaccess network?



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Exam Answers 21

- All DROTHER routers will send LSAs to the DR and BDR to multicast 224.0.0.5.
- When a DR is elected all other non-DR routers become DROTHER.
- If the DR stops producing Hello packets, a BDR will be elected, and then it promotes itself to assume the role of DR.
- **With an election of the DR, the number of adjacencies is reduced from 6 to 3.**

96. In which OSPF state is the DR/BDR election conducted?

- ExStart
- Init
- Exchange
- **Two-Way**

97. An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 10.27.27.0/24. What wildcard mask would the administrator use in the OSPF network statement?

- 0.0.0.15
- 0.0.0.31
- 0.0.0.63
- **0.0.0.255**

98. Which protocol provides authentication, integrity, and confidentiality services and is a type of VPN?

- **IPsec**
- ESP
- MD5
- AES

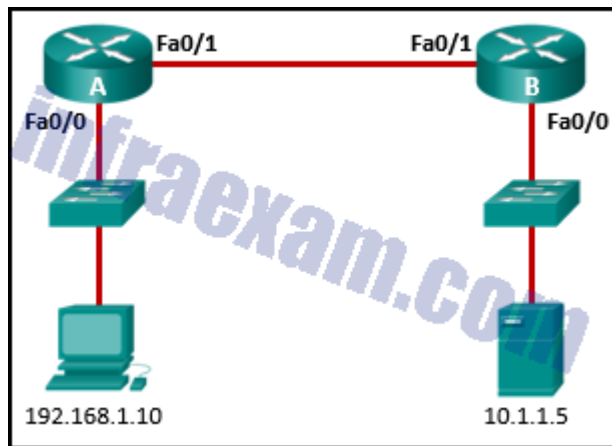
99. What QoS step must occur before packets can be marked?

- queuing
- shaping
- policing
- **classifying**

100. Refer to the exhibit. An administrator configures the following ACL in order to prevent devices on the 192.168.1.0 subnet from accessing the server at 10.1.1.5:

- **access-list 100 deny ip 192.168.1.0 0.0.0.255 host 10.1.1.5**
- **access-list 100 permit ip any any**

100 Where should the administrator place this ACL for the most efficient use of network resources?



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20

- outbound on router A Fa0/1
- outbound on router B Fa0/0
- **inbound on router A Fa0/0**
- inbound on router B Fa0/1

101. Consider the following output for an ACL that has been applied to a router via the access-class in command. What can a network administrator determine from the output that is shown?

- 102. R1# <output omitted>
- 103. Standard IP access list 2
- 104. 10 permit 192.168.10.0, wildcard bits 0.0.0.255 (2 matches)
- 105. 20 deny any (1 match)

- Traffic from one device was not allowed to come into one router port and be routed outbound a different router port.
- Traffic from two devices was allowed to enter one router port and be routed outbound to a different router port.
- Two devices connected to the router have IP addresses of 192.168.10.x.
- **Two devices were able to use SSH or Telnet to gain access to the router.**

106. What protocol synchronizes with a private master clock or with a publicly available server on the internet?

- TFTP
- **NTP**
- MPLS
- CBWFQ

107. Refer to the exhibit. A PC at address 10.1.1.45 is unable to access the Internet. What is the most likely cause of the problem?

```
R1# show ip nat statistics
Total active translations: 4 (0 static, 4 dynamic; 2 extended)
Peak translations: 33, occurred 00:00:46 ago
Outside interfaces:
  FastEthernet0/1
Inside interfaces:
  FastEthernet0/0
Hits: 42 Misses: 0
CEF Translated packets: 42, CEF Punted packets: 0
Expired translations: 0
Dynamic mappings:
-- Inside Source
[Id: 1] access-list 1 pool NATPOOL refcount 4
  pool NATPOOL: netmask 255.255.255.224
    start 209.165.201.10 end 209.165.201.11
    type generic, total addresses 2, allocated 2 (100%), misses 0

R1# show ip nat translations
Pro Inside global      Inside local           Outside local           Outside global
icmp 209.165.201.10:6  10.1.1.33:6           209.165.200.226:6      209.165.200.226:6
--- 209.165.201.10     10.1.1.33             ---                     ---
icmp 209.165.201.11:3  10.1.1.123:3          209.165.200.226:3      209.165.200.226:3
--- 209.165.201.11     10.1.1.123            ---                     ---
```

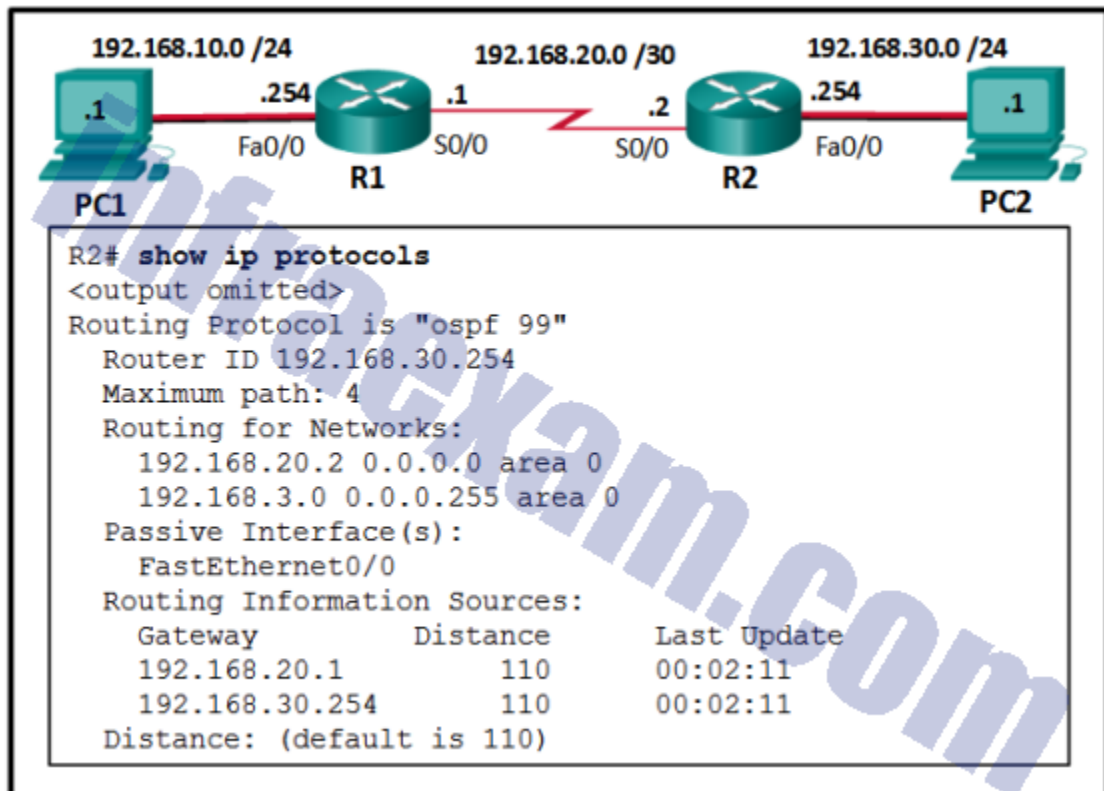
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- The wrong netmask was used on the NAT pool.
- The inside and outside interfaces have been configured backwards.
- **The NAT pool has been exhausted.**
- Access-list 1 has not been configured properly.

108. In setting up a small office network, the network administrator decides to assign private IP addresses dynamically to workstations and mobile devices. Which feature must be enabled on the company router in order for office devices to access the internet?

- MAC filtering
- QoS
- UPnP
- **NAT**

109. Refer to the exhibit. A network administrator has configured OSPFv2 on the two Cisco routers but PC1 is unable to connect to PC2. What is the most likely problem?



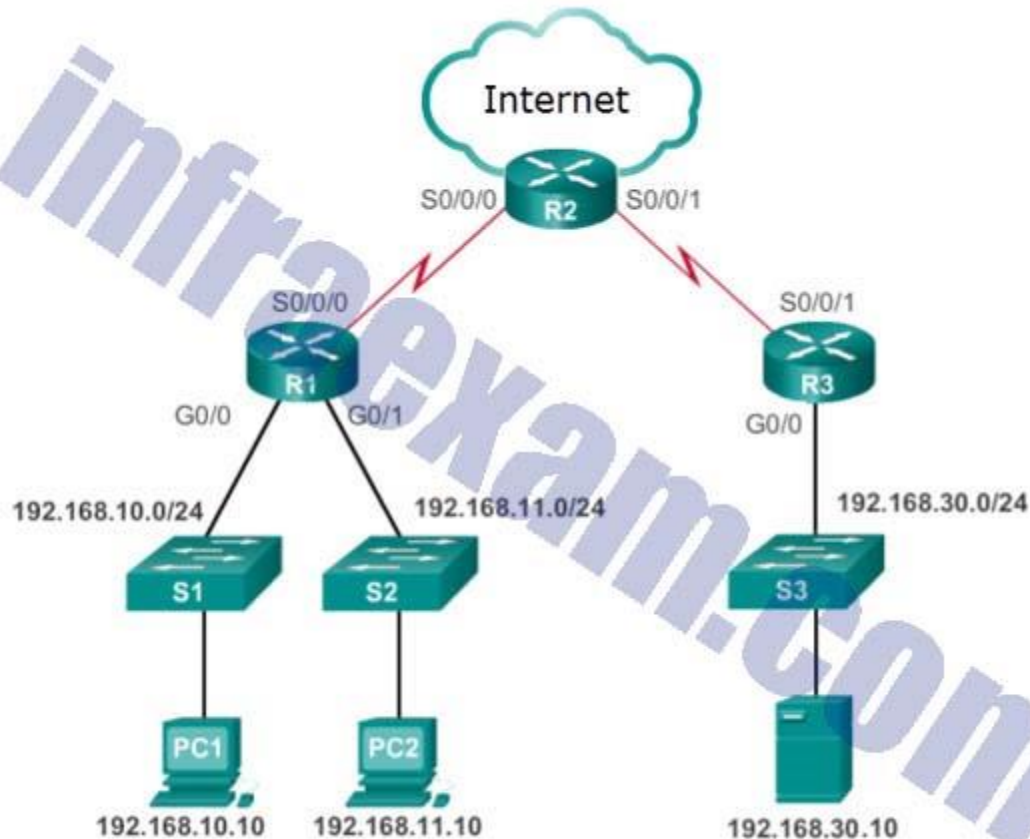
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- Interface Fa0/0 is configured as a passive-interface on router R2.
- Interface s0/0 has not been activated for OSPFv2 on router R2.
- Interface S0/0 is configured as a passive-interface on router R2.
- **Interface Fa0/0 has not been activated for OSPFv2 on router R2.**

110. What command would be used as part of configuring NAT or PAT to identify an interface as part of the external global network?

- access-list 10 permit 172.19.89.0 0.0.0.255
- ip pat inside
- ip nat inside
- **ip nat outside**

111. Refer to the exhibit. The network administrator has an IP address of 192.168.11.10 and needs access to manage R1. What is the best ACL type and placement to use in this situation?



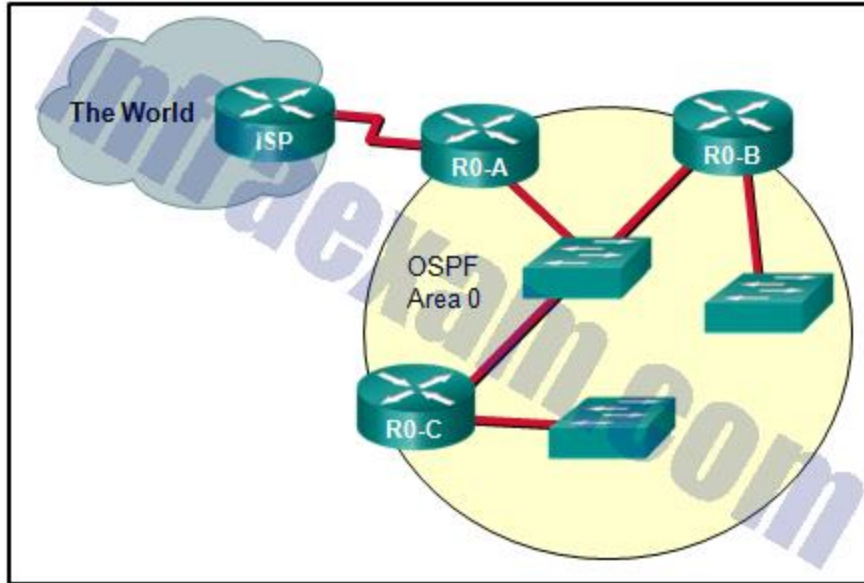
CCNA3 v7 – ENSA Final Exam Answers 24

- standard ACL inbound on R1 vty lines
- standard ACL inbound on R2 WAN interface connecting to the internet
- extended ACL outbound on R2 S0/0/1
- extended ACLs inbound on R1 G0/0 and G0/1

112. A network administrator has been tasked with creating a disaster recovery plan. As part of this plan, the administrator is looking for a backup site for all of the data on the company servers. What service or technology would support this requirement?

- virtualization
- data center
- software defined networking
- dedicated servers

113. Refer to the exhibit. What method can be used to enable an OSPF router to advertise a default route to neighboring OSPF routers?



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Final Exam Answers 22

- Use a static route pointing to the ISP and redistribute it.
- Use the default-information originate command on ISP.
- Use the redistribute static command on R0-A.
- **Use the default-information originate command on R0-A.**
- Use the redistribute static command on ISP.