Cisco

CCNA

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PRINTABLES

PRINTABLE PRACTICE QUESTIONS

QUESTIONS, ANSWERS, AND DETAILED EXPLANATIONS IN AN EASY-TO-USE PRINTABLE FORMAT

LearnSmart™

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CCNA (640-802) Printables

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Chapter 1
Describe how a network works

1. What is the maximum acceptable cable length of Ethernet UTP cables? Select the best answer.

   - ❍ A. 10 meters
   - ❍ B. 50 meters
   - ❍ C. 100 meters
   - ❍ D. 200 meters
   - ❍ E. 500 meters

   Find the Answer p. 142

2. Which of the following technologies is used for media access in Ethernet networks? Select the best answer.

   - ❍ A. Passing token
   - ❍ B. Floating token
   - ❍ C. CSMA/CA
   - ❍ D. CSMA/CD
   - ❍ E. Ad hoc

   Find the Answer p. 142

3. At which OSI reference model layer does a hub operate? Select the best answer.

   - ❍ A. Layer 1
   - ❍ B. Layer 2
   - ❍ C. Layer 3
   - ❍ D. Layer 4
   - ❍ E. Layer 5

   Find the Answer p. 142

4. Which of the following describes the purpose of the ARP protocol? Select the best answer.

- ❍ A. It is used for reliable data transmission.
- ❍ B. It is used to address network applications.
- ❍ C. It is used to map network layer addresses to MAC addresses.
- ❍ D. It is used for file transfers.
- ❍ E. It is not used in today's networks.

Find the Answer p. 142

5. When performing troubleshooting at the data-link layer, which of the following protocols and technologies do you need to include? Select the three best answers.

- ❑ A. IEEE 802.2
- ❑ B. IEEE 802.3
- ❑ C. IEEE 802.5
- ❑ D. IP
- ❑ E. ICMP

Find the Answer p. 142

6. Which of the following IEEE standards specifies the operation of the Spanning Tree Protocol? Select the best answer.

- ❍ A. 802.1D
- ❍ B. 802.1x
- ❍ C. 802.1Q
- ❍ D. 802.3
- ❍ E. 802.11

Find the Answer p. 142

7. You are designing an internetwork. You are concerned about security on WAN links, so you want to use a data-link protocol that provides for authentication. Which protocol will you use? Select the best answer.

- ❍ A. HDLC
- ❍ B. GRE
- ❍ C. Frame Relay
- ❍ D. PPP
- ❍ E. SLIP

Find the Answer p. 142

8. Which of the following standards specifies Ethernet characteristics and operation? Select the best answer.

- ❍ A. 802.1
- ❍ B. 802.2
- ❍ C. 802.3
- ❍ D. 802.5
- ❍ E. 802.11

Find the Answer p. 142

9. At which OSI reference model layer does a bridge operate? Select the best answer.

- ❍ A. Layer 1
- ❍ B. Layer 2
- ❍ C. Layer 3
- ❍ D. Layer 4
- ❍ E. Layer 5

Find the Answer p. 142

10. What functionality does a switch port in listening state have? Select the two best answers.

- ❑ A. It is forwarding frames.
- ❑ B. It is not forwarding frames.
- ❑ C. It is trying to learn IP addresses of neighbor devices.
- ❑ D. It is listening for BPDUs to find out whether it would create a loop.
- ❑ E. It is listening to MAC addresses and collecting them in its transparent switching table.

Find the Answer p. 142

11. What is the role of the root bridge in the Spanning Tree Protocol? Select the best answer.

- ❍ A. This is the bridge/switch that is used to connect the switched LAN to the WAN.
- ❍ B. It serves as the root of a loop-free path to every switch in STP.
- ❍ C. The root bridge is the one that is used to create VLANs.
- ❍ D. The root bridge is a bridge that has a direct connection to every other switch/bridge in the internetwork.
- ❍ E. The root bridge is running a dynamic routing protocol.

Find the Answer p. 142

12. One of the fields of the TCP header is called Window. What does it specify? Select the best answer.

- ❍ A. The Windows version of the sending host.
- ❍ B. The Windows version of the receiving host.
- ❍ C. The receive buffer of the sending host.
- ❍ D. The send buffer of the receiving host.
- ❍ E. It specifies a time window, during which the frame can be transmitted over the network.

Find the Answer p. 142

13. What is the main function of the OSI presentation layer? Select the best answer.

- ❍ A. Put signals on the wire
- ❍ B. Generate and use user data
- ❍ C. Guaranteed delivery and application communication
- ❍ D. Addressing and routing
- ❍ E. Negotiate data format and representation

Find the Answer p. 142

14. What tools can you use to troubleshoot the OSI network layer? Select the three best answers.

- ❑ A. Protocol Analyzer
- ❑ B. traceroute
- ❑ C. ping
- ❑ D. Cable Tester
- ❑ E. TDR

Find the Answer p. 142

15. You are troubleshooting a problem with LMI. Which commands can you use to display LMI configuration and statistics for each PVC? Select the two best answers.

- ❑ A. show lmi
- ❑ B. show interface serial
- ❑ C. show frame-relay pvc
- ❑ D. show frame-relay svc
- ❑ E. show frame-relay lmi

Find the Answer p. 142

16. You are troubleshooting a problem with outgoing RIP updates on one of your routers, and you want to be able to monitor the RIP packets as they are being sent to neighbor routers. Which command will you use? Select the best answer.

- ❍ A. debug ip rip
- ❍ B. show ip rip
- ❍ C. show running-config
- ❍ D. debug ip protocols
- ❍ E. debug ip metrics

Find the Answer p. 142

17. Which of the following pieces of information does a BPDU contain? Select the three best answers.

- ❑ A. IP address of the switch.
- ❑ B. The hostname of the switch.
- ❑ C. The Bridge ID of the sending switch.
- ❑ D. The spanning tree path cost to the root bridge.
- ❑ E. Hello, forward-delay, and max-age protocol timers.

Find the Answer p. 142

18. You are designing a LAN. As a large amount of broadcast traffic is expected within this LAN, you need to create a number of broadcast domains. Which device would you use? Select the best answer.

- ❍ A. Hub
- ❍ B. Repeater
- ❍ C. Bridge
- ❍ D. Router
- ❍ E. Proxy

Find the Answer p. 142

19. You are designing an IP internetwork. You are considering the usage of split horizon. What does this mean? Select the best answer.

- ❍ A. You will configure your routers to use separate routing protocols.
- ❍ B. You will configure your routers to use the same routing protocol, but split routers into separate autonomous systems.
- ❍ C. Routers in one part of your network will be administratively restricted to communicate with routers in another part of your network.
- ❍ D. Routers will not advertise a route out of the interface through which they learned it.
- ❍ E. Routers will not advertise routes to the Internet.

Find the Answer p. 142

20. You are designing an internetwork. You need to use a protocol that provides for logical interfaces over an existing serial connection. Which protocol will you use? Select the best answer.

- ❍ A. PPP
- ❍ B. HDLC
- ❍ C. SLIP
- ❍ D. XMODEM
- ❍ E. Frame Relay

Find the Answer p. 142

21. Which of the following standards specifies Token Ring characteristics and operation? Select the best answer.

- ❍ A. 802.1
- ❍ B. 802.2
- ❍ C. 802.3
- ❍ D. 802.5
- ❍ E. 802.11

Find the Answer p. 142

22. At which OSI reference model layer does a router operate? Select the best answer.

- ❍ A. Layer 1
- ❍ B. Layer 2
- ❍ C. Layer 3
- ❍ D. Layer 4
- ❍ E. Layer 5

Find the Answer p. 142

23. Which of the following protocols are link-state protocols? Select the two best answers.

- ❑ A. RIP
- ❑ B. RTMP
- ❑ C. IGRP
- ❑ D. OSPF
- ❑ E. IS-IS

Find the Answer p. 142

24. What is the maximum number of hops to a destination that a RIP router can support? Select the best answer.

- ❍ A. 8
- ❍ B. 10
- ❍ C. 15
- ❍ D. 24
- ❍ E. 31

Find the Answer p. 143

25. Which of the following statements best describes an OSPF ABR? Select the best answer.

- ❍ A. An ABR is a router that is used to redistribute other routing protocols into OSPF.
- ❍ B. An ABR is a router that is internal to a non-backbone area.
- ❍ C. An ABR is a router that is internal to the OSPF backbone.
- ❍ D. An ABR is an OSPF router that is connected to both an OSPF, and a non-OSPF network.
- ❍ E. An ABR is an OSPF router that is connected to multiple areas.

Find the Answer p. 143

26. Which of the following protocols uses a three-way handshake mechanism to establish sessions? Select the best answer.

- ❍ A. IP
- ❍ B. ARP
- ❍ C. TCP
- ❍ D. UDP
- ❍ E. GRE

Find the Answer p. 143

27. The IP header contains a field called Type of Service (ToS). What is it used for? Select the best answer.

- ❍ A. The Type of Service (ToS) field specifies the UDP port, to which the packet is being sent.
- ❍ B. The Type of Service (ToS) field specifies the UDP port to which the packet is being sent.
- ❍ C. It is used by upper-layer services and applications to store arbitrary, service specific information.
- ❍ D. This field is used as a Quality of Service marker for the packet.
- ❍ E. This packet field is not used in the present version of the IP protocol.

Find the Answer p. 143

28. Which of the following are used by a switch to build the switching table? Select the best answer.

- ❍ A. The source address of unicast frames.
- ❍ B. The destination address of unicast frames.
- ❍ C. The Type/Length field of received frames.
- ❍ D. The destination IP address of received frames.
- ❍ E. The Source IP address of received frames.

Find the Answer p. 143

29. What is the main function of the OSI transport layer? Select the best answer.

- ❍ A. Provide media access and frame format
- ❍ B. Generate and use user data
- ❍ C. Guaranteed delivery and application communication
- ❍ D. Addressing and routing
- ❍ E. Negotiate data format and representation

Find the Answer p. 143

30. While performing troubleshooting at the transport layer, which of the following protocols and technologies do you need to include? Select the two best answers.

- ❑ A. IEEE 802.2
- ❑ B. IEEE 802.5
- ❑ C. IP
- ❑ D. UDP
- ❑ E. TCP

Find the Answer p. 143

31. What tools can you use to troubleshoot the OSI data-link layer? Select the two best answers.

- ❑ A. Digital Multimeter
- ❑ B. Protocol Analyzer
- ❑ C. ping
- ❑ D. show cdp neighbors
- ❑ E. Application specific tools

Find the Answer p. 143

32. You are connecting a workstation that uses a 100BaseTX compliant Ethernet adapter to one of your switches. You are using existing cabling. Which cable category is required for this connection? Select the best answer.

- ❍ A. Category 1
- ❍ B. Category 2
- ❍ C. Category 3
- ❍ D. Category 4
- ❍ E. Category 5

Find the Answer p. 143

33. You are designing an internetwork. You consider bandwidth as the single reliable metric for routes in your network. In order to minimize configuration when new equipment is added to the network, metric calculations by routing protocols must be based on bandwidth by default. Which protocol will you choose? Select the best answer.

- ❍ A. RIP v.1
- ❍ B. RIP v.2
- ❍ C. IGRP
- ❍ D. EIGRP
- ❍ E. OSPF

Find the Answer p. 143

34. You are designing an internetwork and you intend to use poison reverse. What does this imply? Select the best answer.

- ❍ A. You will negate erroneous configurations in the configuration archive.
- ❍ B. You want to allow older technologies within your internetwork.
- ❍ C. You won't be allowed to return defective equipment to the vendor.
- ❍ D. Whenever a router learns a route, it will advertise it as unreachable on the interface from which the packet was received.
- ❍ E. Routers will perform reverse resolution of IP addresses to host addresses.

Find the Answer p. 143

35. At which of the following OSI reference model layers can a multi-layer switch operate? Select the two best answers.

- ❑ A. Layer 1
- ❑ B. Layer 2
- ❑ C. Layer 3
- ❑ D. Layer 5
- ❑ E. Layer 7

Find the Answer p. 143

36. Which of the following authentication protocols are commonly used for PPP authentication? Select the two best answers.

- ❑ A. NTLM
- ❑ B. Kerberos
- ❑ C. PAP
- ❑ D. ABAP
- ❑ E. CHAP

Find the Answer p. 143

37. Which of the following statements about distance vector protocols and link-state protocols is true? Select the best answer.

- ❍ A. Distance vector protocols converge faster than link-state protocols.
- ❍ B. Link state protocols converge faster than distance vector protocols.
- ❍ C. Link state protocols are less CPU intensive than distance vector protocols.
- ❍ D. Link state protocols use more bandwidth than distance vector protocols, even when there are no topology changes.
- ❍ E. Link state protocols advertise their routing tables across the network.

Find the Answer p. 143

38. Which of the following technologies are used by the RIP protocol for stability and routing loop avoidance? Select the two best answers.

- ❑ A. Neighbor state tables
- ❑ B. Feasible distance calculations
- ❑ C. Split horizon
- ❑ D. Hold down timers

Find the Answer p. 143

39. Which of the following protocols rely upon UDP for data delivery? Select the three best answers.

- ❑ A. HTTP
- ❑ B. FTP
- ❑ C. TFTP
- ❑ D. DNS
- ❑ E. SNMP

Find the Answer p. 143

40. What is the role of the ICMP protocol? Select the best answer.

- ❍ A. The ICMP protocol is used for reliable packet delivery.
- ❍ B. The ICMP protocol is used to map network layer IP addresses to data-link layer addresses.
- ❍ C. The ICMP protocol is used for name resolution.
- ❍ D. The ICMP protocol is used by multicast applications.
- ❍ E. The ICMP protocol has diagnostic and control functions within the TCP/IP family.

Find the Answer p. 143

41. What is the main function of the OSI physical layer? Select the best answer.

- ❍ A. It puts signals on the wire.
- ❍ B. It provides media access and frame format.
- ❍ C. It provides guaranteed delivery and application communication.
- ❍ D. It provides addressing and routing.
- ❍ E. It negotiates data format and representation.

Find the Answer p. 143

42. What tools can you use to troubleshoot the OSI physical layer? Select the three best answers.

- ❑ A. Digital Multimeter
- ❑ B. Protocol Analyzer
- ❑ C. Cable Tester
- ❑ D. TDR
- ❑ E. ping

Find the Answer p. 143

43. You have a customer that requires the utmost in network redundancy between their branch offices and headquarters. There must be multiple paths for network traffic in the event of a link failure. Which network topology would you recommend?

- ❍ A. Star
- ❍ B. Full mesh
- ❍ C. Partial mesh
- ❍ D. Bus

Find the Answer p. 143

44. At what layer of the OSI do TCP and UDP function? Select the best answer.

- ❍ A. Presentation Layer
- ❍ B. Physical Layer
- ❍ C. Application Layer
- ❍ D. Transport Layer
- ❍ E. Data Link Layer
- ❍ F. Network Layer

Find the Answer p. 143

45. You are a consultant for a large brokerage firm that is designing a new network. They have 2 main trading sites and 10 branch offices. Redundancy is required between the main sites and for one of the branches, which serves as a secondary backup site. They are very cost-conscious. Which network topology would you recommend?

- ❍ A. Star
- ❍ B. Full mesh
- ❍ C. Partial mesh
- ❍ D. Bus

Find the Answer p. 143

46. Which of the following cabling standards would have a maximum range of 100 m? Select the best answer.

- ❍ A. 10Base5
- ❍ B. 10Base2
- ❍ C. 100BaseT
- ❍ D. 100BaseFX
- ❍ E. 1000BaseZX

Find the Answer p. 143

47. A customer is having issues with their mail server, and they utilize POP. What protocol and port number would you need to examine in the traffic stream? Select the best answer.

- ❍ A. TCP, 119
- ❍ B. TCP, 23
- ❍ C. UDP, 110
- ❍ D. UDP, 69
- ❍ E. TCP, 110

Find the Answer p. 143

48. Which of the following cabling standards would have a maximum range of 400 m? Select the best answer.

- ❍ A. 10Base5
- ❍ B. 10Base2
- ❍ C. 100BaseT
- ❍ D. 100BaseFX
- ❍ E. 1000BaseZX

Find the Answer p. 143

49. Which WAN technology would be an example of a cell-switching connection? Select the best answer.

- ❍ A. Frame Relay
- ❍ B. ISDN
- ❍ C. Asynchronous Transfer Mode (ATM)
- ❍ D. X.25

Find the Answer p. 144

50. Which WAN technology would be an example of a packet-switching transport method? Choose TWO.

- ❑ A. Frame Relay
- ❑ B. ISDN
- ❑ C. Asynchronous Transfer Mode (ATM)
- ❑ D. X.25

Find the Answer p. 144

51. Which devices can be used to separate collision domains? Choose TWO.

- ❑ A. Hubs
- ❑ B. Repeaters
- ❑ C. Switches
- ❑ D. Bridges
- ❑ E. Routers

Find the Answer p. 144

52. You need to connect several branch offices to a headquarters site, and need the most reliable, cost-effective solution. Which is the best WAN connection offering from the following choices? Choose the best answer.

- ❍ A. Dedicated line
- ❍ B. Circuit switched
- ❍ C. Packet switched
- ❍ D. Wireless

Find the Answer p. 144

53. Choose the correct statement about layer 2/3 addressing. Select the best answer.

- ❍ A. The MAC address is a layer 1 physical address that is 48 bits in length. The layer 3 address is a 32-bit logical address.
- ❍ B. The Data Link Layer address (layer 2) is known as the MAC address, and is a 48-bit, unique physical address. The Network Layer address (layer 3) is a 32-bit logical address assigned by the network administrator.
- ❍ C. IP addresses are 32-bit, Data Link Layer addresses. Network addresses are "burnt-in" addresses on network interface cards.
- ❍ D. Both Network and Data Link Layer addresses are unique to one device and are "burnt in" on the network interface card.

Find the Answer p. 144

54. What is the correct sequence for data encapsulation in relation to the OSI model? Select the best answer.

- ❍ A. Data->Segments->Packets->Datagrams->Bits->Frames
- ❍ B. Bits->Frames->Datagrams->Packets->Data->Segments
- ❍ C. Segments->Data->Packets->Datagrams->Bits->Frames
- ❍ D. Data->Segments->Packets->Datagrams->Frames->Bits

Find the Answer p. 144

55. Which of the following are connection-oriented protocols? Choose TWO.

- ❑ A. UDP
- ❑ B. TCP
- ❑ C. IPX
- ❑ D. IP
- ❑ E. SPX

Find the Answer p. 144

56. Which of the following statements are correct about network segmentation with bridges? Choose TWO.

- ❑ A. Bridges act as intelligent network devices, forwarding traffic based on layer 3 addresses.
- ❑ B. Bridges are layer 2 "filters" that keep local traffic local, and forward all other traffic.
- ❑ C. Bridges allow open traffic flow, and perform no segmentation.
- ❑ D. When a destination address is not known to a bridge, it "floods" the traffic to all segments.

Find the Answer p. 144

57. Which of the following are functions of the Transport Layer in the OSI model? Choose THREE.

- ❑ A. Assigns upper-layer application identifiers known as port numbers
- ❑ B. Provides congestion control
- ❑ C. Associates logical addresses with the source and destination nodes
- ❑ D. Ensures retransmission of dropped or lost packets

Find the Answer p. 144

58. Frame Relay operates at which layer of the OSI Model? Choose TWO.

- ❑ A. Network
- ❑ B. Data Link
- ❑ C. Physical
- ❑ D. Transport

Find the Answer p. 144

59. Which statements about half- and full-duplex are true? Choose THREE.

- ❑ A. Half-duplex transmissions are prone to collisions.
- ❑ B. All network devices support both transmission modes.
- ❑ C. Hub-based networks must use half-duplex mode in order to detect collisions.
- ❑ D. Full-duplex links have their collision detect circuits disabled.
- ❑ E. Half-duplex mode allows 100% efficiency over Ethernet.

Find the Answer p. 144

60. Choose the statements that describe the MAC address. Choose TWO.

- ❑ A. 48 bits in length.
- ❑ B. The first four hexadecimal digits are the manufacturer's code.
- ❑ C. Layer 1 address.
- ❑ D. The address is "burnt in" by the manufacturer.
- ❑ E. The address can be set by the administrator.

Find the Answer p. 144

61. The technical industry uses the OSI layered model for several reasons. Some advantages of the layered model are: Choose THREE.

- ❑ A. It ensures that all network devices never break.
- ❑ B. It provides a simple view of the networking elements.
- ❑ C. The model ensures that all network drivers are interchangeable with other vendors.
- ❑ D. The model provides a standardized network "view" for vendors.
- ❑ E. It allows a modular approach to network functionality.

Find the Answer p. 144

62. Which of the following are included in the UDP header? Choose THREE.

- ❑ A. Source port
- ❑ B. Destination port
- ❑ C. Sequence number
- ❑ D. Checksum
- ❑ E. Window size

Find the Answer p. 144

63. You are consulting for a large insurance company, and they are redesigning their outdated network. They currently have 500 Windows-based hosts operating on a single network of hubs and switches. What would your first step be to improve the overall performance of the network? Select the best answer.

- ❍ A. Move the foundation to hub-based technologies.
- ❍ B. Split all the departments to their own switch and separate them with their own network.
- ❍ C. Switch all the hosts to a different operating system.
- ❍ D. Implement routing and subnetworks to create individual broadcast domains.

Find the Answer p. 144

64. At which layer in the Cisco Hierarchical Model would you place the fastest, most powerful switches? Choose the best answer.

- ❍ A. Access Layer
- ❍ B. Distribution Layer
- ❍ C. Core Layer
- ❍ D. Routing Layer

Find the Answer p. 144

65. At which layer in the Cisco Hierarchical Model does Cisco suggest you should place access lists and QoS for optimal performance? Choose the best answer.

- ❍ A. Access Layer
- ❍ B. Distribution Layer
- ❍ C. Core Layer
- ❍ D. Switching Layer

Find the Answer p. 144

66. You are consulting for a large law firm with three branch offices. Their headquarters occupies three floors and they have 150 users per floor. All the servers reside on the top floor, and users are constantly transferring large case files to and from them. The branch offices are backed up over the WAN, and they also connect to all the Headquarters servers. What choices below would provide an optimal network configuration? Choose TWO.

- ❑ A. WAN: ISDN
- ❑ B. WAN: Dedicated T1
- ❑ C. LAN: Core Layer, Cisco 6500 Series switches; Access/Distribution, Cisco 3500 Series connected through GB trunks
- ❑ D. LAN: Core Layer, Cisco 3500 Series switches; Access/Distribution, Cisco 6500 Series connected through GB trunks

Find the Answer p. 144

67. You are having network issues, and need to perform troubleshooting at layer 3. What utilities can you use to accomplish this? Choose TWO.

- ❑ A. Ping
- ❑ B. Traceroute
- ❑ C. Telnet
- ❑ D. Nslookup

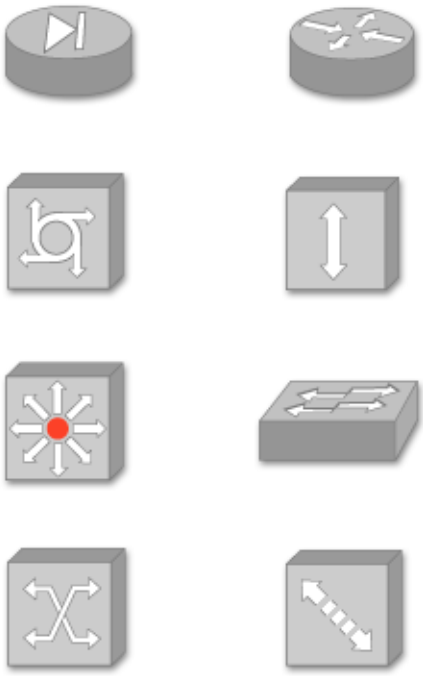
Find the Answer p. 144

68. You are having network issues, and need to perform troubleshooting at layer 4. What utilities can you use to accomplish this? Select the correct answer.

- ❍ A. Ping
- ❍ B. Traceroute
- ❍ C. Telnet
- ❍ D. Nslookup

Find the Answer p. 144

69. Examine the items below. Which represents a PIX firewall?



Detailed Explanation p. 192

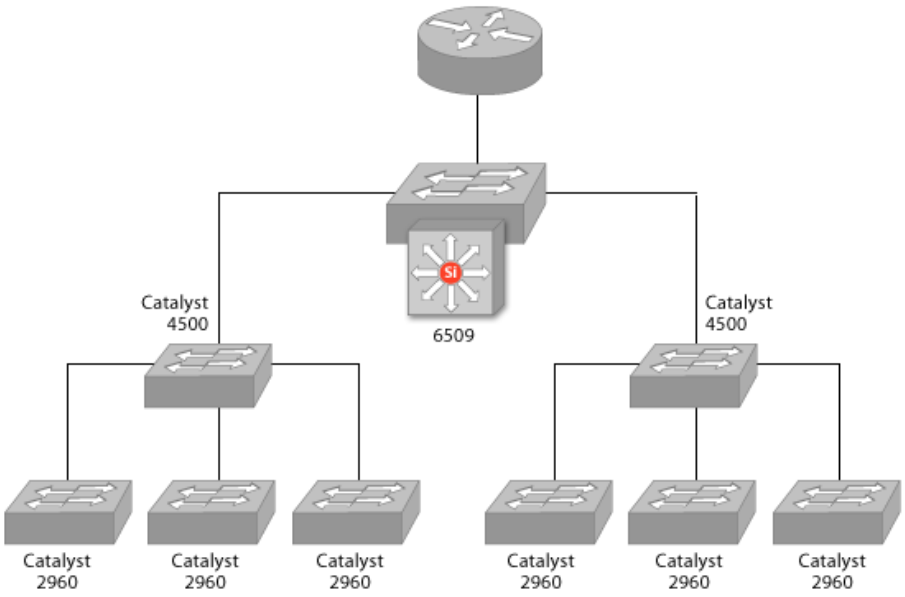
70. Examine the example below, and drag and drop the appropriate port number in for each protocol.

A. 443 B. 53 C. 25 D. 80

SMTP DNS HTTP HTTPS

Detailed Explanation p. 193

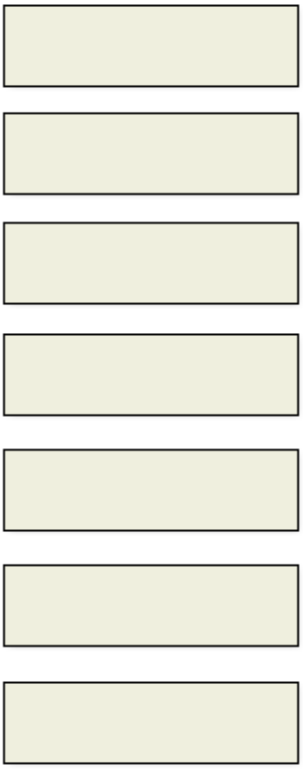
71. Examine the network diagram and select the most appropriate device(s) on which to utilize access lists and QoS. Click on the device(s).



Detailed Explanation p. 193

72. When one host transmits data across a network to another host, information is processed through the OSI stack. Align the OSI layers in the correct order in which a destination host processes network traffic with the first layer processed on the top.

A. Session Layer
B. Network Layer
C. Presentation Layer
D. Transport Layer
E. Application Layer
F. Physical Layer
G. Data Link Layer



Detailed Explanation p. 194

73. You are a consultant working with a customer that is having network issues. Performance is slow, and backups are taking way too long and never finish. Look at the existing topology, and determine which device will improve network performance and provide flexibility for future network upgrade plans.

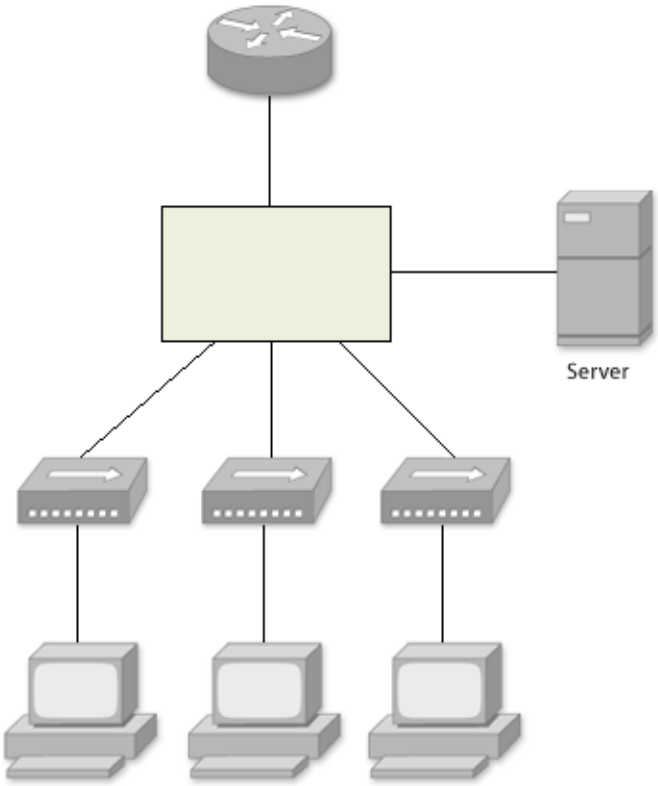
A. 

B. 

C. 

D. 

E. 



Detailed Explanation p. 194

Chapter 2
Configure, verify & troubleshoot a switch with VLANs & interswitch communications

1. You are implementing a switch as part of a VTP domain. What VTP mode should you configure to make the switch manage VLAN configuration for other switches within the VTP domain? Select the best answer.

   - ❍ A. VTP Client
   - ❍ B. VTP Server
   - ❍ C. VTP Transparent
   - ❍ D. VTP Host
   - ❍ E. None of the options listed

   Find the Answer p. 145

2. Which of the following is NOT a valid Spanning Tree Protocol port state? Select the best answer.

   - ❍ A. Blocking
   - ❍ B. Listening
   - ❍ C. Checking
   - ❍ D. Learning
   - ❍ E. Forwarding

   Find the Answer p. 145

3. What information is included in BPDUs sent by bridges and switches as part of their STP operations? Select the four best answers.

- ❑ A. Values for the hello, forward delay, and max-age protocol timers
- ❑ B. The bridge ID of the sending switch
- ❑ C. The spanning-tree path cost to the root
- ❑ D. Its DNS name
- ❑ E. The ID of the root bridge

Find the Answer p. 145

4. Which of the following components is used by a layer 2 switch when it is forwarding packets? Select the best answer.

- ❍ A. A routing table
- ❍ B. ARP table
- ❍ C. A Frame Relay mapping table
- ❍ D. CAM table
- ❍ E. LAN table

Find the Answer p. 145

5. You are troubleshooting a connectivity problem on a Catalyst 2950 switch. You want to display current port status and VLAN assignment. Which single command will you use? Select the best answer.

- ❍ A. show port status
- ❍ B. show interface status
- ❍ C. show switch status
- ❍ D. show running-config
- ❍ E. show ether-channel

Find the Answer p. 145

6. You are troubleshooting a spanning-tree problem on one of your Catalyst 2950 switches. Which command will you use to see a list of forwarding ports? Select the best answer.

- ❍ A. show spanning-tree
- ❍ B. show spanning-tree forwarding
- ❍ C. show spanning-tree inconsistentports
- ❍ D. show port forwarding
- ❍ E. show running-config

Find the Answer p. 145

7. You are implementing a switch as part of a VTP domain. What VTP mode should you configure to make the switch receive VLAN configurations from another switch only? Select the best answer.

- ❍ A. VTP Client
- ❍ B. VTP Server
- ❍ C. VTP Transparent
- ❍ D. VTP Listener
- ❍ E. None of the options listed

Find the Answer p. 145

8. Which of the following statements is true about the difference between store-and-forward switching and cut-through switching? Select the best answer.

- ❍ A. Store-and-forward switching collects frames of one and the same protocol, stores them, and then sends out stored frames, one protocol after the other. Cut-through switching does not do that.
- ❍ B. Store-and-forward switching is used to store and forward packets by conversations, while cut-through interrupts conversations.
- ❍ C. Store-and-forward switching is used in Ethernet environments, while Cut-through switching is used in Token Ring.
- ❍ D. Store-and-forward switching waits for the reception of the entire frame before forwarding the frame on the outgoing interface. Cut-through switching forwards the frame right after enough information about its destination is available.
- ❍ E. Cut-through switching is designed to prevent giant frames from entering the network, and it cuts them down to the permitted size. Store-and-forward does not prevent giant frames.

Find the Answer p. 145

9. You are troubleshooting a trunking problem with a Catalyst 2950 switch. You want to display current port trunking status and trunking encapsulation. Which single command will you use? Select the best answer.

- ❍ A. show interfaces trunk
- ❍ B. show interface status
- ❍ C. show switch status
- ❍ D. show running-config
- ❍ E. show ether-channel

Find the Answer p. 145

10. Which of the following commands can be used to configure trunking on a Cisco Catalyst switch port? Select the three best answers.

- ❑ A. switchport mode dynamic
- ❑ B. switchport mode dynamic desirable
- ❑ C. switchport mode 802.1q
- ❑ D. switchport mode trunk
- ❑ E. switchport mode access

Find the Answer p. 145

11. You are implementing VTP on a switch. What VTP mode should you configure on the switch to make the switch manage its own VLAN configuration without being influenced, or influencing the configuration of other switches? Select the best answer.

- ❍ A. VTP Client
- ❍ B. VTP Server
- ❍ C. VTP Transparent
- ❍ D. VTP Independent
- ❍ E. None of the options listed

Find the Answer p. 145

12. What functionality does a switch port in listening state have? Select the best answer.

- ❍ A. It is forwarding frames.
- ❍ B. It is not forwarding frames.
- ❍ C. It is trying to learn IP addresses of neighbor devices.
- ❍ D. It is selectively forwarding frames.
- ❍ E. It is listening for MAC addresses and collecting them in its transparent switching table.

Find the Answer p. 145

13. You want a specific switch within your internetwork to always play the role of an STP root bridge. What priority should you set for this switch? Select the best answer.

- ❍ A. 8192
- ❍ B. 16384
- ❍ C. 32768
- ❍ D. 49152
- ❍ E. 61440

Find the Answer p. 145

14. Why would you use the switchport nonegotiate command on a switch port? Select the best answer.

- ❍ A. To disable the port
- ❍ B. To disable link speed autonegotiation on this port
- ❍ C. To disable dynamic trunking configuration on this port
- ❍ D. To configure the switch to use ISL instead of 802.1q
- ❍ E. To configure the switch to use 802.1q instead of ISL

Find the Answer p. 145

15. Which of the following statements about VTP domains is true? Select the best answer.

- ❍ A. By default, switches belong to the no-management domain.
- ❍ B. On a VTP server, you can create and modify VLANs while the switch is in the no-management domain.
- ❍ C. The VTP protocol is an IEEE standard.
- ❍ D. VTP messages are sent over each switch port.
- ❍ E. The VTP protocol has only a single version.

Find the Answer p. 145

16. You manually assigned your layer 2 switch an IP address and a subnet mask. However, you will be managing your switch from a remote network. Which command can you use to assign the switch a default gateway? Select the best answer.

- ❍ A. ip address
- ❍ B. ip default-gateway
- ❍ C. router rip
- ❍ D. gateway-address
- ❍ E. ip address dhcp

Find the Answer p. 145

17. You are designing a LAN. Which of the following are valid reasons for using a layer 2 switch in a LAN? Select the best answer.

- ❍ A. To use separate broadcast domains
- ❍ B. To create separate collision domains
- ❍ C. To create separate DNS domains
- ❍ D. To provide for high performance routing
- ❍ E. To provide for efficient WAN connectivity

Find the Answer p. 145

18. Which of the following is an advantage of cut-through switching in comparison to store-and-forward switching? Select the best answer.

- ❍ A. Cut-through switching is able to check frame integrity.
- ❍ B. Cut-through switching is able to switch IP packets.
- ❍ C. Cut-through switching is faster.
- ❍ D. Cut-through switching is able to detect frames with errors in their payload.
- ❍ E. Cut-through switching is compatible with third-party devices.

Find the Answer p. 145

19. Which of the following Spanning Tree Protocol states represents a port status that would allow the port to send and receive data frames? Select the best answer.

- ❍ A. Blocking
- ❍ B. Listening
- ❍ C. Transferring
- ❍ D. Learning
- ❍ E. Forwarding

Find the Answer p. 145

20. What might be the reason for a switch port being in STP blocking state? Select the best answer.

- ❍ A. The port (interface) hardware is faulty.
- ❍ B. Too many collisions have occurred on the segment to which the port is connected.
- ❍ C. The port is part of a FastEtherchannel.
- ❍ D. A data-link loop has been detected in the Internetwork.
- ❍ E. The port has detected a duplicate MAC address in the Internetwork.

Find the Answer p. 145

21. You are troubleshooting a VTP-related problem. You want to check the VTP mode a switch is configured for. Which command will you use? Select the best answer.

- ❍ A. show running-config
- ❍ B. show dtp
- ❍ C. show interface status
- ❍ D. show vlan
- ❍ E. show vtp status

Find the Answer p. 145

22. Which of the following Catalyst 2950 commands will show you the current root bridge for each specific VLAN? Select the best answer.

- ❍ A. show root-bridge
- ❍ B. show vtp status
- ❍ C. show spanning-tree root
- ❍ D. show running-config
- ❍ E. show spanning-tree backbonefast

Find the Answer p. 145

23. Which of the following statements are true concerning different LAN switch forwarding technologies? Choose TWO.

- ❑ A. Store-and-forward switching does not perform a CRC to reduce latency.
- ❑ B. Cut-through switching immediately checks the destination address upon receiving a frame, and forwards it.
- ❑ C. Store-and-forward switching recieves the entire frame before forwarding.
- ❑ D. Cut-through switching performs a CRC on the frame immediately.

Find the Answer p. 145

24. What are the four Spanning Tree states in the order of operation? Select the best answer.

- ❍ A. Spanning, Learning, Forwarding, Blocking
- ❍ B. Election, Blocking, Learning, Forwarding
- ❍ C. Listening, Blocking, Learning, Forwarding
- ❍ D. Blocking, Listening, Learning, Forwarding

Find the Answer p. 146

25. Which of the following is not a benefit of VLAN technology? Choose the best answer.

- ❍ A. Improvement in performance and security
- ❍ B. Network segmentation
- ❍ C. Flexibility
- ❍ D. Physical segmentation

Find the Answer p. 146

26. Which commands are required to configure a basic VLAN on a single Catalyst switch? Choose TWO.

- ❑ A. Switch(config)# vlan 100
- ❑ B. Switch(config-vlan)#name Accounting
- ❑ C. Switch(config-if)#switchport access vlan 100
- ❑ D. Switch(config-if)#switchport mode trunk

Find the Answer p. 146

27. What is the main purpose of the VLAN Trunking Protocol (VTP)? Choose the best answer.

- ❍ A. VTP facilitates the propagation of VLAN information across switches.
- ❍ B. VTP tags all frames transmitted over a trunk link to identify frames for specific VLANs.
- ❍ C. VTP provides the ability to prevent loops within connected switches.
- ❍ D. VTP passes routing information between layer 3 switches.

Find the Answer p. 146

28. You have a five-switch network you are creating, and one of the switches will be in the lab for research and development. You do not want any of the changes made on the switch to affect any other switches, but want it to pass on information to other devices in the network. What type of VTP mode should be set for the switch? Select the best answer.

- ❍ A. Server Mode
- ❍ B. Client Mode
- ❍ C. Transparent Mode
- ❍ D. Silent Mode

Find the Answer p. 146

29. Your file server is having performance issues, and you notice that the interface is flapping. You suspect it is a duplex/speed mismatch, and auto-negotiation is not occurring. What commands would you use to troubleshoot the issue? Choose THREE.

- ❑ A. show interfaces
- ❑ B. show interfaces summary
- ❑ C. show logging
- ❑ D. show running-configuration
- ❑ E. show interfaces accounting

Find the Answer p. 146

30. You have some new users that have just been set up by the desktop group, and they cannot communicate with PCs or servers outside of their local subnet. You have checked the IP address and gateway, and they are configured correctly. Your network consists of multiple VLANs. What commands could you use to check the VLAN configuration of their ports? Select TWO.

- ❑ A. show vlan
- ❑ B. show interfaces
- ❑ C. show running-config
- ❑ D. show ip protocols

Find the Answer p. 146

31. Your backup server is experiencing poor network performance issues, and your nightly backups are not completing. The server is connected via a 100MB Ethernet to the switch, and you suspect there is a duplex mismatch. What commands would you use to troubleshoot the issue? Select THREE.

- ❑ A. show interfaces
- ❑ B. show interface counters
- ❑ C. show log
- ❑ D. show log history
- ❑ E. show interfaces status

Find the Answer p. 146

32. Which command below will show port number, port status, VLAN, duplex, and speed, and designate auto-negotiation? Select the best answer.

- ❍ A. show interfaces
- ❍ B. show interfaces status
- ❍ C. show interface stats
- ❍ D. show protocols

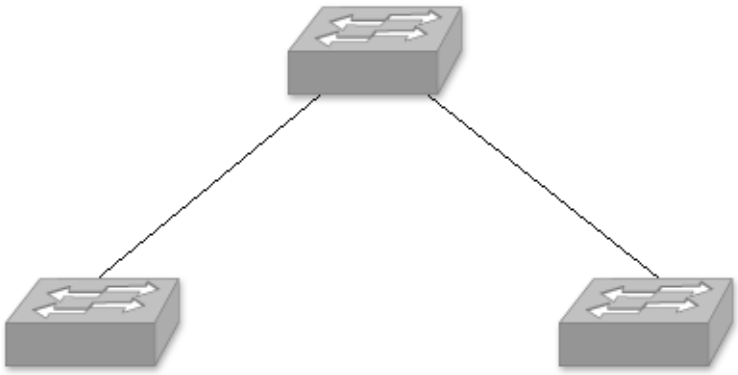
Find the Answer p. 146

33. You have connected three switches together, set up VLAN 100 on all of them, and have three separate hosts, one on each switch. The hosts are all in the 10.10.10.0/24 network. You have tried to ping each host, but cannot. What is the problem? Select the best answer.

- ❍ A. You must configure a default gateway to ping across switches.
- ❍ B. You must configure spanning tree to operate across the switches.
- ❍ C. You must set up a trunk between each switch and enable VTP.
- ❍ D. Set up Layer 3 switching, and the problem will resolve itself.

Find the Answer p. 146

Exhibit(s):



34. You are having trouble with the VLAN Trunking Protocol (VTP), and need to do some extensive troubleshooting. At what layer of the OSI model does VTP operate? Select the best answer.

- ❍ A. Layer 1
- ❍ B. Layer 3
- ❍ C. Layer 2
- ❍ D. Layer 6

Find the Answer p. 146

35. You have created your VLANs on your switch, and realize they are not being propagated to the other three switches in your network. You execute the "show VTP status" command (as shown in the exhibit). What is the problem? Select the best answer.

- ❍ A. VTP pruning is not enabled.
- ❍ B. The switch is in "Transparent" mode.
- ❍ C. There is no VTP domain name set.
- ❍ D. VTP v2 is not enabled.

Find the Answer p. 146

Exhibit(s):

```
SAC-CORE-SW01#sh vtp status
VTP Version                     : 2
Configuration Revision          : 16
Maximum VLANs supported locally : 1005
Number of existing VLANs        : 11
VTP Operating Mode              : Transparent
VTP Domain Name                 :
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x04 0x48 0x41 0x48 0xF8 0xD5 0x03 0x31
Configuration last modified by 200.1.1.146 at 5-17-93 00:47:23
Local updater ID is 200.1.1.146 on interface Vl1 (lowest numbered VLAN interface found)
```

36. You are troubleshooting VTP issues within your switched infrastructure, and need to check to ensure all the switches are configured in the same VTP domain. What commands can be used to check the setting? Choose TWO.

- ❑ A. show cdp neighbors
- ❑ B. show cdp neighbors detail
- ❑ C. show vtp status
- ❑ D. show vtp domain

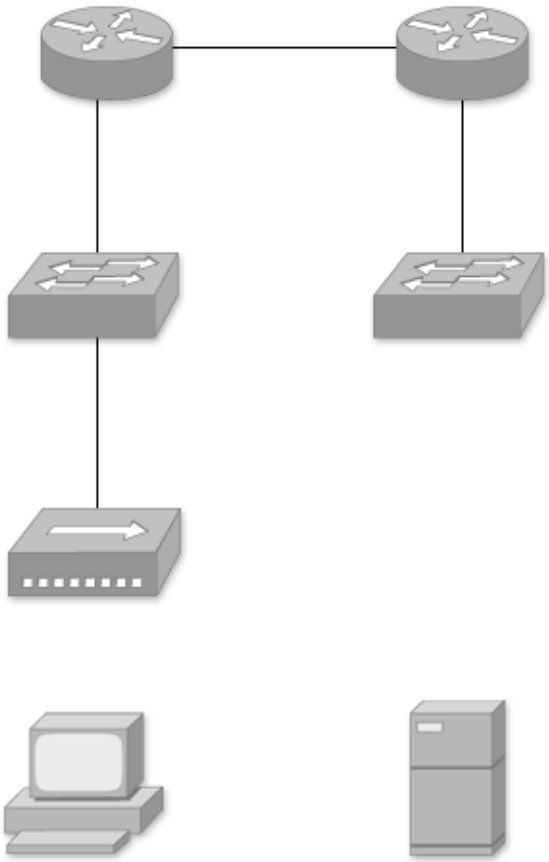
Find the Answer p. 146

37. Examine the network diagram. In the absence of VLANs, how many broadcast domains exist within this network?

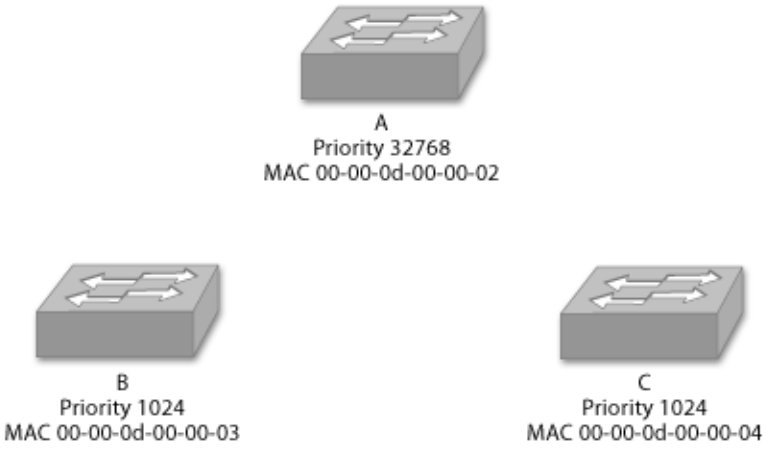
_____

Detailed Explanation p. 214

Exhibit(s):



38. Examine the following layer 2 switched network topology. Choose the switch that will be elected the root. Click on the root bridge.



Detailed Explanation p. 214

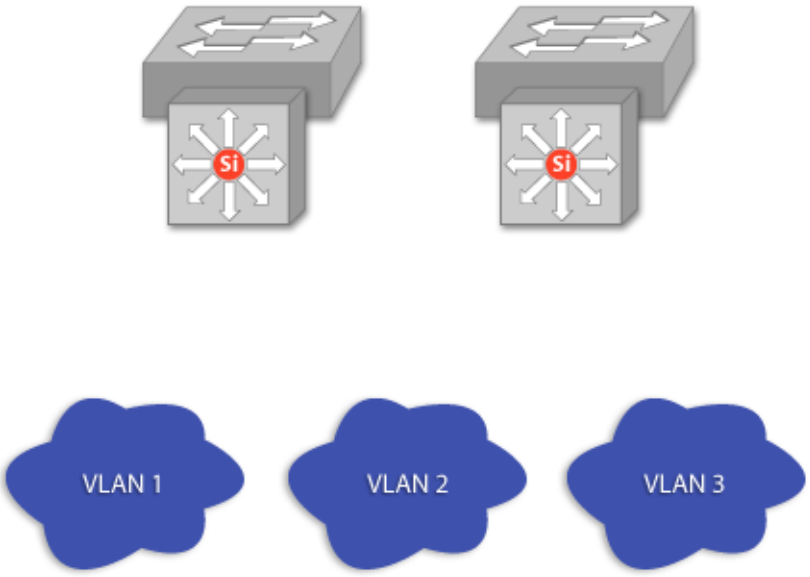
39. Examine the campus network in the exhibit. It utilizes two switches with three VLANs. All of the switches and devices are 100MB, Full Duplex. How many of each exist in the depicted network? Drag and drop the correct answers from the left to the right.

A. 3 B. 0

Collision Domains	
IP Subnets	
Broadcast Domains	

Detailed Explanation p. 214

Exhibit(s):



Chapter 3
Implement an IP addressing scheme & IP Services to meet network requirements in a medium-size Enterprise branch office network

1. You are troubleshooting a Frame Relay problem. You want to see the correspondence of DLCIs and IP addresses on a particular router. Which command can you use? Select the best answer.

   ❍ A. show frame-relay route
   ❍ B. show frame-relay traffic
   ❍ C. show frame-relay pvc
   ❍ D. show frame-relay map
   ❍ E. show arp

Find the Answer p. 147

2. You want to manually assign a router ID to an OSPF router. Which commands can you use to influence the router ID selection? Select the three best answers.

   ❑ A. router ospf 100
   ❑ B. area 0 virtual-link
   ❑ C. interface serial 0
   ip address 192.168.1.1
   ❑ D. interface loopback 0
   ip address 192.168.1.1
   ❑ E. router-id

Find the Answer p. 147

3. You need to configure RIP to support load balancing across five equal cost routes. Which Cisco IOS command will you use? Select the best answer.

- ❍ A. equal-cost 5
- ❍ B. maximum-paths 5
- ❍ C. default-information originate
- ❍ D. traffic-share
- ❍ E. version

Find the Answer p. 147

4. Which of the following commands is used to configure an IP address of 192.168.2.1 on a router interface? Select the best answer.

- ❍ A. ip-address 192.168.2.1
- ❍ B. ip secondary-address 192.168.2.1
- ❍ C. ip address 192.168.2.1 255.255.255.0
- ❍ D. ip route 192.168.2.1 255.255.255.255 loopback 0
- ❍ E. arp 192.168.2.1 0007.50ef.2c75 arpa

Find the Answer p. 147

5. Looking at your routing table, you see the following entry: O 192.168.2.0/24 [110/51] via 192.168.2.5, 01:52:55, FastEthernet0 What does the number 110 indicate? Select the best answer.

- ❍ A. The OSPF metric
- ❍ B. The number of paths
- ❍ C. The age of the entry, in seconds
- ❍ D. The administrative distance of the entry
- ❍ E. The number of hops to the destination

Find the Answer p. 147

6. Your organization is using 172.16.0.0/16 as its address space. Your IP address plan calls for 64 subnets (including the broadcast and network address). What network mask should you configure on hosts in your organization? Select the best answer.

- ❍ A. 172.16.64.0
- ❍ B. 255.255.64.0
- ❍ C. 255.255.252.0
- ❍ D. 255.255.254.0
- ❍ E. 255.255.255.0

Find the Answer p. 147

7. Which of the following LMI types can you implement on a Cisco router? Select the three best answers.

- ❑ A. ANSI
- ❑ B. Cisco
- ❑ C. Juniper
- ❑ D. Q.933a
- ❑ E. IETF

Find the Answer p. 147

8. Your company uses the 192.168.0.0/24 address space. You need to plan the address space for equal-sized subnets with no more than 62 users in each subnet. How many subnets do you have at your disposal? Select the best answer.

- ❍ A. 64
- ❍ B. 128
- ❍ C. 256
- ❍ D. 512
- ❍ E. 4

Find the Answer p. 147

9. You are designing an internetwork. Due to the variety of technologies and connectivity methods in use, you need to select routing protocols that support unequal cost path load balancing. Which protocols will you select? Select the two best answers.

- ❑ A. RIP v.1
- ❑ B. RIP v.2
- ❑ C. IGRP
- ❑ D. EIGRP
- ❑ E. OSPF

Find the Answer p. 147

10. Which of the following routing protocols are able to support unequal cost path load balancing? Select the two best answers.

- ❑ A. RIP v.1
- ❑ B. RIP v.2
- ❑ C. IGRP
- ❑ D. EIGRP
- ❑ E. OSPF

Find the Answer p. 147

11. Which of the following statements represent the difference between RIP version 1 and RIP version 2? Select the three best answers.

- ❑ A. RIP version 2 can use multicast packets.
- ❑ B. RIP version 2 is a link state protocol.
- ❑ C. RIP version 2 is not susceptible to routing loops.
- ❑ D. RIP version 2 provides routing update authentication.
- ❑ E. RIP version 2 carries network mask information and provides for VLSM.

Find the Answer p. 147

12. By default, the OSPF metric in Cisco routers is based on which of the following? Select the best answer.

- ❍ A. Delay
- ❍ B. Reliability
- ❍ C. Load
- ❍ D. Bandwidth
- ❍ E. Hop count

Find the Answer p. 147

13. Which of the following protocols provides a means for addressing specific applications on hosts, without providing reliability, flow control, or error recovery? Select the best answer.

- ❍ A. TCP
- ❍ B. UDP
- ❍ C. ICMP
- ❍ D. ARP
- ❍ E. PPP

Find the Answer p. 147

14. You are configuring OSPF on a Cisco router. Interface FastEthernet 0/0 belongs to the 192.168.1.0/24 IP subnet. Your router has multiple interfaces. You want only this interface to be included in the OSPF routing process. Which command would you issue? Select the best answer.

- ❍ A. network 192.168.1.0 255.255.255.0 area 0
- ❍ B. network 192.168.1.0 255.255.255.255 area 0
- ❍ C. network 192.168.1.0 0.0.0.255 area 0
- ❍ D. interface 192.168.1.0 area 0
- ❍ E. area 192.168.1.0

Find the Answer p. 147

15. One of your routers is configured for RIP broadcast updates. Which single command would allow you to reconfigure the router for RIP multicast updates? Select the best answer.

- ❍ A. router rip
- ❍ B. input-queue
- ❍ C. maximum-paths
- ❍ D. distribute-list
- ❍ E. Version 2

Find the Answer p. 147

16. You want to disable the CDP protocol on a particular interface without influencing the operations of the CDP protocol on other router interfaces. Which single command can you use? Select the best answer.

- ❍ A. cdp disable
- ❍ B. no cdp enable
- ❍ C. no cdp run
- ❍ D. shutdown cdp
- ❍ E. no ip cdp

Find the Answer p. 147

17. From one of your routers, you want to see a list of all the Cisco routers and switches on a particular connected segment and their corresponding IP addresses. Which single command can you use? Select the best answer.

- ❍ A. show devices
- ❍ B. show neighbors
- ❍ C. session
- ❍ D. name-connection
- ❍ E. show cdp neighbor detail

Find the Answer p. 147

18. Which Frame Relay encapsulation types can you implement on a Cisco router? Select the two best answers.

- ❑ A. ANSI
- ❑ B. IETF
- ❑ C. Cisco
- ❑ D. Q.933a
- ❑ E. Q.931

Find the Answer p. 147

19. Your organization is using the 198.133.219.0/24 address space for its Internet presence systems. The IP address plan provides for 4 subnets within the given address space. What network mask are these hosts in your organization using? Select the best answer.

- ❍ A. 255.255.255.0
- ❍ B. 255.255.255.4
- ❍ C. 255.255.255.8
- ❍ D. 255.255.255.192
- ❍ E. 255.255.255.224

Find the Answer p. 147

20. Your organization is using the 172.16.0.0/16 address space. You will need 28 subnets. What subnet mask would you use for hosts in these subnets? Select the best answer.

- ❍ A. 172.16.28.0
- ❍ B. 172.16.0.28
- ❍ C. 255.255.0.0
- ❍ D. 255.255.248.0
- ❍ E. 255.255.255.28

Find the Answer p. 147

21. You are designing an internetwork and you want to use a link-state routing protocol, which provides you with the option to separate your network into different areas, summarize routes within these areas, and natively route traffic through your high-speed backbone. Which protocol would you use? Select the best answer.

- ❍ A. RIP v.1
- ❍ B. RIV v.2
- ❍ C. IGRP
- ❍ D. OSPF
- ❍ E. EIGRP

Find the Answer p. 147

22. On an OSPF router, you use the following command in router configuration mode for OSPF: network 0.0.0.0 255.255.255.255 area 0 What is the effect of this command? Select the best answer.

- ❍ A. This command is invalid.
- ❍ B. This command will instruct OSPF to generate a default gateway.
- ❍ C. This command will configure the OSPF router with a router ID.
- ❍ D. This command will include all the connected interfaces and networks in the OSPF routing process.
- ❍ E. This command will change the broadcast address used by OSPF.

Find the Answer p. 147

23. Your organization uses the 10.0.0.0/8 address space. Your IP address plan provides for 256 subnets. What network mask are hosts within your network using? Select the best answer.

- ❍ A. 255.0.0.0
- ❍ B. 255.128.0.0
- ❍ C. 255.256.0.0
- ❍ D. 255.255.0.0
- ❍ E. 255.255.255.0

Find the Answer p. 147

24. You are designing a network for an organization that needs to use IP multicasting. The company will have 10,000 users taking part in multicast sessions. Which IP address class would you use for multicast group addressing in this organization? Select the best answer.

- ❍ A. Class A
- ❍ B. Class B
- ❍ C. Class C
- ❍ D. Class D
- ❍ E. Class E

Find the Answer p. 148

25. Which of the following statements are true about an OSPF backbone area? Select the two best answers.

- ❑ A. The OSPF backbone area is not generally used.
- ❑ B. The OSPF backbone area must have number 0 (or 0.0.0.0).
- ❑ C. Any routing information about routes in different OSPF areas is transferred through the backbone area.
- ❑ D. The backbone area contains only ABRs.
- ❑ E. Any non-OSPF networks must connect to the OSPF domain through the backbone area.

Find the Answer p. 148

26. You are connecting a Cisco Router to a third-party router using Frame Relay. Although the line comes up, the line protocol does not. You suspect that this may be related to Frame Relay encapsulation. Which Cisco router commands can you use to check what encapsulation is in use? Select the two best answers.

- ❑ A. show frame-relay pvc
- ❑ B. show frame-relay svc
- ❑ C. show frame-relay map
- ❑ D. show frame-relay route
- ❑ E. show interface

Find the Answer p. 148

27. Choose the correct class and address that falls within the class range from the selections below. Select the best answer.

- ❍ A. Class B: 128.0.0.1
- ❍ B. Class A: 127.1.1.1
- ❍ C. Class C: 224.10.2.6
- ❍ D. Class B: 192.168.1.1

Find the Answer p. 148

28. You need to create an access list entry that will permit SMTP traffic to your mail server, 192.168.1.25. Which IOS configuration entry will accomplish this task? Choose the best answer.

- ❍ A. access-list 121 permit tcp any host 192.168.1.25 eq smtp
- ❍ B. access-list 21 permit 192.168.1.25
- ❍ C. access-list 121 permit tcp any eq smtp host 192.168.1.25
- ❍ D. access-list 121 permit tcp host 192.168.1.25 any eq smtp

Find the Answer p. 148

29. Examine the following access list: access-list 10 permit 10.1.1.1access-list 10 deny 10.1.1.0 0.0.0.255access-list 10 permit 192.168.0.0 0.0.255.255 Which of the following statements are true? Choose THREE.

- ❑ A. Traffic from the host 10.1.1.1 will be denied.
- ❑ B. This is an extended access list.
- ❑ C. Traffic from 172.16.1.1 will be denied.
- ❑ D. There is an implicit deny at the end.
- ❑ E. This is a standard access list.

Find the Answer p. 148

30. Your company has hired a consultant who works out of his home. He needs total IP access to your test network. His IP is 66.35.190.20 and the test network is a publicly addressed network of 55.25.2.0 255.255.255.0. What access list entries below will allow him access? Choose TWO.

- ❑ A. access-list 1 permit 66.35.190.20
- ❑ B. access-list 100 permit 66.35.190.20
- ❑ C. access-list 100 permit ip host 66.35.190.20 55.25.2.0 0.0.0.255
- ❑ D. access-list 100 permit ip host 66.35.190.20 any 55.25.2.0 255.255.255.0 any

Find the Answer p. 148

31. Which of the following access-list type/range pairs are incorrect? Choose TWO.

- ❑ A. IP standard, 1-99
- ❑ B. IP extended, 100-199
- ❑ C. IP standard, 1-199
- ❑ D. IP standard expanded, 1300-1999
- ❑ E. IP standard expanded, 1100-1999

Find the Answer p. 148

32. Users are complaining that your company's website has been extremely slow all day, and in several cases, connections are timing out. You have checked all the servers, and they seem fine, but the load on your router's external interface is abnormally high. You suspect a denial of service attack using spoofed ICMP traffic that is bringing a barrage of echo replies to your network. What single entry in your ACL would provide the most information to trace the attack when applied inbound to the outside interface? Select the best answer.

- ❍ A. access-list 167 permit icmp any any echo-reply
- ❍ B. access-list 167 permit icmp any any echo-reply log-input
- ❍ C. access-list 67 permit any log
- ❍ D. access-list 67 permit icmp any any echo-reply

Find the Answer p. 148

33. Match the IP address class with its first octet. Choose THREE.

- ❑ A. A: 1-126
- ❑ B. A: 1-127
- ❑ C. B: 128-192
- ❑ D. B: 128-191
- ❑ E. D: 224-239
- ❑ F. D: 224-240

Find the Answer p. 148

34. You are creating several WAN links to branch offices from your central office, and want to conserve your IP address space. What subnet would give you addresses for two hosts? Select the best answer.

- ❍ A. /30
- ❍ B. /31
- ❍ C. /29
- ❍ D. /28

Find the Answer p. 148

35. You have a /20 network, 172.16.32.0/20, and need to subnet the network into 4 networks of 62 hosts each. What size subnet of the /20 would achieve this goal, and conserve your address space? Select the best answer.

- ❍ A. /25
- ❍ B. /24
- ❍ C. /21
- ❍ D. /26

Find the Answer p. 148

36. A previous consultant designed the following access list for a client. Which of the below statements are true concerning this access list? access-list 10 permit 10.1.1.1access-list 10 deny 10.1.1.0 0.0.0.255access-list 10 permit 192.168.0.0 0.0.255.255 Choose THREE.

- ❑ A. This is an extended access list.
- ❑ B. Traffic from the host 10.1.1.1 will be denied.
- ❑ C. Traffic from 172.16.1.1 will be denied.
- ❑ D. There is an implicit deny at the end of the access list.
- ❑ E. This is a standard IP access list.

Find the Answer p. 148

37. After creating a standard access list, you wish to apply it to interface Serial 0. The list will block inbound traffic over the WAN. Which interface command will accomplish this task? Select the best answer.

- ❍ A. router(config-if)#ip access-list 10
- ❍ B. router(config-if)#ip access-group 10 out
- ❍ C. router(config-if)#access-group 10 in
- ❍ D. router(config-if)#ip access-group 10 in

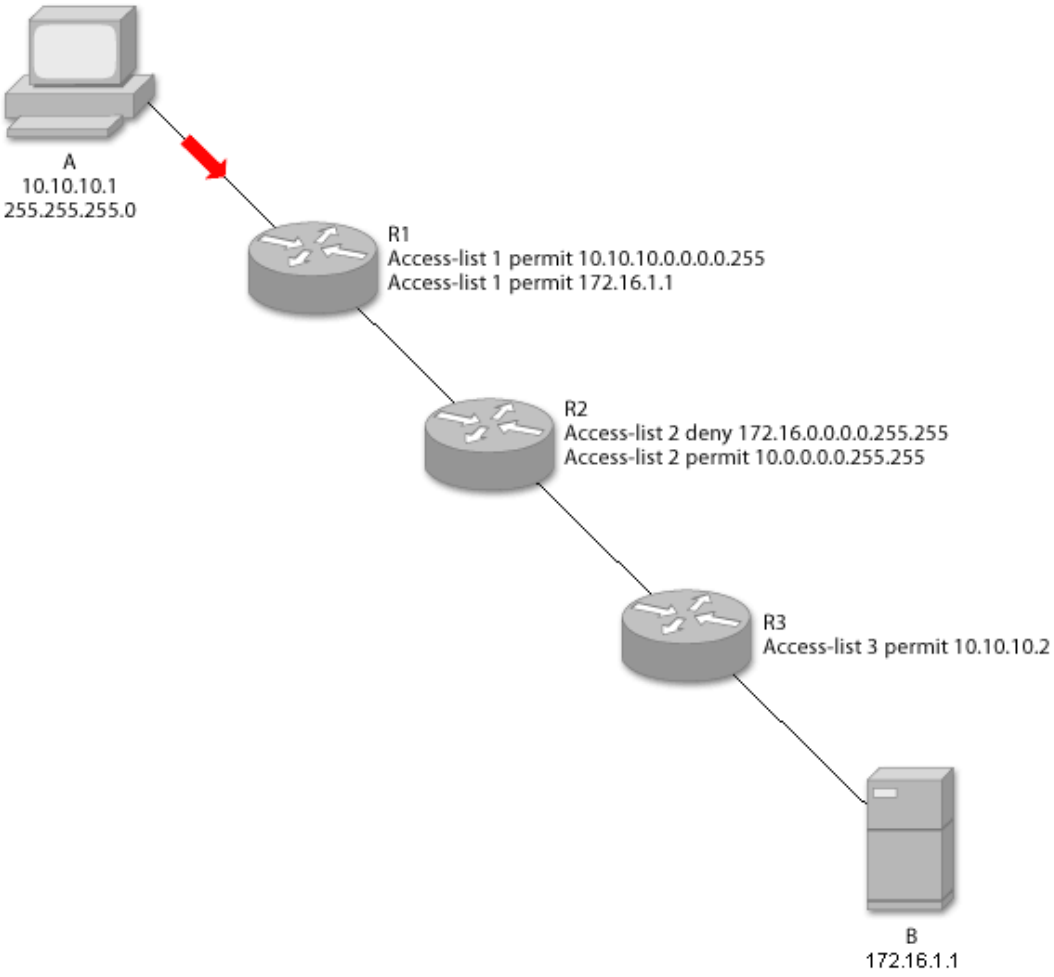
Find the Answer p. 148

38. You need to troubleshoot an existing access list (100), and need to examine matches. Which of the actions below would allow you to view the matches in the buffer? Choose TWO.

- ❑ A. Add the "log" keyword to the end of the access list entry.
- ❑ B. Add the "log-input" keyword to the end of the access list entry.
- ❑ C. Just issue the "logging buffered" command, and all ACL matches will be logged.
- ❑ D. debug ip access-list 100

Find the Answer p. 148

39. Host A is trying to ping Host B. Access lists have been applied to the interfaces closest to host A. Where will the traffic from host A be dropped? Click on R1, R2, R3, or Host B.

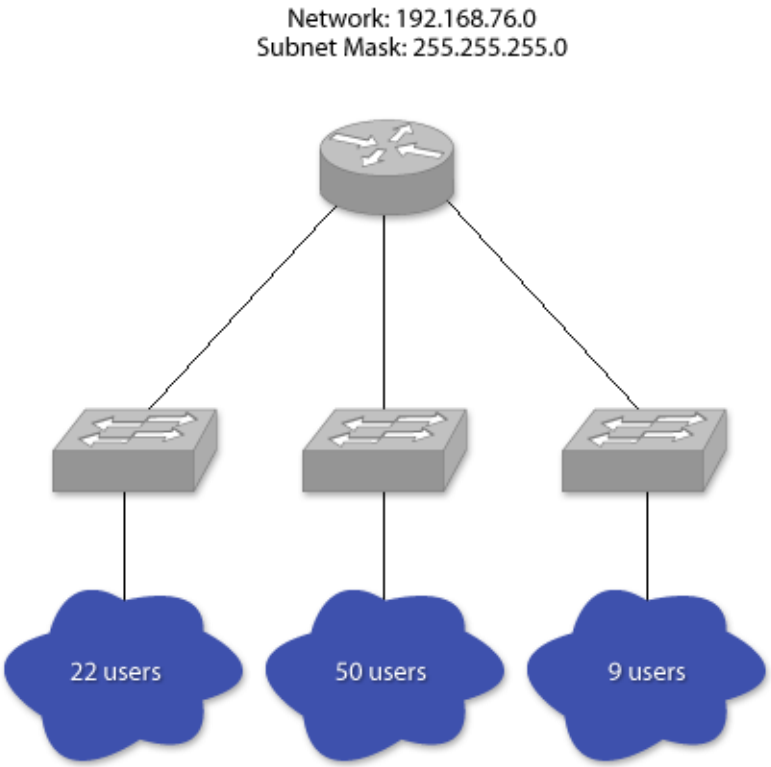


Detailed Explanation p. 235

40. Your boss gives you a 192.168.76.0 255.255.255.0 address space and asks you to break this network up into identically sized subnets that meet the requirements in the diagram. What is the correct subnet mask?

Detailed Explanation p. 235

Exhibit(s):

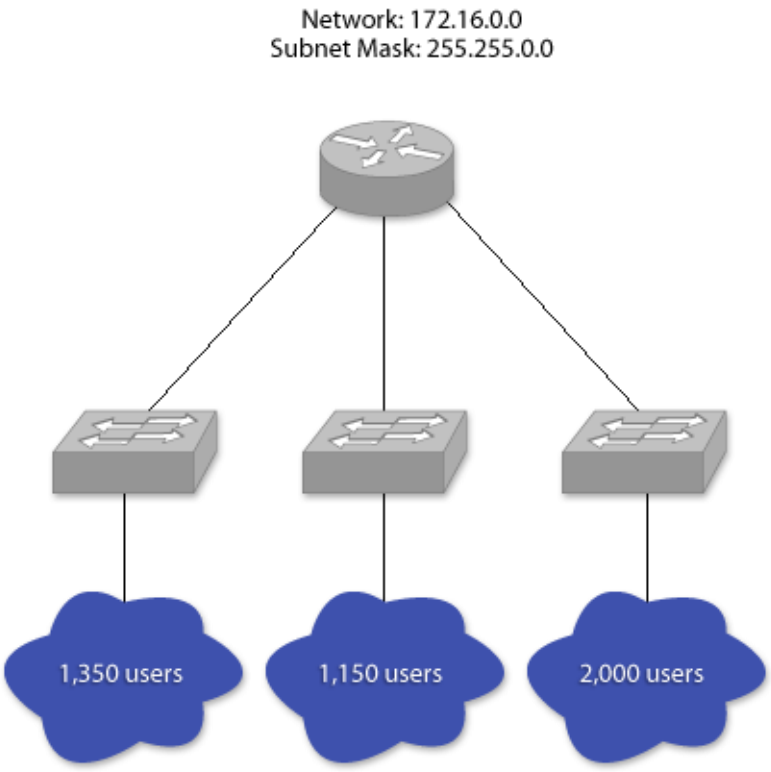


41. You have a class B network and need to break the network up into the smallest sized subnets that will allow for the number of users expected on the diagram. Type the subnet mask that best works in this situation.

_____

Detailed Explanation p. 236

Exhibit(s):

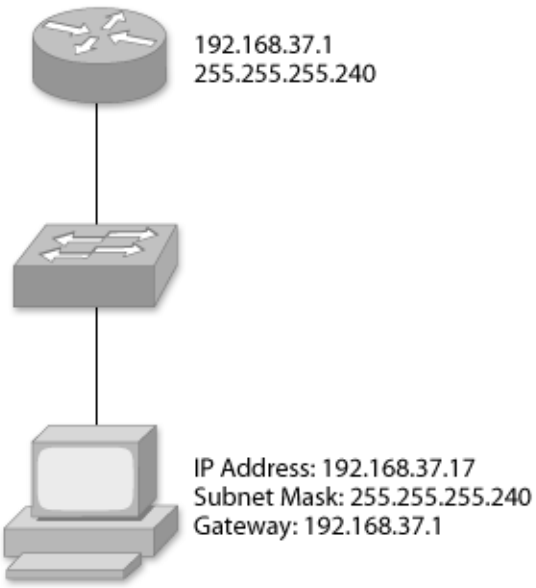


42. A user is complaining that they cannot access anything beyond the local LAN network. They are unable to ping the gateway IP address of 192.168.37.1. What is the problem? Select the best answer.

- ❍ A. The subnet mask of the host does not match the gateway.
- ❍ B. The IP address of the host is not on the same subnet as the gateway.
- ❍ C. The default gateway of the host incorrect.
- ❍ D. The gateway IP address should be configured on the switch, not the router.

Find the Answer p. 148

Exhibit(s):

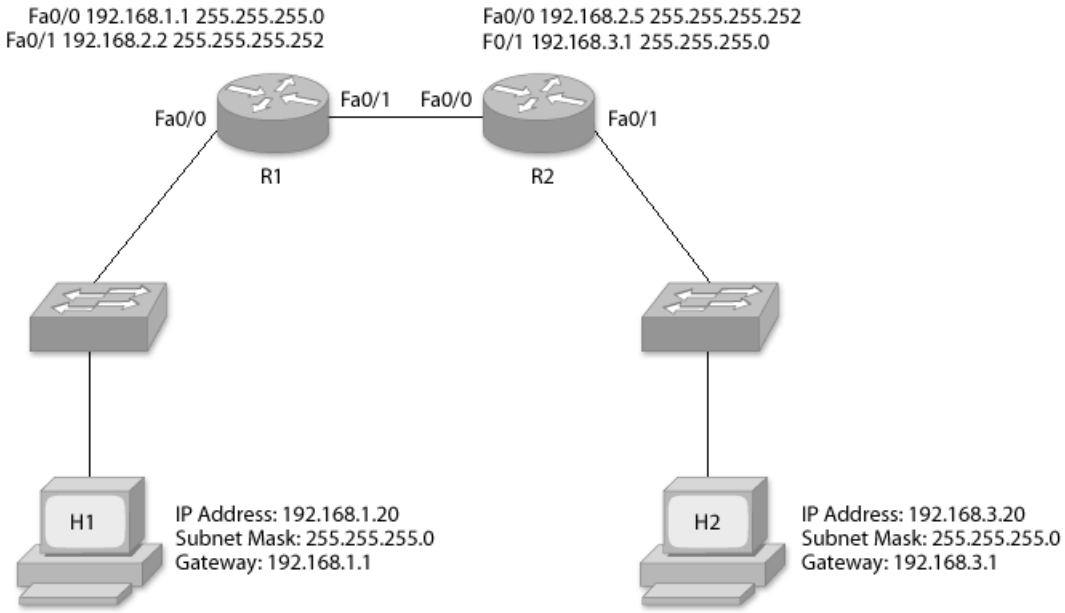


43. Hosts H1 and H2 are unable to communicate over the network. Given the information in the network diagram, what is the problem? Select the best answer.

- ❍ A. The subnet mask is incorrectly configured on H1.
- ❍ B. The subnet mask is incorrectly configured on H2.
- ❍ C. The subnet mask is incorrectly configured on fa0/1 R1.
- ❍ D. The IP address is incorrectly configured on R2.

Find the Answer p. 148

Exhibit(s):

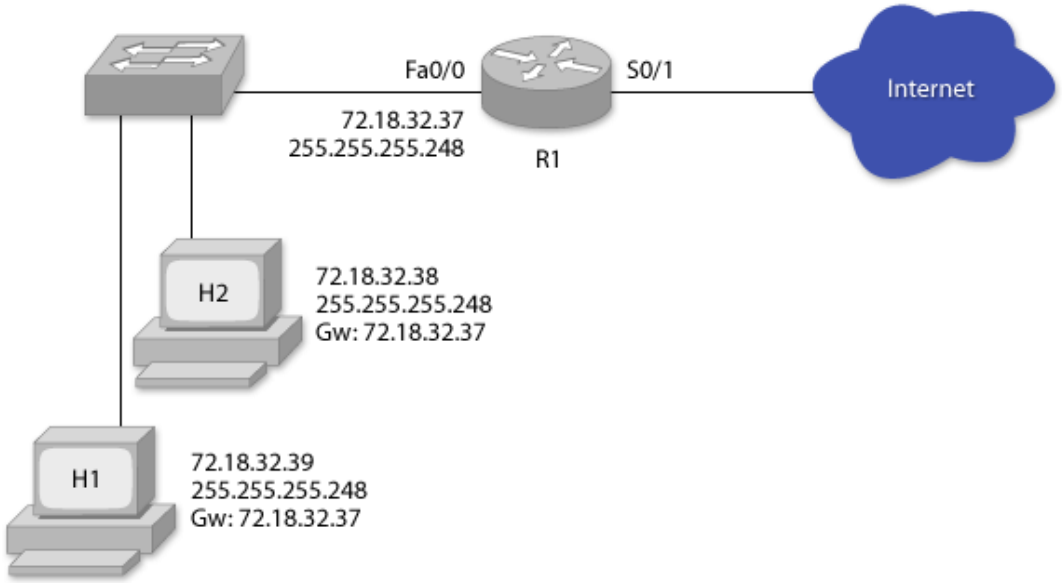


44. Host H1 and H2 are configured to access the Internet. Host H2 can access the Internet properly but H1 cannot. What is the cause of this problem? Select the best answer.

- ❍ A. The subnet mask of H1 is incorrect.
- ❍ B. The switch needs to be configured with an IP address.
- ❍ C. H1 is configured with the broadcast address of the network.
- ❍ D. The gateway IP address configured on H1 is incorrect.

Find the Answer p. 148

Exhibit(s):

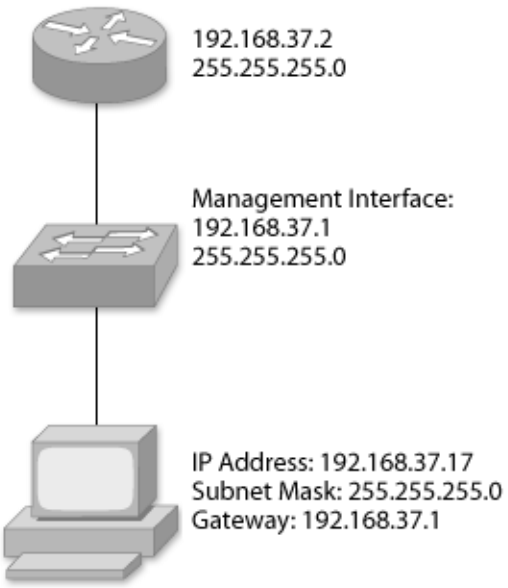


45. A user is complaining that they cannot access anything beyond the local LAN network. The user can ping the gateway address but nothing beyond the router interface. What is the problem? Select the best answer.

- ❍ A. The subnet mask is not correct on the host PC.
- ❍ B. The IP address is incorrect.
- ❍ C. The default gateway is incorrect.
- ❍ D. The router should not be configured with an IP address.

Find the Answer p. 148

Exhibit(s):

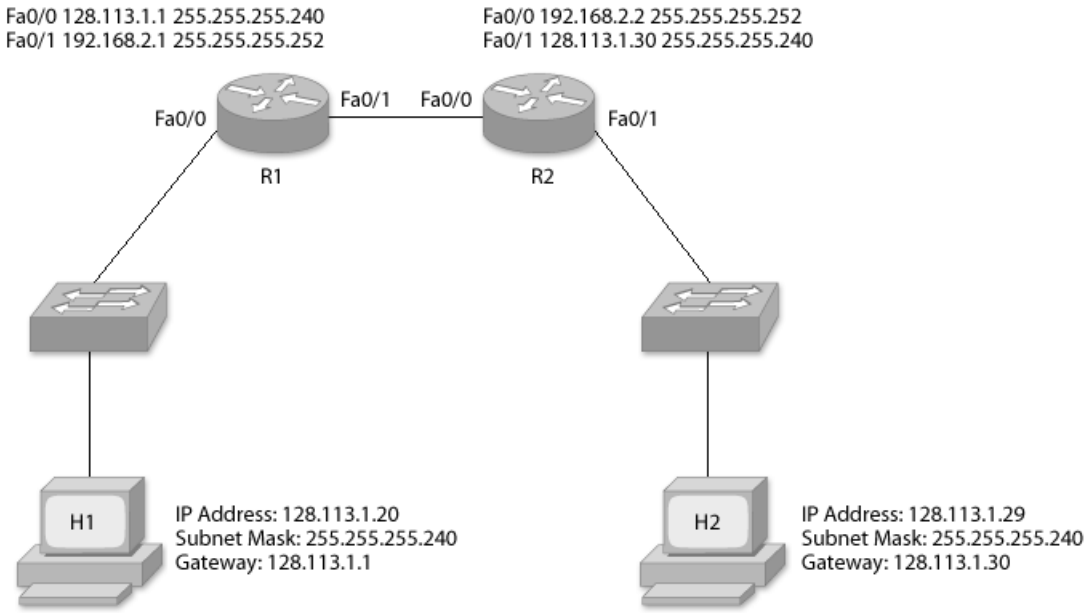


46. Hosts H1 and H2 are unable to communicate over the network. Given the information in the network diagram, what is the problem? Select the best answer.

- ❍ A. The subnet mask is incorrectly configured on H1.
- ❍ B. The subnet mask is incorrectly configured on H2.
- ❍ C. The IP address is incorrectly configured on H1.
- ❍ D. The network between R1 and R2 is not on the correct subnet.

Find the Answer p. 148

Exhibit(s):

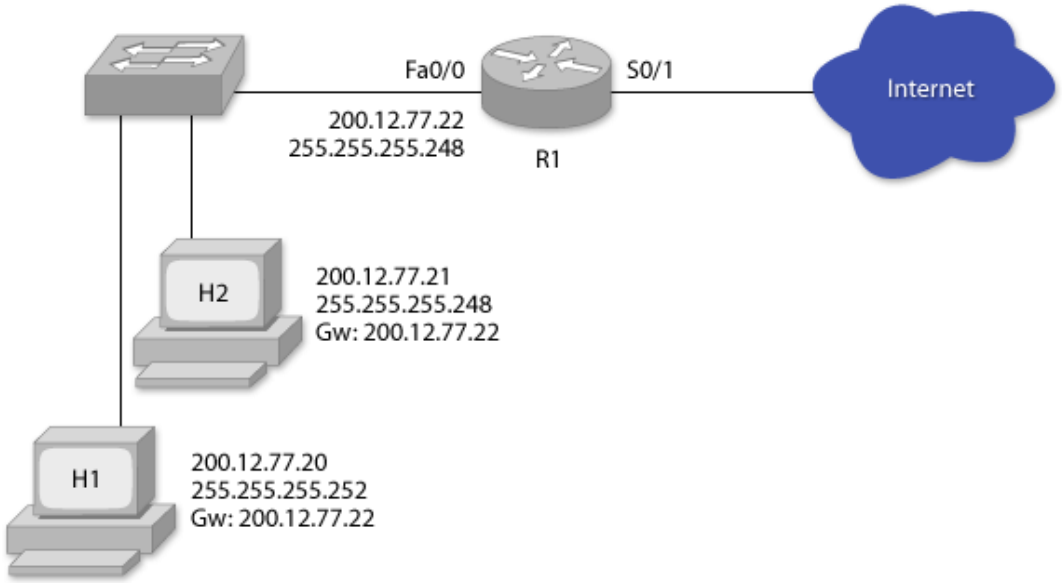


47. Host H1 and H2 are configured to access the Internet. Host H2 can access the Internet properly but H1 cannot. What is the cause of this problem? Select the best answer.

- ❍ A. The subnet mask of H1 is incorrect.
- ❍ B. The switch needs to be configured with an IP address.
- ❍ C. The gateway IP address and the IP address of H2 are on different networks.
- ❍ D. The gateway IP address configured on H1 is incorrect.

Find the Answer p. 148

Exhibit(s):



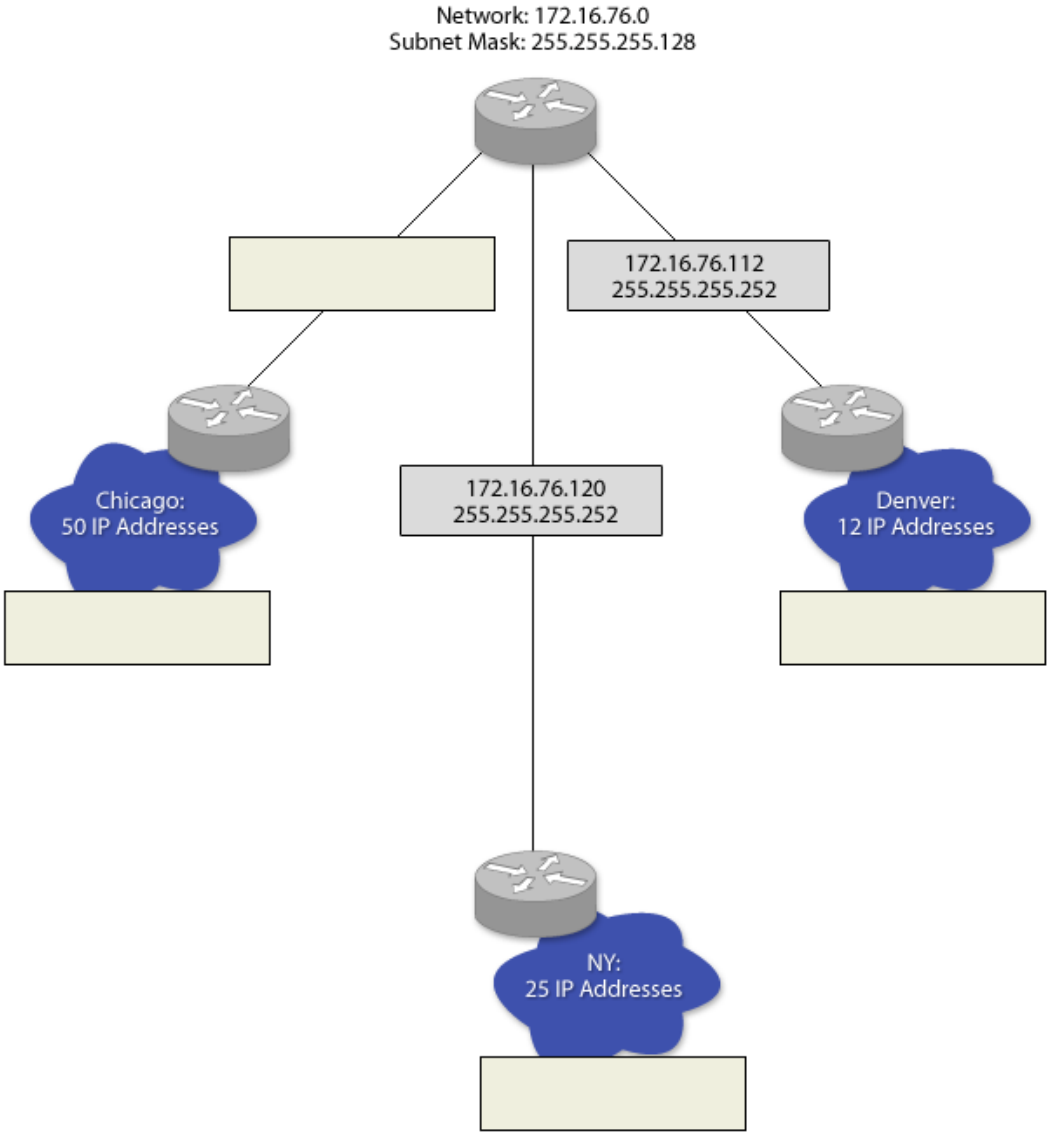
48. You have been hired as a network consultant to segment the network address space of 172.16.76.0 255.255.255.128. The Chicago remote site requires approximately 50 IP addresses. The NY site needs 25 IP addresses and Denver requires 12 IP addresses. Each remote site is connected to the corporate office by a point-to-point connection that also needs to be addressed properly. Two of the point-to-point links have already been addressed. Drag and drop the correct IP addressing schemes to the network diagram location.

A. 172.16.76.64 255.255.255.224

B. 172.16.76.116 255.255.255.252

C. 172.16.76.96 255.255.255.240

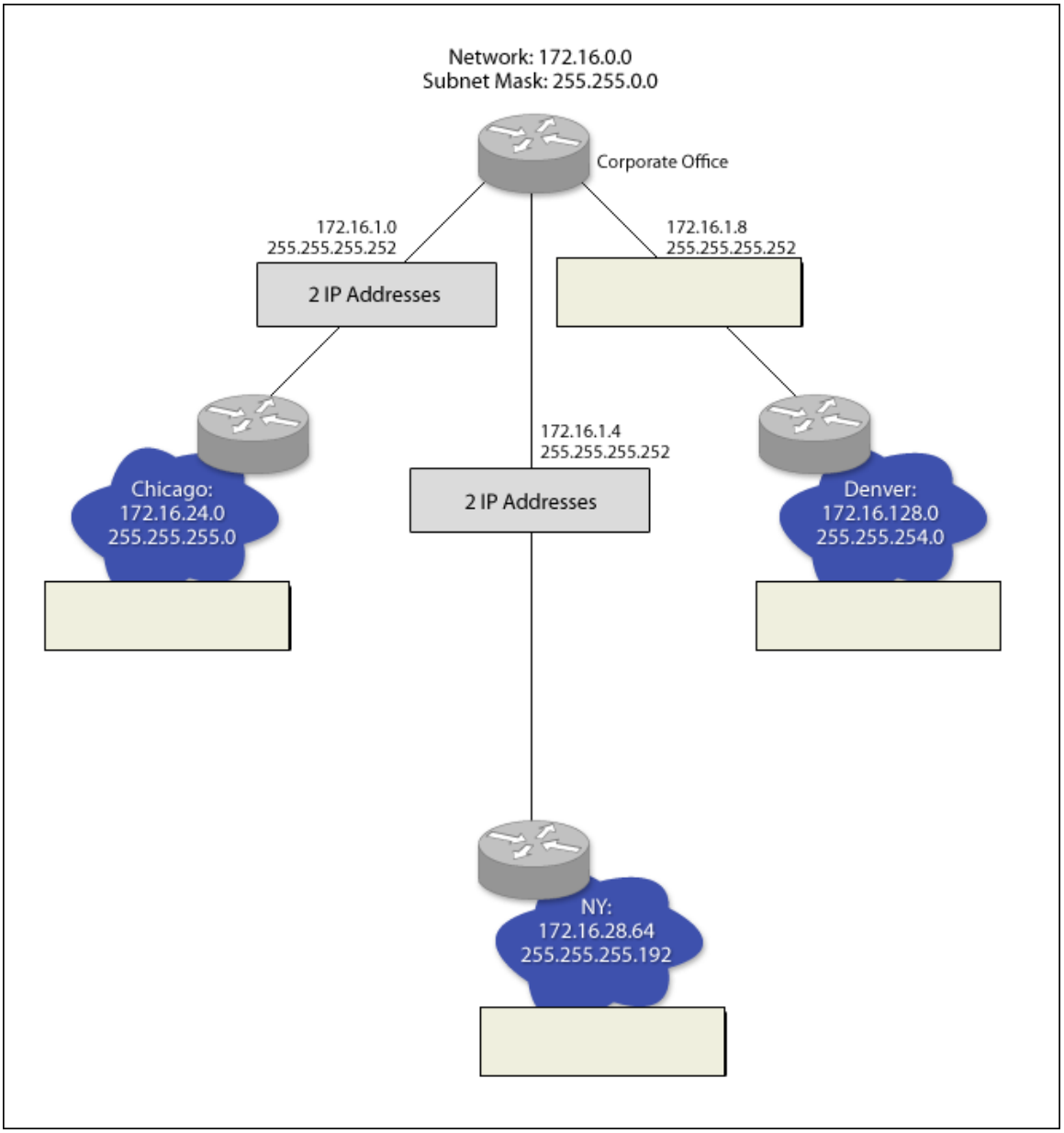
D. 172.16.76.0 255.255.255.192



Detailed Explanation p. 238

49. Your company needs to understand the maximum number of IP address available on each subnet in the diagram. Drag and drop the correct number at each remote site and for one of the point to point links back to the corporate office. Drag and drop the correct IP address host numbers to the network diagram location.

A. 254 IP Addresses B. 510 IP Addresses C. 2 IP Addresses D. 62 IP Addresses



Detailed Explanation p. 239

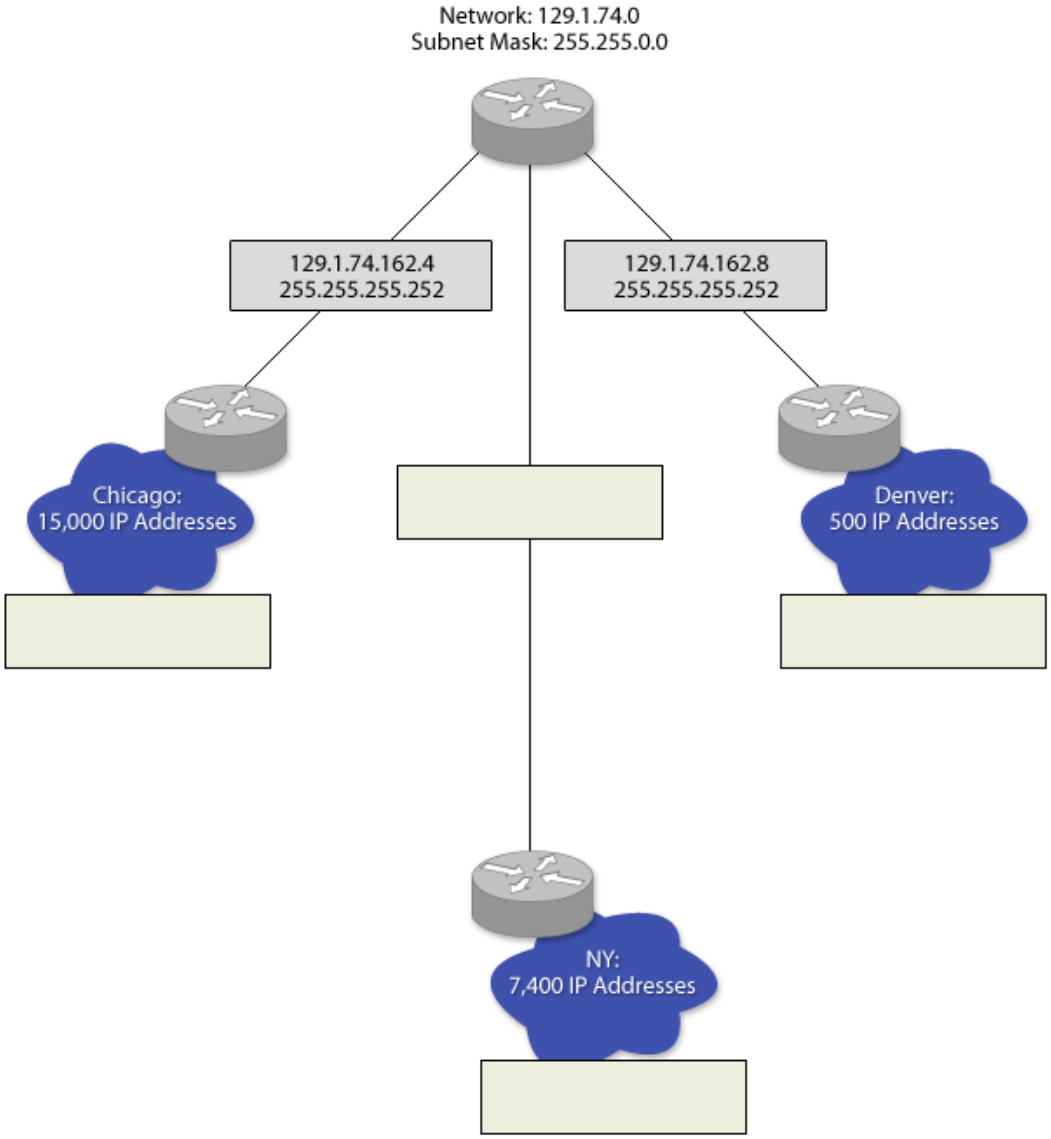
50. A large Institution needs to break up their network into 3 remote segments. The business has a class B network and has created a network diagram listing the number of IP addresses required at each location. Your task is to match the network and subnet mask that best fits the number of addresses required. Drag and drop the correct IP addressing schemes to the network diagram location.

A. 129.1.74.160 255.255.254.0

B. 129.1.74.162.0 255.255.255.252

C. 129.1.74.128.0 255.255.224.0

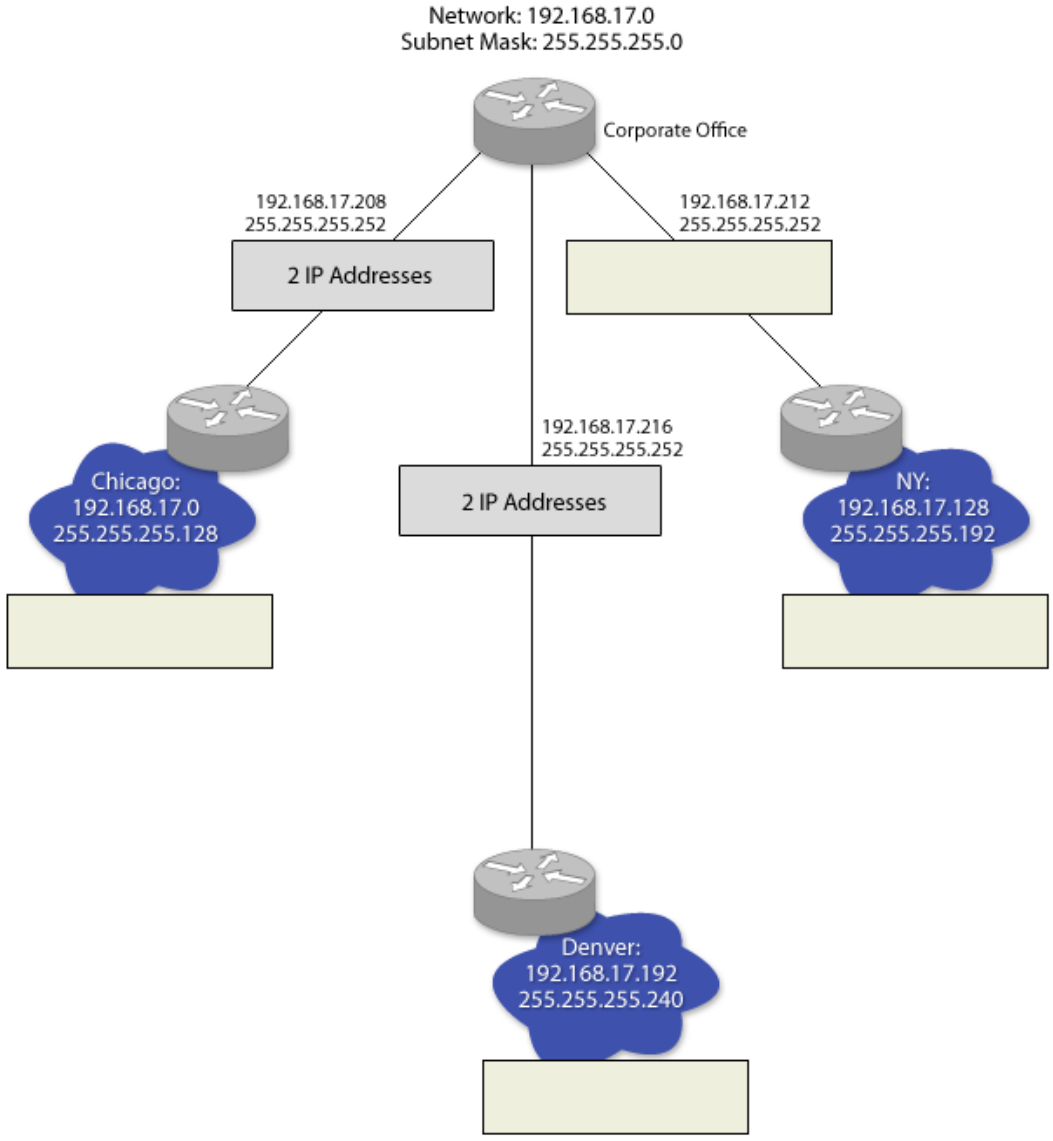
D. 129.1.74.0 255.255.192.0



Detailed Explanation p. 240

51. Your network consists of a class C address space. Complete the network diagram by filling in the correct number of hosts for each segment. Drag and drop the correct IP address host numbers to the network diagram location. Answers may be used more than once.

A. 62 IP Addresses B. 2 IP Addresses C. 14 IP Addresses D. 126 IP Addresses



Detailed Explanation p. 241

52. The network diagram displays a large network with 2 DHCP subnets and a single server with a static IP address. Complete the network diagram by dragging and dropping the correct IP/subnet mask label where it belongs.

A. 172.16.144.0 255.255.252.0

B. 172.16.128.0 255.255.240.0

C. 172.16.148.5 255.255.255.252

D.

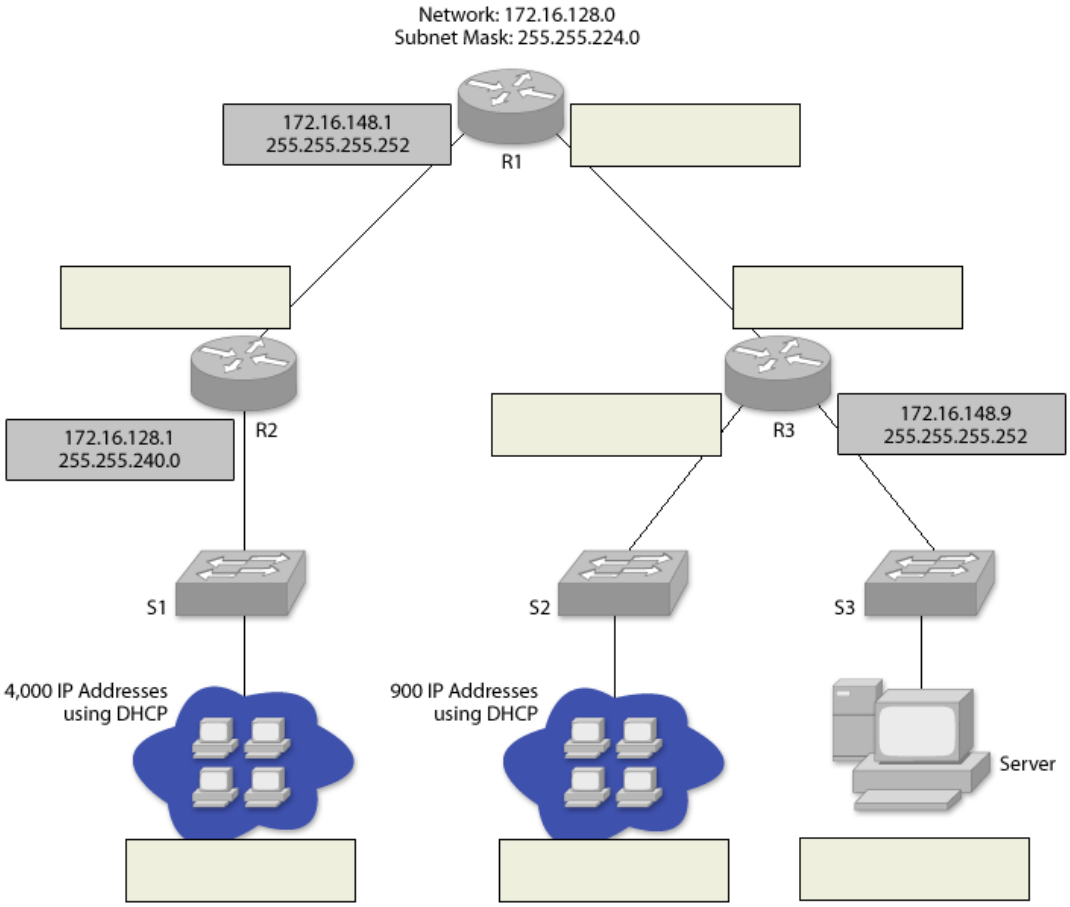
172.16.148.2 255.255.255.252

E. 172.16.148.6 255.255.255.252

F. 172.16.148.10 255.255.255.252

G.

172.16.144.1 255.255.252.0



Detailed Explanation p. 242

53. The network diagram displays a medium sized business with 2 DHCP subnets and a single server with a static IP address. Please finish the network diagram by dragging and dropping the correct IP/subnet mask label where it belongs.

A. 192.168.30.17 255.255.255.248

B. 192.168.30.10-14 255.255.255.248

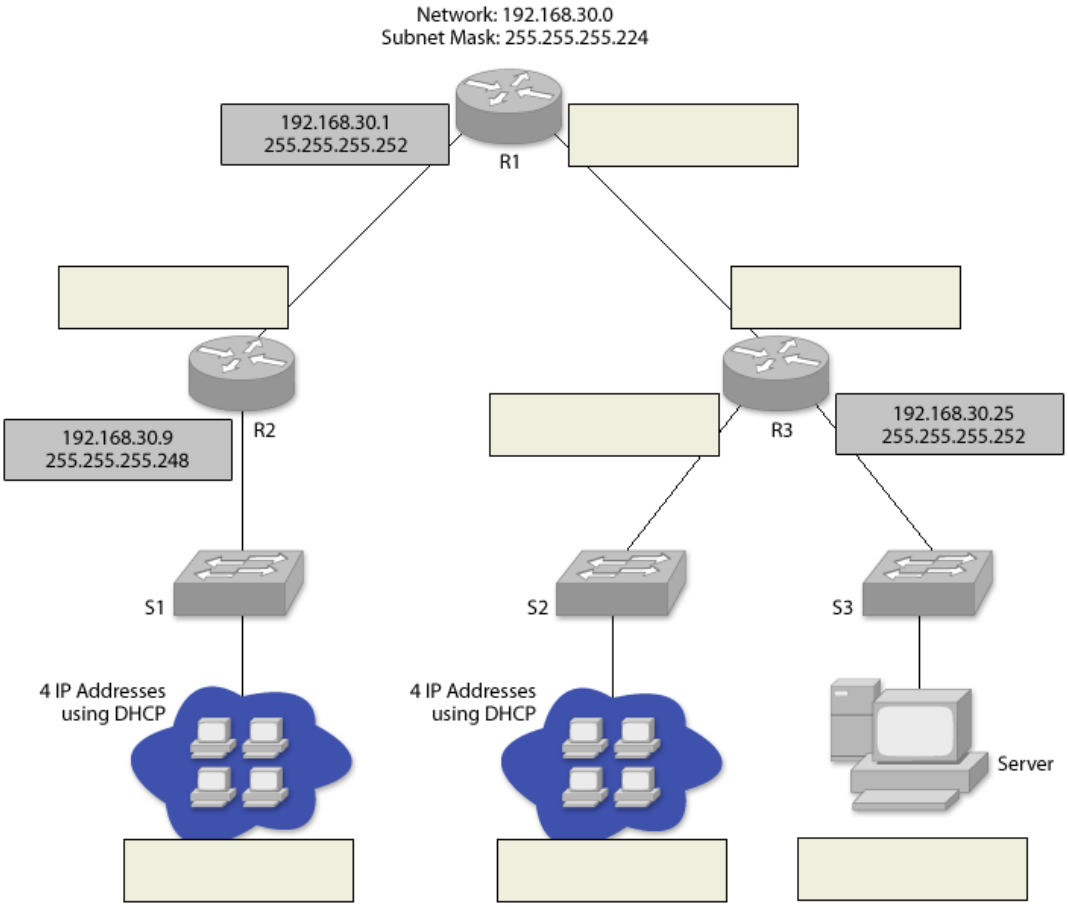
C. 192.168.30.2 255.255.255.252

D. 192.168.30.18-22 255.255.255.248

E. 192.168.30.26 255.255.255.252

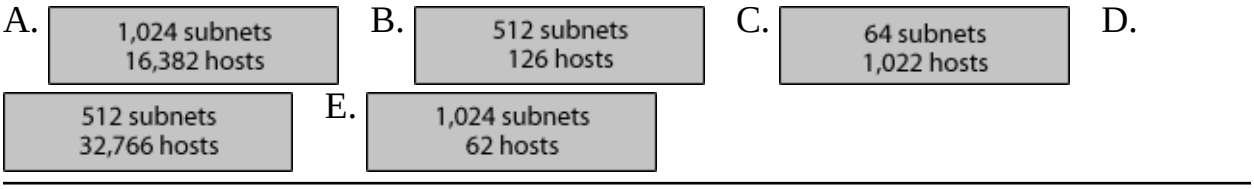
F. 192.168.30.5 255.255.255.252

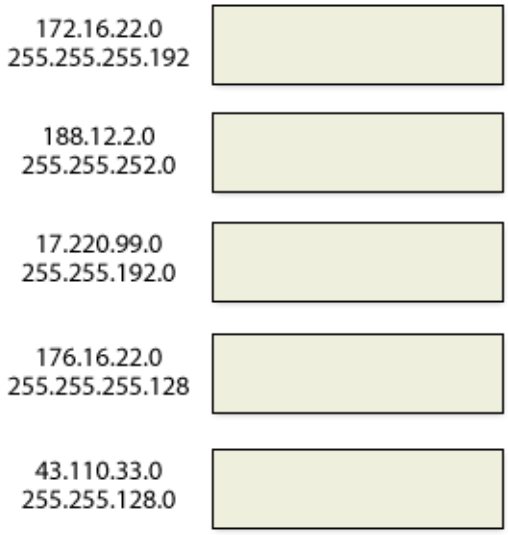
G. 192.168.30.6 255.255.255.252



Detailed Explanation p. 243

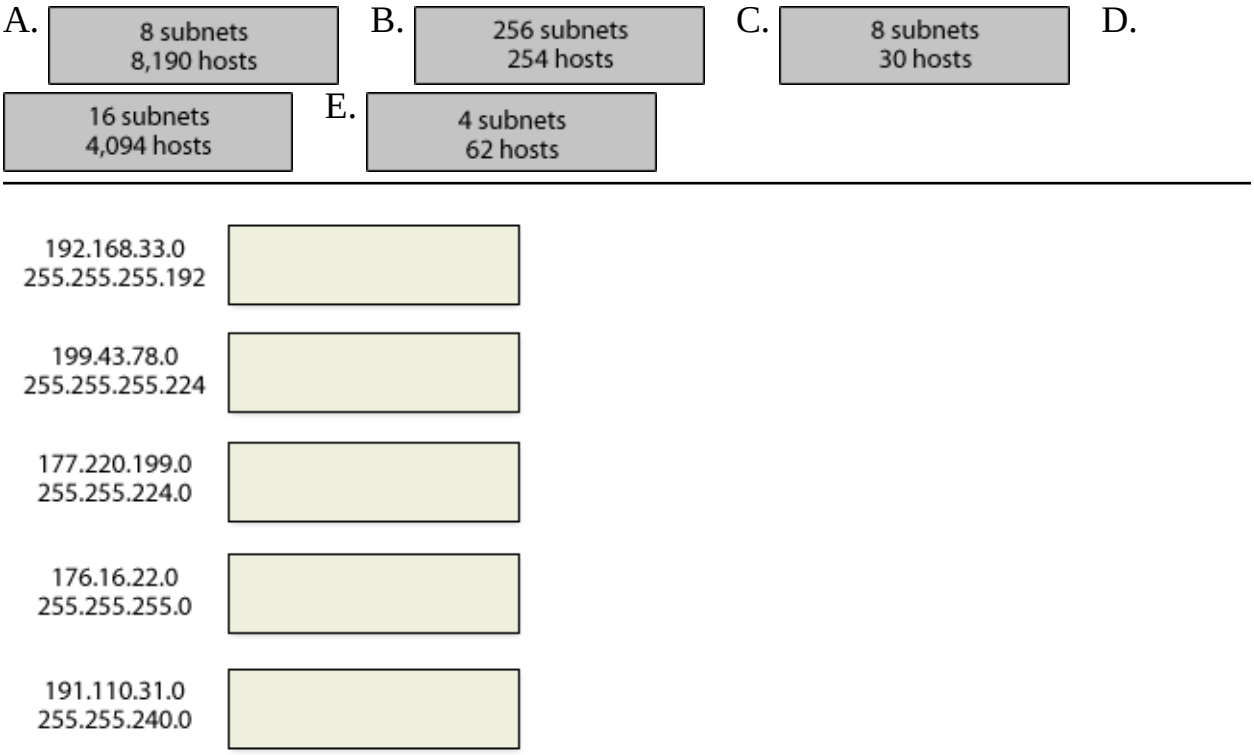
54. Given the classless addresses and subnet mask on the diagram, determine the number of subnets and hosts each represents. Drag and drop the correct hosts/subnets to the classless address and subnet mask.





Detailed Explanation p. 244

55. Given the classless addresses and subnet mask on the diagram, determine the number of subnets and hosts each represents. Drag and drop the correct hosts/subnets to the classless address and subnet mask.



Detailed Explanation p. 245

56. What are the three different RSTP connectivity types? Choose the best answers.

- ❍ A. Link-type point to point, Link-type shared, Edge-type.
- ❍ B. Link-State, Point to Point, Shared Point to Point.
- ❍ C. Link to Point, Link State, Shared Type.
- ❍ D. P2P, Solid State, Link-to-Point.

Find the Answer p. 149

57. Which of the following is NOT a RSTP state? Choose the best answer.

- ❍ A. Learning.
- ❍ B. Forwarding.
- ❍ C. Listening.
- ❍ D. Discarding.

Find the Answer p. 149

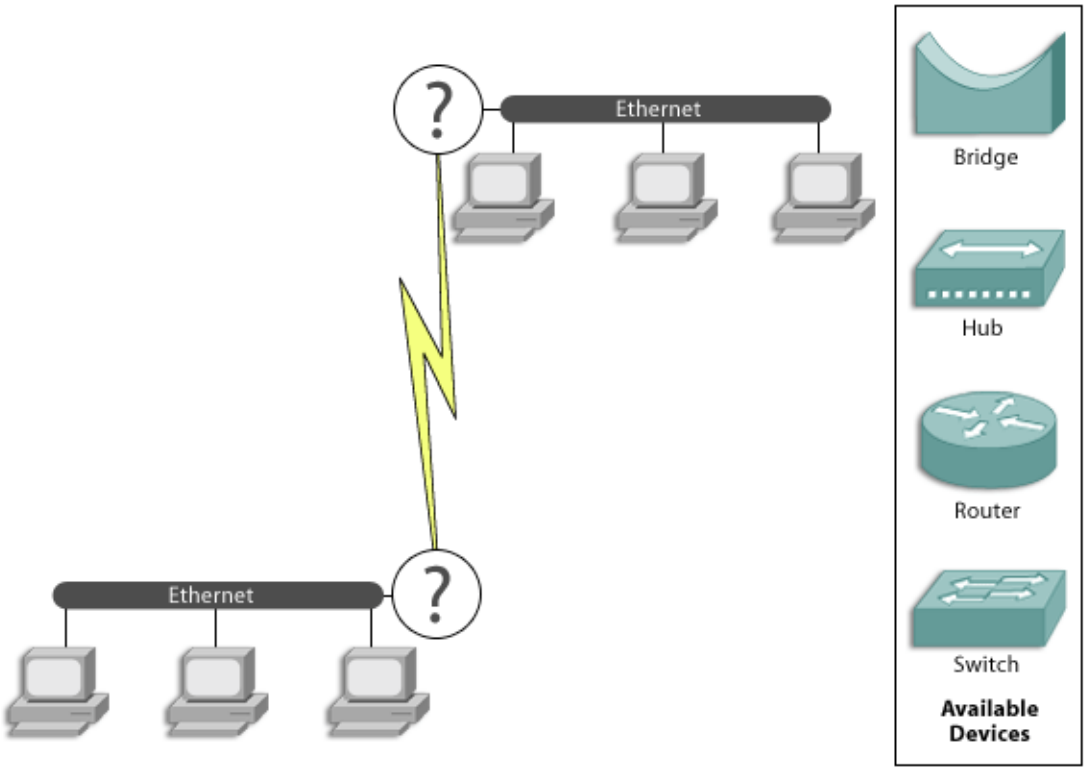
58. Which of the following processes assists and improves convergence in RSTP edge-type connections? Choose the best answers.

- ❍ A. Enabling Learning Mode.
- ❍ B. Enabling PortFast.
- ❍ C. Enabling Convergence.
- ❍ D. Designating an Alternate Port.

Find the Answer p. 149

Chapter 4
Configure, verify, and troubleshoot basic router operation and routing on Cisco devices

1. You are designing an internetwork. You need to connect two sites (two LANs) using a leased line. Which of the following devices will you use in each of the two positions indicated by a question mark in the diagram below?



Detailed Explanation p. 248

2. You are configuring the OSPF protocol on a router. You use the router ospf process-id command in global configuration mode to enable OSPF. What value should you specify for the process_id parameter? Select the best answer.

   - ❍ A. An Autonomous system number. This should match any other router within the same autonomous system.
   - ❍ B. A router ID. This should match any other within the same autonomous system.
   - ❍ C. A router ID. This should be unique within the OSPF domain.
   - ❍ D. A process ID. This needs to be locally unique, within the router.
   - ❍ E. A thread ID.

Find the Answer p. 150

3. Looking at your routing table, you see the following entry: O 192.168.2.0/24 [110/51] via 192.168.2.5, 01:52:55, FastEthernet0 What does the O symbol in the beginning of the line indicate? Select the best answer.

   - ❍ A. There is a routing loop for this route.
   - ❍ B. The specified route entry is obsolete.
   - ❍ C. This route entry is invalid.
   - ❍ D. This route entry has been generated by the OSPF protocol.
   - ❍ E. This route entry has been generated by the ODR protocol.

Find the Answer p. 150

4. Which of the following protocols are distance vector protocols? Select the three best answers.

   - ❑ A. RIP v.1
   - ❑ B. RIP v.2
   - ❑ C. OSPF
   - ❑ D. IGRP
   - ❑ E. IS-IS

Find the Answer p. 150

5. Which of the following statements best describes an OSPF ASBR? Select the best answer.

- ❍ A. An ASBR is a router that connects a backbone area to a non-backbone area.
- ❍ B. An ASBR is a router, used to create a virtual link to the backbone area.
- ❍ C. An ASBR is a router that is internal to the backbone area.
- ❍ D. An ASBR is a router that connects an OSPF network to a non-OSPF network.
- ❍ E. An ASBR is a router that always generates a default route into OSPF.

Find the Answer p. 150

6. What is the purpose of NVRAM in Cisco routers? Select the best answer.

- ❍ A. NVRAM is used to store IOS images.
- ❍ B. NVRAM is used as a fast packet buffer.
- ❍ C. NVRAM is used to store device configuration.
- ❍ D. NVRAM is used to store backup images in case a primary failure occurs.
- ❍ E. NVRAM is used as a fast cache for instructions that need processing.

Find the Answer p. 150

7. You are troubleshooting RIP-related problems. You want to be able to see RIP update packets as they are being sent out to neighbor routers. Which command can you use? Select the best answer.

- ❍ A. debug ip protocols
- ❍ B. debug rip
- ❍ C. debug ip rip
- ❍ D. debug ip packets
- ❍ E. debug ip policy

Find the Answer p. 150

8. You are troubleshooting routing protocols on your router. You want to see a list of routing protocols, configured on the router, and the interfaces they are operating on or the neighbors they are communicating with. Which single command can you use? Select the best answer.

- ❍ A. show ip local policy
- ❍ B. show ip route
- ❍ C. show ip cache policy
- ❍ D. show ip protocols
- ❍ E. show protocols

Find the Answer p. 150

9. Which of the following protocols can you use to transfer a system image file from flash to a network server? Select the three best answers.

- ❑ A. FTP
- ❑ B. HTTP
- ❑ C. SMB
- ❑ D. TFTP
- ❑ E. RCP

Find the Answer p. 150

10. You want to save the current configuration your router is using. You have modified the configuration since last restart, and the new configuration has not yet been saved to persistent storage. Which command or set of commands will you use to achieve this with a minimum amount of administrative effort? Select the best answer.

- ❍ A. copy startup-config flash
- ❍ B. copy startup-config ftp
- ❍ C. copy running-config startup-config
- ❍ D. copy running-config ftp
- ❍ E. copy running-config ftp
  copy ftp flash

Find the Answer p. 150

11. You are designing an access list to permit IP traffic only from any host to a host with an IP address of 192.168.1.1. Which command(s) would you use? Select the best answer.

- ❍ A. access-list 192.168.1.1 permit any
- ❍ B. access-list any permit 192.168.1.1
- ❍ C. access-list 103 permit ip any host 192.168.1.1
- ❍ D. access-list 104 permit ip host 192.168.1.1 any
- ❍ E. access-list 105 permit ip host 192.168.1.1 host 192.168.1.1

Find the Answer p. 150

12. You are configuring IGRP on a router. You need to specify that IGRP will run in autonomous system 55. Which command or set of commands will you use? Select the best answer.

- ❍ A. router igrp
autonomous system 55
- ❍ B. router igrp as 55
- ❍ C. router igrp 55
- ❍ D. router igrp
network 55
- ❍ E. igrp router 55

Find the Answer p. 150

13. IP routing is disabled on one of your routers. Which command will you use to configure this router with a default gateway? Select the best answer.

- ❍ A. default-gateway
- ❍ B. ip default-gateway
- ❍ C. ip address
- ❍ D. ip routing
- ❍ E. ip gateway

Find the Answer p. 150

14. You are using the initial configuration dialog on a router, and you make a mistake while entering information. However, you have already hit enter, and you are now on the next step. You need to interrupt the initial configuration process without saving the changes. What do you need to do? Select the best answer.

- ❍ A. Use the router escape sequence.
- ❍ B. Press Ctrl-C
- ❍ C. Press Ctrl-*
- ❍ D. Press Ctrl-A
- ❍ E. Press Ctrl-E

Find the Answer p. 150

15. You want to be able to download an image file over the network. Your FTP server requires a username and password. Which command or set of commands can you use to specify authentication information for your FTP connections? Select the best answer.

- ❍ A. Cisco does not support authenticated FTP sessions
- ❍ B. copy ftp flash /username:user1 /password:cisco
- ❍ C. copy ftp flash /authentication:user1 /password:cisco
- ❍ D. ip ftp username user1
  ip ftp password cisco
- ❍ E. ftp-server username user1
  ftp-password cisco

Find the Answer p. 150

16. You want to store your router configuration file on a TFTP location. You want the router to download the configuration file from this network location every time it starts. You configure your router with the service config statement. What else do you need to do? Select the best answer.

- ❍ A. Use the boot system tftp configuration command.
- ❍ B. Use the boot system ftp configuration command.
- ❍ C. Use the boot host tftp configuration command.
- ❍ D. Use the boot host ftp configuration command.
- ❍ E. Use the boot bootstrap tftp configuration command.

Find the Answer p. 150

17. You are designing an access list to filter UDP traffic from port 500 on any host to any port on host 172.16.1.1. Which command(s) will you use? Select the best answer.

- ❍ A. access-list 101 deny udp any eq 500 host 172.16.1.1
- ❍ B. access-list 102 deny udp host 172.16.1.1 eq 500 any
- ❍ C. access-list 103 deny udp host 172.16.1.1 any eq 500
- ❍ D. access-list 105 deny udp any any eq 500
  access-list 105 deny udp host 172.16.1.1 any
- ❍ E. access-list 105 deny udp any eq 500 any
  access-list 105 permit udp 172.16.1.1 any

Find the Answer p. 150

18. What is rommon in Cisco routers? Select the best answer.

- ❍ A. A process that monitors ROM memory.
- ❍ B. A process used for packet switching.
- ❍ C. It is used by Cisco devices to provide for offline device configuration.
- ❍ D. ROMmon is used as a helper image in emergency cases.
- ❍ E. ROMmon is used to defragment ROM memory.

Find the Answer p. 150

19. You are troubleshooting a Frame Relay problem. You need to see the status of each PVC you are using to connect via the Frame Relay cloud. Which command will display this information? Select the best answer.

- ❍ A. show frame-relay route
- ❍ B. show frame-relay traffic
- ❍ C. show frame-relay pvc
- ❍ D. show frame-relay map
- ❍ E. show pvc

Find the Answer p. 150

20. You are troubleshooting routing problems. Your routing table is huge, so you only want to see routes to a couple of specific networks, no matter by which routing protocol they have been generated. You don't want to see all the routes. Which command can you use? Select the best answer.

- ❍ A. show ip route
- ❍ B. show ip route rip
- ❍ C. show ip route list
- ❍ D. show ip local policy

Find the Answer p. 150

21. You are performing password recovery of a Cisco 2600 series router. How can you interrupt the boot process and enter ROMmon? Select the best answer.

- ❍ A. Reboot the router and press Ctrl-Break
- ❍ B. Reboot the router and press Ctrl-Z
- ❍ C. Reboot the router and press Ctrl-S
- ❍ D. Replace the flash image with a special password recovery image

Find the Answer p. 150

22. You are using the initial system configuration dialog. You are not sure what the format of a specific entry should be. How can you check the syntax of the entry? Select the best answer.

- ❍ A. Press Ctrl-A
- ❍ B. Press Ctrl-E
- ❍ C. Type ?
- ❍ D. Type !
- ❍ E. Type help

Find the Answer p. 150

23. You want to check the integrity of a system image that you have recently downloaded to your router. Which command can you use? Select the best answer.

- ❍ A. check flash
- ❍ B. erase
- ❍ C. dir
- ❍ D. verify
- ❍ E. squeeze

Find the Answer p. 150

24. You are configuring a partial mesh Frame Relay network. You can't rely on Inverse ARP. You need to statically configure your router with IP addresses and DLCIs of remote Frame Relay routers. Which command will you use? Select the best answer.

- ❍ A. ip route
- ❍ B. arp
- ❍ C. frame-relay interface DLCI
- ❍ D. frame-relay route
- ❍ E. frame-relay map

Find the Answer p. 151

25. What is the purpose of flash in Cisco routers? Select the best answer.

- ❍ A. Cisco flash is used to store configuration files.
- ❍ B. Flash is used to accelerate the process of sending packets out the interface.
- ❍ C. Flash is used to store Cisco IOS images.
- ❍ D. Flash is used as a storage for packets that need to be sent out onto the network.
- ❍ E. Flash is normally used for rack mounting the router.

Find the Answer p. 151

26. What is the purpose of RAM memory in Cisco routers? Select the three best answers.

- ❑ A. It is used to store run-time configuration information.
- ❑ B. It is used as a persistent configuration storage.
- ❑ C. It is used for packet buffers.
- ❑ D. It is used by running processes.
- ❑ E. RAM is used as a persistent IOS storage.

Find the Answer p. 151

27. What are the two basic principles of routing? Choose TWO.

- ❑ A. Path determination
- ❑ B. Packet fragmentation
- ❑ C. Protocol identification
- ❑ D. Switching

Find the Answer p. 151

28. How does a router determine the best path to a destination? Select the best answer.

- ❍ A. By using layer 2 addresses
- ❍ B. Through the utilization of switching algorithms
- ❍ C. Through the use of routing protocol metrics
- ❍ D. By analyzing layer 4 information

Find the Answer p. 151

29. Which of the following is not a design goal of a routing algorithm? Select the best answer.

- ❍ A. Optimality
- ❍ B. Slow convergence
- ❍ C. Stability
- ❍ D. Flexibility

Find the Answer p. 151

30. What are the advantages of a link-state protocol over a distance-vector protocol? Choose TWO.

- ❑ A. Slower convergence
- ❑ B. Low resource utilization
- ❑ C. Faster convergence
- ❑ D. Scalability
- ❑ E. Full routing table updates

Find the Answer p. 151

31. Which definition below describes split horizon? Select the best answer.

- ❍ A. Routing updates that are transmitted outside the normal update period.
- ❍ B. Forces the router to ignore information about a network for a certain time period when a network is deemed unreachable.
- ❍ C. When a route is received on an interface, it is advertised back to the originating router with a hop count that is equal to the maximum number of hops on the distance vector protocol.
- ❍ D. When a router learns about a network, it does not advertise that network back to the originating device.

Find the Answer p. 151

32. Which one of the items below is not contained in the routing table? Select the best answer.

- ❍ A. Metric
- ❍ B. Hardware address (MAC address)
- ❍ C. Administrative distance
- ❍ D. Next-hop device network address
- ❍ E. Routing mechanism by which the route was learned

Find the Answer p. 151

33. With respect to OSPF, choose the incorrect definition below. Select the best answer.

- ❍ A. Routing table: The result of running the link-state algorithm on the link-state database.
- ❍ B. Link-state database: A list of all the neighbors a router has established communications with.
- ❍ C. Cost: The value assigned to a link.
- ❍ D. Neighbor database: A table of all router link states within the network.

Find the Answer p. 151

34. A large law firm is designing a network with four branches and a headquarters location. Their IP address space has been designed, and they are utilizing classless addressing. They also need rapid convergence, because they use redundant links and cannot afford to have a network outage. What routing protocol choices would meet their requirements? Choose TWO.

- ❑ A. OSPF
- ❑ B. EIGRP
- ❑ C. RIP version 1
- ❑ D. RIP version 2

Find the Answer p. 151

35. Which routing protocols provide fast convergence and scalability for large implementations? Choose TWO.

- ❑ A. OSPF
- ❑ B. RIP
- ❑ C. EIGRP
- ❑ D. IGRP

Find the Answer p. 151

36. What advantages does OSPF have over RIP version 1? Choose THREE.

- ❑ A. Vendor interoperability
- ❑ B. Speed of convergence
- ❑ C. VLSM support
- ❑ D. Bandwidth utilization

Find the Answer p. 151

37. You have a client that needs your help in choosing the correct routing protocol for their needs. They are leaning towards EIGRP, and have created a list of features they believe are inclusive in the protocol. Which item below is not a feature of EIGRP? Select the best answer.

- ❍ A. Rapid convergence
- ❍ B. Pure link-state functionality
- ❍ C. Low bandwidth usage
- ❍ D. Multi-protocol support

Find the Answer p. 151

38. You are performing a password recovery operation on a router, and need to set the configuration register to ignore the startup configuration file. Which configuration register value would allow the recovery? Select the best answer.

- ❍ A. 0x2102
- ❍ B. 0x2142
- ❍ C. 0x2120
- ❍ D. 0x2124

Find the Answer p. 151

39. You need to set the password on your router for all telnet connections. Which of the following commands would not be required? Choose TWO.

- ❑ A. line vty 0 4
- ❑ B. line con 0
- ❑ C. login
- ❑ D. password cisco
- ❑ E. service password-encryption

Find the Answer p. 151

40. You need to copy a new IOS version from your TFTP server to your 2600 router. What command would accomplish this task? Select the best answer.

- ❍ A. copy tftp flash
- ❍ B. copy flash tftp
- ❍ C. copy startup-config tftp
- ❍ D. restore tftp flash

Find the Answer p. 151

41. You are configuring a 2600 series router, and need to set a default route. The next hop router is 192.168.10.1 and it is on serial 1/1. Which commands would statically route all packets destined for remote hosts to the correct device? Choose TWO.

- ❑ A. ip route 0.0.0.0 0.0.0.0 serial 1/1
- ❑ B. ip route 0.0.0.0 0.0.0.0 192.168.10.1
- ❑ C. ip route 192.168.10.1 0.0.0.0 0.0.0.0
- ❑ D. ip route serial 1/1 0.0.0.0 0.0.0.0

Find the Answer p. 151

42. You are consulting with a company that utilizes IP, IPX, and Apple networks. Which routing protocol would you utilize to support all three of these network protocols? Select the best answer.

- ❍ A. BGP
- ❍ B. OSPF
- ❍ C. EIGRP
- ❍ D. IGRP
- ❍ E. RIP

Find the Answer p. 151

43. The correct command syntax to assign an IP address to an interface is: Select the best answer.

- ❍ A. ip address 10.10.10.1 mask 255.255.255.0
- ❍ B. ip-address 10.10.10.1 255.255.255.0
- ❍ C. ip address 10.10.10.1 255.255.255.0
- ❍ D. ip address 10.10.10.1

Find the Answer p. 151

44. Which commands will allow you to verify the IP address you have assigned to an interface? Choose TWO.

- ❑ A. show ip interface brief
- ❑ B. show interfaces
- ❑ C. show ip
- ❑ D. show interfaces summary

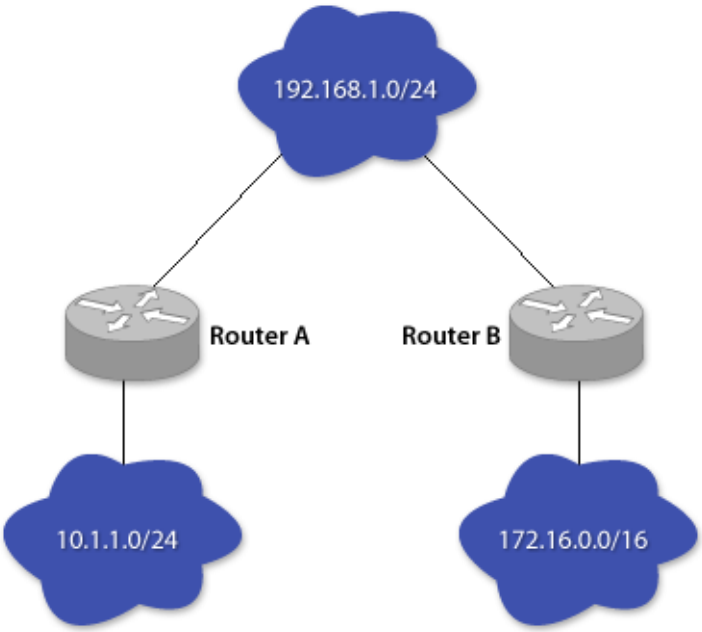
Find the Answer p. 151

45. You have two routers within your network, and you need to enable RIP as your routing protocol. The routers are connected by the 192.168.1.0/24 network. Router A also has an interface in the 10.1.1.0/24 network. Router B has an interface in the 172.16.0.0/16 network. What are all the commands necessary to enable RIP on router B, and ensure all connected networks are reachable by router A? Select the best answer.

- ❍ A. router rip
- ❍ B. router rip
  network 192.168.1.0
- ❍ C. enable router rip
  network 10.0.0.0
  network 192.168.1.0
- ❍ D. router rip
  network 172.16.0.0
  network 192.168.1.0

Find the Answer p. 151

Exhibit(s):



46. Choose the correct commands to enable EIGRP on a router connected to the 10.2.2.0/24 and 192.168.1.0/24 networks. Choose THREE.

- ❑ A. router eigrp
- ❑ B. network 10.2.2.0
- ❑ C. network 192.168.1.0
- ❑ D. router eigrp 100

Find the Answer p. 151

47. What does the following command sequence accomplish? line vty 0 4password Cisco Select the best answer.

- ❍ A. Sets the enable password for the router
- ❍ B. Sets the console password for the router
- ❍ C. Encrypts the line password
- ❍ D. Configures the virtual terminal, or telnet/ssh password for remote access

Find the Answer p. 151

48. What does the following command sequence accomplish? line con 0password Cisco Select the best answer.

- ❍ A. Sets the enable password for the router
- ❍ B. Sets the console password for the router
- ❍ C. Encrypts the line password
- ❍ D. Configures the virtual terminal, or telnet/ssh password for remote access

Find the Answer p. 151

49. Place the following boot sequence events in order: 1. Load the first IOS image in flash memory.2. Check the boot field of the configuration register.3. Check NVRAM for boot system comands.4. Attempt a net boot.5. Boot into ROMmon.6. Load the RXBOOT file from ROM. Select the best answer.

- ❍ A. 1,2,3,4,5,6
- ❍ B. 2,1,3,4,6,5
- ❍ C. 2,6,3,1,4,5
- ❍ D. 2,3,1,4,6,5

Find the Answer p. 152

50. You are configuring a router with the interface 172.16.1.1/24 and wish to have it participate in OSPF, area 0. Which command should be entered under the router ospf 1 command? Select the best answer.

- ❍ A. network 172.16.1.0 0.0.0.255
- ❍ B. network 172.16.1.0 0.0.0.255 area 0
- ❍ C. network 172.16.1.0 255.255.255.0 area 0
- ❍ D. none

Find the Answer p. 152

51. One of your end users cannot browse websites on the Internet. They have a statically assigned IP address on their PC, and can see all the local PCs and resolve their hostnames. What Windows commands could you use in the Windows command window to troubleshoot the problem? Choose THREE.

- ❑ A. tracert XX.XX.XX.XX
- ❑ B. nslookup
- ❑ C. ping XX.XX.XX.XX
- ❑ D. ipconfig
- ❑ E. arp -a

Find the Answer p. 152

52. Examine the exhibit. What is the administrative distance for the route to the 10.1.3.0/24 network? Select the best answer.

- ❍ A. 116
- ❍ B. 0
- ❍ C. 6
- ❍ D. 110

Find the Answer p. 152

Exhibit(s):

```
Router>sh ip route

Gateway of last resort is 172.16.1.1 to network 0.0.0.0

     172.16.0.0/24 is subnetted, 2 subnets
C       172.16.1.0 is directly connected, FastEthernet2/0
C       172.16.2.0 is directly connected, FastEthernet4/0
     10.0.0.0/8 is variably subnetted, 15 subnets, 2 masks
O       10.1.3.0/24 [110/6] via 172.16.2.2, 08:58:53, FastEthernet4/0
O E1    10.5.6.0/24 [110/11] via 172.16.2.2, 08:58:53, FastEthernet4/0
O IA    10.1.2.0/24 [110/3] via 192.168.1.26, 08:58:53, FastEthernet0/0
O       10.5.5.0/24 [110/6] via 172.16.2.2, 08:58:53, FastEthernet4/0
S       10.1.1.0/24 [1/0] via 172.16.1.1
C       10.250.1.1/32 is directly connected, Loopback0
     192.168.1.0/30 is subnetted, 2 subnets
C       192.168.1.24 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 [1/0] via 172.16.1.1
```

53. Examine the exhibit. What is the routing metric on the 10.5.6.0/24 route? Select the best answer.

- ❍ A. 11
- ❍ B. 110
- ❍ C. E1
- ❍ D. 121

Find the Answer p. 152

Exhibit(s):

```
Router>sh ip route

Gateway of last resort is 172.16.1.1 to network 0.0.0.0

     172.16.0.0/24 is subnetted, 2 subnets
C       172.16.1.0 is directly connected, FastEthernet2/0
C       172.16.2.0 is directly connected, FastEthernet4/0
     10.0.0.0/8 is variably subnetted, 15 subnets, 2 masks
O       10.1.3.0/24 [110/6] via 172.16.2.2, 08:58:53, FastEthernet4/0
O E1    10.5.6.0/24 [110/11] via 172.16.2.2, 08:58:53, FastEthernet4/0
O IA    10.1.2.0/24 [110/3] via 192.168.1.26, 08:58:53, FastEthernet0/0
O       10.5.5.0/24 [110/6] via 172.16.2.2, 08:58:53, FastEthernet4/0
S       10.1.1.0/24 [1/0] via 172.16.1.1
C       10.250.1.1/32 is directly connected, Loopback0
     192.168.1.0/30 is subnetted, 2 subnets
C       192.168.1.24 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 [1/0] via 172.16.1.1
```

54. Your router is receiving routes for the same 192.168.1.0/24 network from four different routing protocols: internal EIGRP, OSPF, RIP, and external EIGRP. Which route will be placed in the routing table? Select the best answer.

- ❍ A. OSPF
- ❍ B. Internal EIGRP
- ❍ C. RIP
- ❍ D. External EIGRP

Find the Answer p. 152

55. Which commands are required to enable logging of informational messages to be viewable while connected to a device via telnet? Choose TWO.

- ❑ A. logging monitor informational
- ❑ B. logging console informational
- ❑ C. logging telnet informational
- ❑ D. logging on
- ❑ E. logging enable

Find the Answer p. 152

56. Which commands are required to enable logging of informational messages to a router's memory, as displayed with the "show logging" command? Choose TWO.

- ❑ A. logging buffered informational
- ❑ B. logging console informational
- ❑ C. logging memory informational
- ❑ D. logging on
- ❑ E. logging enable

Find the Answer p. 152

57. Host A is sending packets destined for LA to its default Gateway in San Francisco. The San Francisco router has both EIGRP and RIP enabled. What is the next hop for packets destined for LA? (Note: All EIGRP routes are internal, and the LA and SF routers are running both protocols.)

Detailed Explanation p. 275

58. Drag and drop the associated administrative distances for each routing protocol.

A. 90 B. 170 C. 110 D. 1

Static Route	EIGRP (internal)	OSPF	EIGRP (external)

Detailed Explanation p. 275

59. The Cisco Router Memory Types are all listed on the right. Match the contents of the memory with the memory type. Drag and drop the contents to the correct memory type.

A. Startup Config

B. Cisco IOS Software

C. Running Config and Working Memory

D. Basic IOS Software

Flash

NVRAM

ROM

RAM

Detailed Explanation p. 276

Chapter 5
Explain & select the appropriate administrative tasks required for a WLAN

1. You are designing a wireless network for a small office that will have one access point for end users that is connected to a wired LAN. Which WLAN topology does this describe? Select the best answer.

   - ❍ A. Independent Basic Service Sets (IBSS)
   - ❍ B. Basic Service Sets (BSS)
   - ❍ C. Extended Service Sets (ESS)
   - ❍ D. Service Set Identifier (SSID)

   Find the Answer p. 153

2. You are sitting outside at a table with a study group, preparing for your CCNA exam, and want to transfer files to and from laptops. What type of wireless topology does this describe? Select the best answer.

   - ❍ A. Independent Basic Service Sets (IBSS)
   - ❍ B. Basic Service Sets (BSS)
   - ❍ C. Extended Service Sets (ESS)
   - ❍ D. Ad Hoc Service Sets (AHSS)

   Find the Answer p. 153

3. Which of the following are key components to the 802.11 Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA) Model? Choose all that apply.

- ❑ A. Carrier Sense
- ❑ B. DCF
- ❑ C. Acknowledgment frames
- ❑ D. Request to Send/Clear to Send
- ❑ E. Frame fragmentation

Find the Answer p. 153

4. In CSMA/CA, which component uses the Network Allocation Vector (NAV) to determine the state of the wireless medium? Select the best answer.

- ❍ A. Acknowledgment frames
- ❍ B. Carrier Sense
- ❍ C. Frame fragmentation
- ❍ D. Request to Send/Clear to Send

Find the Answer p. 153

5. Which of the following devices are non-standard within wireless networks, according to the 802.11 standard? Choose THREE.

- ❑ A. Repeater access point (AP)
- ❑ B. Universal clients
- ❑ C. Workgroup bridge
- ❑ D. Access point

Find the Answer p. 153

6. Which step in the station connectivity process allows an AP to map a logical port/association identifier to the wireless station? Select the best answer.

- ❍ A. Probe/scanning process
- ❍ B. Authentication process
- ❍ C. Association process
- ❍ D. Verification process

Find the Answer p. 153

7. Which field in the wireless probe response frame contains the data rates that the AP supports? Select the best answer.

- ❍ A. Capability Information Field
- ❍ B. SSID Element
- ❍ C. Support Rates Element
- ❍ D. PHY Parameter Set Element

Find the Answer p. 153

8. Identify the three 802.11 MAC frame types. Choose THREE.

- ❑ A. Control Frames
- ❑ B. Management Frames
- ❑ C. Data Frames
- ❑ D. Acknowledgement Frames

Find the Answer p. 153

9. Which of the following wireless Physical Layer building blocks allows for high speed transmission of data over noisy channels? Select the best answer.

- ❍ A. Scrambling
- ❍ B. Coding
- ❍ C. Interleaving
- ❍ D. Symbol mapping and modulation

Find the Answer p. 153

10. Which wireless LAN standards support transmission rates up to 54 Mbps? Choose TWO.

- ❑ A. 802.11g
- ❑ B. 802.11a
- ❑ C. 802.11b
- ❑ D. 802.11z

Find the Answer p. 153

11. Choose the order in which the wireless standards were created. Select the best answer.

- ❍ A. 802.11a, 802.11b, 802.11g, 802.11n
- ❍ B. 802.11b, 802.11a, 802.11g, 802.11n
- ❍ C. 802.11g, 802.11a, 802.11b, 802.11n
- ❍ D. 802.11n, 802.11a, 802.11b, 802.11g

Find the Answer p. 153

12. When configuring WEP (Wired Equivalent Privacy) in a wireless network, what are the two key sizes that are supported? Choose TWO.

- ❑ A. 40 bit
- ❑ B. 128 bit
- ❑ C. 48 bit
- ❑ D. 156 bit

Find the Answer p. 153

13. Which of the following is NOT a WEP security feature? Select the best answer.

- ❍ A. Message Integrity Check (MIC)
- ❍ B. Temporary Key Integrity Protocol (TKIP)
- ❍ C. Broadcast Key Rotation
- ❍ D. MAC-based authentication

Find the Answer p. 153

14. Which wireless network authentication type utilizes a RADIUS server to authenticate and provide WEP keys? Select the best answer.

- ❍ A. Network-EAP
- ❍ B. MAC address
- ❍ C. Open
- ❍ D. Shared key

Find the Answer p. 153

15. Which wireless authentication types can use a RADIUS server for authentication? Choose TWO.

- ❑ A. Network-EAP
- ❑ B. MAC address
- ❑ C. Open
- ❑ D. Shared Key
- ❑ E. Combined MAC-EAP-OA

Find the Answer p. 153

16. Which component below is NOT required for Wi-fi Protected Access (WPA) security? Select the best answer.

- ❍ A. Software support in the access point
- ❍ B. Software support in the client devices
- ❍ C. Wi-fi-certified NIC driver support for WPA
- ❍ D. WEP-enabled client

Find the Answer p. 153

17. What is the difference between WPA 1 and 2? Select the best answer.

- ❍ A. WPA 1 can only use TKIP encryption.
- ❍ B. WPA 2 supports the AES cipher, and WPA 1 does not.
- ❍ C. WPA 2 has improvements in the information elements within frames.
- ❍ D. WPA 1 is only appropriate for the small office environment.

Find the Answer p. 153

18. Which key lengths are supported by the AES cipher? Choose THREE.

- ❑ A. 40 bit
- ❑ B. 128 bit
- ❑ C. 192 bit
- ❑ D. 256 bit

Find the Answer p. 153

19. You are implementing a wireless network for a healthcare organization that is very focused on security. What are some key recommendations for securing a wireless network that come standard in Cisco access points? Choose FOUR.

- ❑ A. Utilize WPA.
- ❑ B. Turn off the SSID broadcast and change the default SSID.
- ❑ C. Utilize WEP.
- ❑ D. Turn off administrative access through the wireless interface.
- ❑ E. Place APs in the center of the building or floor, not near a window or door.

Find the Answer p. 153

20. You are configuring clients to join a WPA-enabled network. What parameters are required within the client adapter settings to enable connectivity? Choose THREE.

- ❑ A. Select or enter the SSID.
- ❑ B. Enter a static IP.
- ❑ C. Set the network authentication method to WPA.
- ❑ D. Choose an encryption type.

Find the Answer p. 153

21. Match the three wireless topologies with their associated characteristic on the right. Drag and Drop the left topologies onto the correct characteristic.

A. Independent Basic Service Set (IBSS)

B. Basic Service Set (BSS)

C. Extended Service Set (ESS)

Requires an Access Point

Ad Hoc Network

Multiple BSS

Detailed Explanation p. 285

Chapter 6
Identify security threats to a network and describe general methods to mitigate those threats

1. With respect to network security, which definition below describes a digital certificate? Select the best answer.

   - ❍ A. A digitally signed message that is used to attest to the validity of a public key
   - ❍ B. A trusted third party that proves the validity of a certificate
   - ❍ C. An encrypted message digest that is attached to a document
   - ❍ D. A scanned image of a certificate

Find the Answer p. 154

2. What security feature ensures that only entities allowed to see protected data see it in usable or readable format? Select the best answer.

   - ❍ A. Authorization
   - ❍ B. Integrity
   - ❍ C. Confidentiality
   - ❍ D. Access control

Find the Answer p. 154

3. What are the three components of the Secure Shell (SSH) protocol? Choose THREE.

   - ❑ A. Data Link Layer Protocol
   - ❑ B. Transport Layer Protocol
   - ❑ C. User Authentication Protocol
   - ❑ D. Connection Protocol

Find the Answer p. 154

4. You have configured a router for local authentication using the following commands: aaa new-modelusername cisco password 0 ciscoline vty 0 15transport input telnet What additional commands are required to enable and restrict logins to ssh only? Choose THREE.

- ❑ A. crypto key generate rsa
- ❑ B. ip domain-name router.cisco.com
- ❑ C. ip ssh time-out 30
- ❑ D. transport input ssh
- ❑ E. ip ssh authentication-retries 3

Find the Answer p. 154

5. You are configuring a router to act as an SSH server. What steps are required to enable this function? Choose FOUR.

- ❑ A. Generate an SSH key.
- ❑ B. Configure the hostname.
- ❑ C. Configure the DNS domain.
- ❑ D. Enable SSH transport on the VTY lines.
- ❑ E. ip ssh authentication-retries 3

Find the Answer p. 154

6. What command will encrypt VTY passwords? Select the best answer.

- ❍ A. Router(config)#enable secret
- ❍ B. Router(config)#password XXXXX
- ❍ C. Router(config)#service password-encryption
- ❍ D. Router(config)#username secret

Find the Answer p. 154

7. Which of the following firewall types does the following statement describe? Captures and inspects packets with an inspection engine at the Network Layer, where they are queued and then analyzed at all layers of the OSI model. Select the best answer.

- ❍ A. Packet filtering firewall
- ❍ B. Application-level firewall
- ❍ C. Stateful inspection firewalls
- ❍ D. Dynamic packet filtering firewall

Find the Answer p. 154

8. What type of firewall is the Cisco PIX? Select the best answer.

- ❍ A. Packet filtering firewall.
- ❍ B. Application-level firewall.
- ❍ C. Stateful inspection firewalls.
- ❍ D. Dynamic packet filtering firewall.
- ❍ E. All of these.

Find the Answer p. 154

9. You want to configure centralized logging for all your network devices for security monitoring. Which steps are required? Choose THREE.

- ❑ A. Configure NTP.
- ❑ B. Configure a SYSLOG server.
- ❑ C. Enter the "logging ip" command.
- ❑ D. Enter the "logging console" command.
- ❑ E. Enter the "logging buffered" command.

Find the Answer p. 154

10. What type of attack does the following access list prevent? access-list number deny icmp any any redirectaccess-list number deny ip 127.0.0.0 0.255.255.255 anyaccess-list number deny ip 224.0.0.0 31.255.255.255 anyaccess-list number deny ip host 0.0.0.0 any Select the best answer.

- ❍ A. Directed broadcasts
- ❍ B. Spoofing
- ❍ C. Routing protocol attack
- ❍ D. TCP SYN attack

Find the Answer p. 154

11. What type of attack alters packets at the TCP level, and masquerades as a known host address? Select the best answer.

- ❍ A. SYN attack
- ❍ B. TCP sequence number attack
- ❍ C. Spoofing attack
- ❍ D. Fragmentation attack

Find the Answer p. 154

12. Examine the following excerpt from a Cisco device's running configuration: enable secret 5 1PhXB$ZF1hptFe6PADLVC/EGN6N/What does the "5" mean? Select the best answer.

- ❍ A. That the following characters are to be interpreted as plain text.
- ❍ B. The following characters are to be interpreted as having simple encryption.
- ❍ C. The following characters should be interpreted as being hashed with MD5.
- ❍ D. It means nothing.

Find the Answer p. 154

13. Why is it important to configure a loopback interface on a router from a security perspective? Choose THREE.

- ❑ A. Different router services can bind to any of the different interfaces on the router.
- ❑ B. It makes it possible to lock down other device security.
- ❑ C. Loopback interface configuration offers no additional security.
- ❑ D. The loopback address is not shown by network mapping software.

Find the Answer p. 154

14. How many different privilege levels does the Cisco IOS provide? Select the best answer.

- ❍ A. 2
- ❍ B. 15
- ❍ C. 16
- ❍ D. 5

Find the Answer p. 154

15. Which of the following services are enabled by default on a Cisco router? Choose THREE.

- ❑ A. IP redirects
- ❑ B. SNMP
- ❑ C. Cisco Discovery Protocol (CDP)
- ❑ D. TCP small servers
- ❑ E. UDP small servers

Find the Answer p. 154

16. Which command below disables the Cisco Discovery Protocol GLOBALLY? Select the best answer.

- ❍ A. Router#no cdp run
- ❍ B. Router#cdp disable
- ❍ C. Router(config)#no cdp run
- ❍ D. Router(config)#cdp disable

Find the Answer p. 154

17. Examine the exhibit and choose the correct statements below concerning the security configuration of the device. Choose TWO.

- ❑ A. The terminal password is encrypted with the MD5 Hash.
- ❑ B. The terminal password is encrypted with Cisco's simple algorithm and can be broken.
- ❑ C. The two interfaces are protected against directed broadcast attacks.
- ❑ D. The two interfaces are not protected against directed broadcast attacks.

Find the Answer p. 154

Exhibit(s):

```
Building configuration...

Current configuration:
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
service password-encryption
!
hostname MRY-ROUTER
!
enable secret 5 $1$PhXB$ZF1hptFe6PADLVC/EGN6N/
enable password 7 045802150C2E47470D48
!
ip subnet-zero
!
!
!
interface Ethernet0
 ip address 192.168.32.1 255.255.255.0
 ip helper-address 192.168.2.15
 no ip directed-broadcast
!
interface Serial0
 ip address 172.16.1.14 255.255.255.252
 no ip directed-broadcast
!

!
ip classless

!
!
line con 0
 transport input none
line vty 0 4
 password 7 121A0C041104070D2E
 login
!
end
```

18. Your network is being flooded by spoofed ICMP reply packets. What interface-level command can you utilize to drop these packets? Select the best answer.

- ❍ A. no ip directed-broadcast
- ❍ B. no ip source-router
- ❍ C. no ip spoof
- ❍ D. ip verify unicast reverse-path

Find the Answer p. 154

19. You are consulting for a client that wants to secure their switches, and lock down the ports to specific MAC addresses. Which commands will lock down a switch port to a specific source MAC address, and shut down the port if there is a violation? Choose TWO.

- ❑ A. switchport port-security mac-address XXXX.XXXX.XXXX
- ❑ B. switchport port-security violation shutdown
- ❑ C. switchport port-security violation restrict
- ❑ D. switchport mode access security

Find the Answer p. 154

20. Which commands can be used to reenable a switch interface when there is a MAC security violation? Choose TWO.

- ❑ A. Switch(config-if)#No shutdown
- ❑ B. Switch(config)# errdisable recovery cause psecure-violation
- ❑ C. Switch(config-if)# errdisable recovery cause psecure-violation
- ❑ D. Switch(config)#disable switchport security

Find the Answer p. 154

Chapter 7
Implement, verify, & troubleshoot NAT and ACLs in a medium-size Enterprise branch office network

1. You are implementing an IP access list. You want this access list to be applied to incoming traffic on a specific interface. Which command will you use? Select the best answer.

   - ❍ A. access-list 101 in
   - ❍ B. access-list 101 out
   - ❍ C. ip access-group 101 in
   - ❍ D. ip access-group 101 out
   - ❍ E. ip traffic-filter 101

Find the Answer p. 155

2. You create an access list and assign it to an interface. You perform testing; however, the access list is not working as expected. You now want to see the number of matched packets during your testing for each specific access-list entry. Which command can you use? Select the best answer.

   - ❍ A. show interface
   - ❍ B. show running-config
   - ❍ C. show access-lists
   - ❍ D. debug security
   - ❍ E. debug access-lists

Find the Answer p. 155

3. You create an extended access list in order to filter communication between two specific hosts. Which router mode will you use to apply this access list? Select the best answer.

- ❍ A. Privileged EXEC mode
- ❍ B. Global configuration mode
- ❍ C. Router configuration mode
- ❍ D. Interface configuration mode
- ❍ E. Line configuration mode

Find the Answer p. 155

4. Your organization uses access lists to filter traffic between applications. What is the most likely problem with the following access list: access-list 101 permit ip any anyaccess-list 101 deny tcp any any eq 1234 Select the best answer.

- ❍ A. This must be a standard access list, and it is configured as extended.
- ❍ B. This must be an extended access list, and it is configured as standard.
- ❍ C. The second line will never be evaluated, and all hosts will be allowed any IP access.
- ❍ D. No host IP addresses are specified, so no host will be allowed access.
- ❍ E. No network IP addresses are specified, so no network will be allowed access.

Find the Answer p. 155

5. Which of the following statements is true about the implementation of IP access lists on interfaces? Select the best answer.

- ❍ A. You can implement a single access list per interface, regardless of traffic direction.
- ❍ B. You can implement either an inbound access list, or an outbound access list.
- ❍ C. If you implement an inbound access list, the outbound access list configured for the interface won't be evaluated.
- ❍ D. If you implement an outbound access list, the inbound access list configured for the interface won't be evaluated.
- ❍ E. You can implement one access list in each direction.

Find the Answer p. 155

6. What is the significance of the "implied deny all" statement in access lists? Select the best answer.

- ❍ A. Router interfaces block any traffic by default.
- ❍ B. Access lists can only contain deny statements.
- ❍ C. The first statement within an access list must be a deny statement.
- ❍ D. The last statement of any access list is a deny any statement, even if not specified in the access list.
- ❍ E. An access list is only valid if the last statement in it is a deny all statement.

Find the Answer p. 155

7. Your organization uses access lists to filter traffic between applications. What is the most likely problem with the following access list? access-list 101 deny udp any anyaccess-list 101 permit icmp any any Select the best answer.

- ❍ A. Only network diagnostic applications will be able to function.
- ❍ B. Only UDP traffic will be permitted.
- ❍ C. No ICMP traffic will be permitted.
- ❍ D. This access list overrides the implicit deny all statement.
- ❍ E. Mixing IP protocols, such as UDP and ICMP, in a single access list is not supported.

Find the Answer p. 155

8. You are designing an access list to filter ICMP traffic from a host with an IP address 192.168.1.1 to any host on subnet 192.168.3.0/24. Which statement(s) will you use as part of this access list? Select the best answer.

- ❍ A. access-list 101 deny icmp 192.168.1.0 0.0.0.255 any
  access-list 101 deny icmp 192.168.3.0 0.0.0.255 any
- ❍ B. access-list 102 deny icmp host 192.168.1.1 any
  access-list 102 deny icmp 192.168.3.0 0.0.0.255 any
- ❍ C. access-list 103 deny icmp host 192.168.1.1 192.168.3.0 255.255.255.0
- ❍ D. access-list 104 deny icmp host 192.168.1.1 host 192.168.3.0
- ❍ E. access-list 105 deny icmp host 192.168.1.1 192.168.3.0 0.0.0.255

Find the Answer p. 155

9. When is an outbound access list applied to a packet? Select the best answer.

- ❍ A. Immediately after the packet is received by the router.
- ❍ B. Before the router makes a routing decision.
- ❍ C. Immediately after a routing decision has been made.
- ❍ D. Immediately before the interface puts the frame on the network.

Find the Answer p. 155

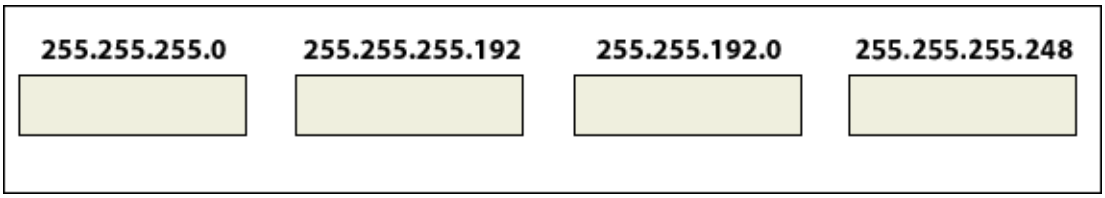
10. Your organization uses access lists to filter traffic between applications. What is the most likely problem with the following access list: access-list 101 remark deny any smtp packetsaccess-list 101 remark permit any other ip packetsaccess-list 101 permit tcp any any eq smtpaccess-list 101 permit ip any any Select the best answer.

- ❍ A. No network IP addresses are specified - so no network will be allowed access.
- ❍ B. No host IP addresses are specified - so no host will be allowed access.
- ❍ C. This must be a standard access list, but it is configured as extended.
- ❍ D. This must be an extended access list, but it is configured as standard.
- ❍ E. It does not do what it is intended to.

Find the Answer p. 155

11. Drag and drop the correct binary representation of the last octet for each of the subnet masks listed below.

A. 00000000 B. 11111000 C. 11000000



Detailed Explanation p. 302

12. Calculate then drag and drop the number of networks and hosts provided by using the following network masks.

A. 126 B. 16 C. 512 D. 14

	Networks	Hosts
Class B/255.255.255.128		
Class C/255.255.255.240		

Detailed Explanation p. 302

13. Host H1 should be able to Telnet, FTP and view the website on Host H2. Router R1 has an outbound ACL applied to Fa0/1 that is supposed to allow the mentioned access and nothing more. View the ACL and identify what access the user H1 will actually be allowed to reach on H2. Choose TWO. Select the best TWO answers.

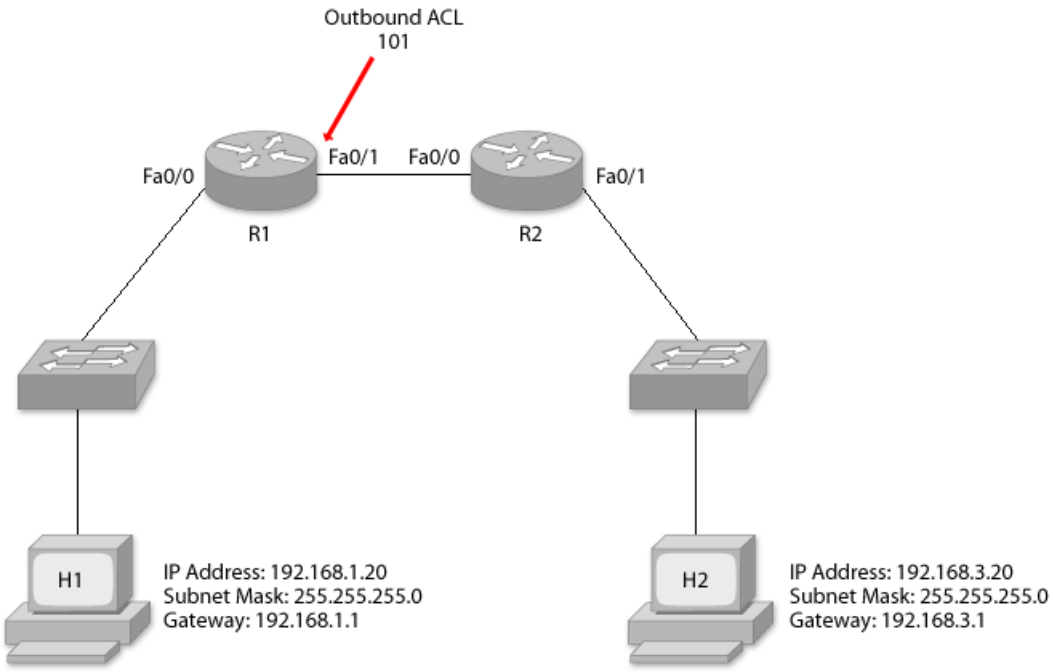
- ❑ A. H1 will be able to access H2 using www
- ❑ B. H1 will be able to access H2 using Telnet
- ❑ C. H1 will be able to access H2 using ftp
- ❑ D. H1 will be able to access H2 using DNS

Find the Answer p. 155

Exhibit(s):

```
access-list 101 permit tcp host 192.168.1.20 gt 0 host 192.168.3.20 eq ftp
access-list 101 permit tcp any host 192.168.3.20 eq www
access-list 101 permit tcp host 192.168.1.20 eq telnet host 192.168.3.20 eq telnet
access-list 101 permit udp any host 192.168.3.20 eq 23
access-list 101 deny   ip any any
```

Exhibit(s):



14. Your boss asked you to limit access from H1 to H2. An ACL was created and applied outbound on R1 fa0/1 to allow only certain access. Which TCP and UDP ports are permitted by ACL 101? Choose THREE. Select the best THREE answers.

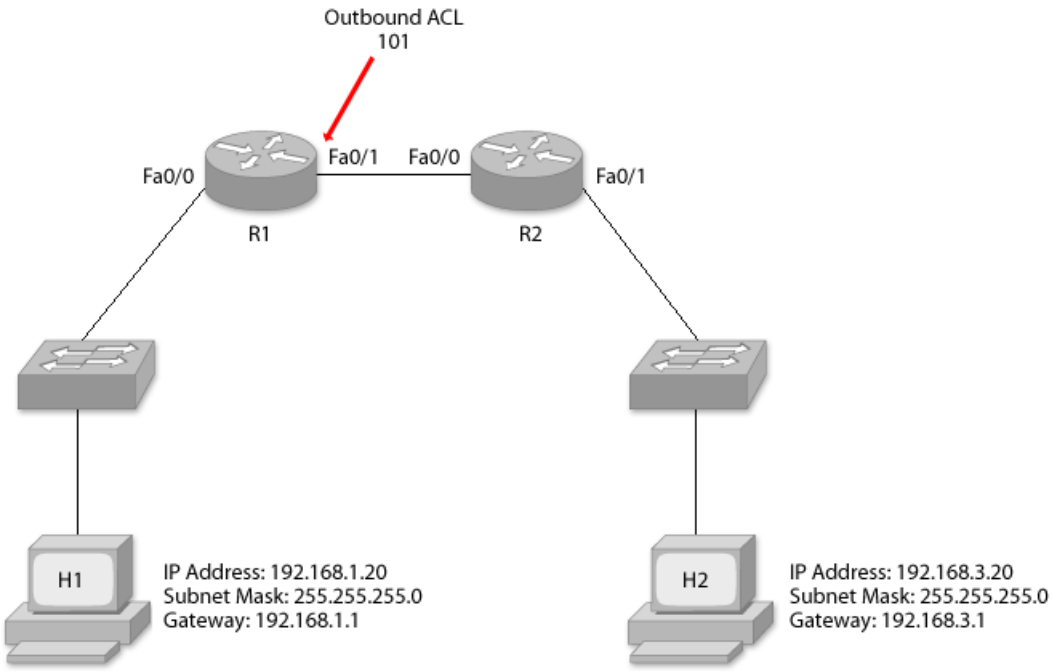
- ❑ A. H1 will be able to access H2 using www.
- ❑ B. H1 will be able to access H2 using Telnet.
- ❑ C. H1 will be able to access H2 using UDP 23.
- ❑ D. H1 will be able to access H2 using HTTPS.

Find the Answer p. 155

Exhibit(s):

```
access-list 101 permit tcp host 192.168.1.20 host 192.168.3.20 eq 443
access-list 101 permit tcp host 192.168.1.20 host 192.168.3.20 eq www
access-list 101 deny tcp host 192.168.1.20 host 192.168.3.20 range 20 23
access-list 101 permit tcp host 192.168.1.20 host 192.168.3.20 eq telnet
access-list 101 permit udp any host 192.168.3.20 eq 23
```

Exhibit(s):



Chapter 8
Implement and verify WAN links

1. Your service provider does not support LMI, and you need to manually configure DLCIs on one of your Frame Relay interfaces. Which command will you use? Select the best answer.

   - ❍ A. dlci 105
   - ❍ B. map dlci 105
   - ❍ C. frame-relay map
   - ❍ D. frame-relay interface-dlci
   - ❍ E. frame-relay intf-type

   Find the Answer p. 156

2. You are designing an internetwork. You need to select a WAN technology that can easily provide for partial or full-mesh connectivity through the WAN. Which technology will you choose? Select the best answer.

   - ❍ A. Analog dial-up
   - ❍ B. Leased line
   - ❍ C. ISDN
   - ❍ D. Frame Relay
   - ❍ E. ADSL

   Find the Answer p. 156

3. You want to troubleshoot outgoing Demand Dial Routing. Which command will allow you to see the reason for dialing? Select the best answer.

- ❍ A. show dialer reason
- ❍ B. show dialer interface
- ❍ C. show dialer sessions
- ❍ D. show ip route
- ❍ E. show int bri 0

Find the Answer p. 156

4. Which encapsulation types can you use over a circuit-switched line? Choose all that apply.

- ❑ A. HDLC
- ❑ B. PPP
- ❑ C. SLIP
- ❑ D. Frame Relay
- ❑ E. X.25

Find the Answer p. 156

5. Which LMI types are supported by Cisco devices? Choose THREE.

- ❑ A. Cisco
- ❑ B. ANSI
- ❑ C. Q933A
- ❑ D. Q933B
- ❑ E. 802.1q

Find the Answer p. 156

6. What is the purpose of the Frame Relay map command? Select the best answer.

- ❍ A. To identify LMI types on remote routers
- ❍ B. To ensure proper encapsulation
- ❍ C. To provide address-to-DLCI mapping
- ❍ D. To create network mapping/topology

Find the Answer p. 156

7. You are troubleshooting a frame-relay issue, and need to examine statistics for a particular interface and verify the LMI type. Which command below will display both pieces of information? Select the best answer.

- ❍ A. show frame-relay pvc
- ❍ B. show frame-relay lmi
- ❍ C. show frame-relay map
- ❍ D. show frame-relay statistics

Find the Answer p. 156

8. You have two routers connected by a leased line, and you have configured the serial interfaces on each side of the link. You cannot ping, and the line protocol is not up. What is the problem? (Examine the Exhibit.) Select the best answer.

- ❍ A. The encapsulations do not match.
- ❍ B. There is a cabling problem with the routers.
- ❍ C. Router A is utilizing Serial 0/0 and Router B is utilizing Serial 0. These must match in order for the link to work.
- ❍ D. The IP addresses are not in the same network.

Find the Answer p. 156

Exhibit(s):

```
Router A

Serial0/0 is up, line protocol is down
  Hardware is PowerQUICC Serial
  Description: connected to CBS-1600
  Internet address is 172.16.1.13/30
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive set (10 sec)
  Last input 00:00:01, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 461
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/461 (size/max total/threshold/drops)
     Conversations  0/66/256 (active/max active/max total)
     Reserved Conversations 0/0 (allocated/max allocated)
     Available Bandwidth 1158 kilobits/sec
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     12466566 packets input, 865587826 bytes, 0 no buffer
     Received 468059 broadcasts, 0 runts, 2 giants, 0 throttles
     250 input errors, 146 CRC, 96 frame, 0 overrun, 0 ignored, 8 abort
     11805093 packets output, 3943519252 bytes, 0 underruns
     0 output errors, 0 collisions, 25 interface resets
     0 output buffer failures, 0 output buffers swapped out
     8 carrier transitions


Router B

Serial0 is up, line protocol is down
  Hardware is QUICC Serial
  Internet address is 172.16.1.14/30
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  Last input 00:00:00, output 00:00:03, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 24
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/24 (size/max total/threshold/drops)
     Conversations  0/35/256 (active/max active/max total)
     Reserved Conversations 0/0 (allocated/max allocated)
  5 minute input rate 1000 bits/sec, 1 packets/sec
  5 minute output rate 1000 bits/sec, 1 packets/sec
     5538227 packets input, 3378657450 bytes, 0 no buffer
     Received 211807 broadcasts, 0 runts, 0 giants, 0 throttles
     1 input errors, 0 CRC, 1 frame, 0 overrun, 0 ignored, 0 abort
     6116614 packets output, 459244763 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
```

9. You are attempting to enable one of your WAN links between HQ and one of your branches and you cannot ping the branch. You have "show interfaces" output for each of the serial interfaces, shown within the exhibit. What is the problem? Select the best answer.

- ❍ A. The encapsulation types do not match.
- ❍ B. Router A is utilizing Serial 0/0 and Router B is utilizing Serial 0. These must match in order for the link to work.
- ❍ C. The IP addresses are not in the same network.
- ❍ D. Router A and Router B are utilizing different hardware types, PowerQUICC and QUICC.

Find the Answer p. 156

Exhibit(s):

```
Router A

Serial0/0 is up, line protocol is up
  Hardware is PowerQUICC Serial
  Description: connected to CBS-1600
  Internet address is 172.16.1.12/30
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive set (10 sec)
  Last input 00:00:01, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 461
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/461 (size/max total/threshold/drops)
     Conversations  0/66/256 (active/max active/max total)
     Reserved Conversations 0/0 (allocated/max allocated)
     Available Bandwidth 1158 kilobits/sec
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     12466566 packets input, 865587826 bytes, 0 no buffer
     Received 468059 broadcasts, 0 runts, 2 giants, 0 throttles
     250 input errors, 146 CRC, 96 frame, 0 overrun, 0 ignored, 8 abort
     11805093 packets output, 3943519252 bytes, 0 underruns
     0 output errors, 0 collisions, 25 interface resets
     0 output buffer failures, 0 output buffers swapped out
     8 carrier transitions


Router B

Serial0 is up, line protocol is up
  Hardware is QUICC Serial
  Internet address is 172.16.1.14/30
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input 00:00:00, output 00:00:03, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 24
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/24 (size/max total/threshold/drops)
     Conversations  0/35/256 (active/max active/max total)
     Reserved Conversations 0/0 (allocated/max allocated)
  5 minute input rate 1000 bits/sec, 1 packets/sec
  5 minute output rate 1000 bits/sec, 1 packets/sec
     5538227 packets input, 3378657450 bytes, 0 no buffer
     Received 211807 broadcasts, 0 runts, 0 giants, 0 throttles
     1 input errors, 0 CRC, 1 frame, 0 overrun, 0 ignored, 0 abort
     6116614 packets output, 459244763 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
```

10. Which of the following six protocols is NOT associated with IPv4 or IPv6? Choose the best answer.

- ❍ A. RIPng
- ❍ B. RIPv2
- ❍ C. EIGRP
- ❍ D. OSPFv3
- ❍ E. MP-BGP4
- ❍ F. OSPFv1

Find the Answer p. 156

11. What is the maximum number of subnets available to an IPv6 address? Choose the best answer.

- ❍ A. 16,777,214
- ❍ B. 65,536
- ❍ C. 2,097,151
- ❍ D. 2^64

Find the Answer p. 156

12. Which of the following is an EUI-64 compatible MAC address? Choose the best answer.

- ❍ A. 4832:94FF:FE43:2394
- ❍ B. 4832:94FF:FF43:2394
- ❍ C. 2004:1847:92AC:4BC3:4832:94FF:FE43:2394
- ❍ D. FFFE:0000:0000:0000:0000:0000:0001:0002

Find the Answer p. 156

13. Which of the following is a valid IPv6 address for the predefined prefix of 3493:AAAA:0001?

- ❍ A. 3493:AAAA:0001:0001:4832:94FF:FE43:2394::/64
- ❍ B. 3493:AAAA:0001:0001:4832:94FF:FE43:2394::/24
- ❍ C. 4832:94FF:FE43:2394:3493:AAAA:0001:0001::/64
- ❍ D. FFFE:0000:0000:0000:0000:3493:AAAA:0001

Find the Answer p. 156

14. Which of the following are features of Stateless DHCP? Choose the best answer.

- ❍ A. Remembers IPv6 addresses of client requests.
- ❍ B. Supplies DNS info.
- ❍ C. Site Prefix assignment.
- ❍ D. Host Identifier Allocation.

Find the Answer p. 156

15. Which of the following is a valid IPv6 address command for Cisco IOS? Choose the best answers.

- ❑ A. Show ipv6 route
- ❑ B. ip address 5349:0000:0000::/64 eui-64
- ❑ C. ipv6 interface <port>
- ❑ D. show EUI-64

Find the Answer p. 156

16. What organization is responsible for the IPv6 address assignment process? Choose the best answers.

- ❍ A. ICANN
- ❍ B. RIR
- ❍ C. IANA
- ❍ D. IEEE

Find the Answer p. 156

17. What organization is responsible for the IPv6 address assignment process? Choose the best answers.

- ❍ A. ICANN
- ❍ B. RIR
- ❍ C. IANA
- ❍ D. IEEE

Find the Answer p. 156

18. Which of the following technologies includes a protocol field? Choose the best answers.

- ❍ A. PPP
- ❍ B. HDLC
- ❍ C. CDP
- ❍ D. MD5

Find the Answer p. 156

19. Which of the following protocols uses "Magic Numbers?" Choose the best answers.

- ❍ A. PPP
- ❍ B. LCP
- ❍ C. CDP
- ❍ D. FTP

Find the Answer p. 156

20. What type of encryption is used by CHAP (Challenge Handshake Authentication Protocol) on PPP connections? Choose the best answer.

- ❍ A. MD5
- ❍ B. PAP
- ❍ C. RSA
- ❍ D. AES

Find the Answer p. 156

21. What type of encryption is used by CHAP (Challenge Handshake Authentication Protocol) on PPP connections? Choose the best answer.

- ❍ A. MD5
- ❍ B. PAP
- ❍ C. RSA
- ❍ D. AES

Find the Answer p. 156

22. What type of encryption is used by CHAP (Challenge Handshake Authentication Protocol) on PPP connections? Choose the best answer.

- ❍ A. MD5
- ❍ B. PAP
- ❍ C. RSA
- ❍ D. AES

Find the Answer p. 156

23. Press the "Exhibit" button to observe the following output of the show interfaces command of a serial port 0/1. From this output, which of the following can be determined? Choose the best answer.

- ❍ A. There is a problem on the Physical Layer.
- ❍ B. There is a problem on the Transport Layer.
- ❍ C. There is a problem on the Network Layer.
- ❍ D. There is a problem at the Application Layer.

Find the Answer p. 156

Exhibit(s):

```
Router1#show interfaces serial 0
Serial0 is up, line protocol is down
  Hardware is HD64570
  Internet address is 129.118.1.9/24
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
```

24. Which command can be used to determine the type of cable used to connect a serial connection? Choose the best answer.

- ❍ A. Show version
- ❍ B. Show serial 0/1
- ❍ C. Show controllers
- ❍ D. Show controllers serial 0

Find the Answer p. 157

25. Which Frame Relay concept identifies a unique address used to differentiate Permanent Virtual Circuits (PVCs)? Choose the best answer.

- ❍ A. DLCI
- ❍ B. LMI
- ❍ C. DCE
- ❍ D. DTE

Find the Answer p. 157

26. Which of the following LMI protocols are available in Cisco IOS? Choose the THREE.

- ❑ A. Cisco
- ❑ B. ITU
- ❑ C. ANSI
- ❑ D. 802.1d
- ❑ E. CDP
- ❑ F. 802.1x

Find the Answer p. 157

27. Which of the following terms identifies a commitment that must be upheld by the ISP servicing your Frame Relay Network? Choose the best answer.

- ❍ A. DLCI
- ❍ B. CIR
- ❍ C. LMI
- ❍ D. T1
- ❍ E. CSU/DSU

Find the Answer p. 157

28. Congestion and varying data rates are frequently associated with a Frame Relay Network. Which TWO of the following five Frame Relay technologies are directly associated with the regulation of that traffic? Choose the best TWO answers.

- ❑ A. FECN
- ❑ B. BECN
- ❑ C. LMI
- ❑ D. Discard Eligible
- ❑ E. NAT

Find the Answer p. 157

29. As a Network Administrator, you are setting up Frame Relay in your Small Business Office and are mapping a Point to Multipoint DLCI to the remote next logical hop. Which of the following commands would map DLCI number 30 to ip address 129.1.45.3 using Cisco LMI? Choose the best answer.

- ❍ A. Frame-relay map ip 129.1.45.3 30 broadcast cisco
- ❍ B. Frame-relay map 129.1.45.3 30 cisco
- ❍ C. Frame-relay map 30
- ❍ D. Frame-relay map ip 129.1.45.3 30 ietf
- ❍ E. Frame-relay map ip 129.1.45.3 30 broadcast ietf

Find the Answer p. 157

30. Upon beginning an initial router configuration for frame-relay, you realize that you need to set your encapsulation type. Which of the following commands would define frame relay encapsulation instead of HDLC or PPP? Choose the best TWO answers.

- ❑ A. Encapsulation frame-relay ietf
- ❑ B. Encapsulation frame-relay cisco
- ❑ C. Encap frame dot1q
- ❑ D. Encap frame-lmi cisco
- ❑ E. Encap frame-lmi ietf

Find the Answer p. 157

Answers: Chapter 1

1. **C**	Review Question p. 2	Detailed Explanation p. 159
2. **D**	Review Question p. 2	Detailed Explanation p. 159
3. **A**	Review Question p. 2	Detailed Explanation p. 160
4. **C**	Review Question p. 3	Detailed Explanation p. 160
5. **A, B, C**	Review Question p. 3	Detailed Explanation p. 161
6. **A**	Review Question p. 3	Detailed Explanation p. 161
7. **D**	Review Question p. 4	Detailed Explanation p. 162
8. **C**	Review Question p. 4	Detailed Explanation p. 162
9. **B**	Review Question p. 4	Detailed Explanation p. 163
10. **B, D**	Review Question p. 5	Detailed Explanation p. 163
11. **B**	Review Question p. 5	Detailed Explanation p. 164
12. **C**	Review Question p. 5	Detailed Explanation p. 164
13. **E**	Review Question p. 6	Detailed Explanation p. 165
14. **A, B, C**	Review Question p. 6	Detailed Explanation p. 166
15. **B, E**	Review Question p. 6	Detailed Explanation p. 166
16. **A**	Review Question p. 7	Detailed Explanation p. 167
17. **C, D, E**	Review Question p. 7	Detailed Explanation p. 167
18. **D**	Review Question p. 7	Detailed Explanation p. 168
19. **D**	Review Question p. 8	Detailed Explanation p. 168
20. **E**	Review Question p. 8	Detailed Explanation p. 169
21. **D**	Review Question p. 8	Detailed Explanation p. 169
22. **C**	Review Question p. 9	Detailed Explanation p. 170
23. **D, E**	Review Question p. 9	Detailed Explanation p. 170

24. **C**	Review Question p. 9	Detailed Explanation p. 171
25. **E**	Review Question p. 10	Detailed Explanation p. 171
26. **C**	Review Question p. 10	Detailed Explanation p. 172
27. **D**	Review Question p. 11	Detailed Explanation p. 172
28. **A**	Review Question p. 11	Detailed Explanation p. 173
29. **C**	Review Question p. 11	Detailed Explanation p. 173
30. **D, E**	Review Question p. 12	Detailed Explanation p. 174
31. **B, D**	Review Question p. 12	Detailed Explanation p. 175
32. **E**	Review Question p. 12	Detailed Explanation p. 175
33. **E**	Review Question p. 13	Detailed Explanation p. 176
34. **D**	Review Question p. 13	Detailed Explanation p. 176
35. **B, C**	Review Question p. 14	Detailed Explanation p. 177
36. **C, E**	Review Question p. 14	Detailed Explanation p. 177
37. **B**	Review Question p. 14	Detailed Explanation p. 178
38. **C, D**	Review Question p. 15	Detailed Explanation p. 178
39. **C, D, E**	Review Question p. 15	Detailed Explanation p. 179
40. **E**	Review Question p. 15	Detailed Explanation p. 179
41. **A**	Review Question p. 16	Detailed Explanation p. 180
42. **A, C, D**	Review Question p. 16	Detailed Explanation p. 180
43. **B**	Review Question p. 16	Detailed Explanation p. 181
44. **D**	Review Question p. 17	Detailed Explanation p. 181
45. **C**	Review Question p. 17	Detailed Explanation p. 182
46. **C**	Review Question p. 17	Detailed Explanation p. 182
47. **E**	Review Question p. 18	Detailed Explanation p. 183
48. **D**	Review Question p. 18	Detailed Explanation p. 183

49. **C**	Review Question p. 18	Detailed Explanation p. 184
50. **A, D**	Review Question p. 19	Detailed Explanation p. 184
51. **C, D**	Review Question p. 19	Detailed Explanation p. 184
52. **C**	Review Question p. 19	Detailed Explanation p. 185
53. **B**	Review Question p. 20	Detailed Explanation p. 185
54. **D**	Review Question p. 20	Detailed Explanation p. 185
55. **B, E**	Review Question p. 20	Detailed Explanation p. 186
56. **B, D**	Review Question p. 21	Detailed Explanation p. 186
57. **A, B, D**	Review Question p. 21	Detailed Explanation p. 187
58. **B, C**	Review Question p. 21	Detailed Explanation p. 187
59. **A, C, D**	Review Question p. 22	Detailed Explanation p. 188
60. **A, D**	Review Question p. 22	Detailed Explanation p. 188
61. **B, D, E**	Review Question p. 22	Detailed Explanation p. 188
62. **A, B, D**	Review Question p. 23	Detailed Explanation p. 189
63. **D**	Review Question p. 23	Detailed Explanation p. 189
64. **C**	Review Question p. 23	Detailed Explanation p. 190
65. **B**	Review Question p. 24	Detailed Explanation p. 190
66. **B, C**	Review Question p. 24	Detailed Explanation p. 191
67. **A, B**	Review Question p. 24	Detailed Explanation p. 191
68. **C**	Review Question p. 25	Detailed Explanation p. 191
69. See Explanation	Review Question p. 25	Detailed Explanation p. 192
70. See Explanation	Review Question p. 26	Detailed Explanation p. 193
71. See Explanation	Review Question p. 26	Detailed Explanation p. 193
72. See Explanation	Review Question p. 27	Detailed Explanation p. 194
73. See Explanation	Review Question p. 28	Detailed Explanation p. 194

Answers: Chapter 2

1. **B**	Review Question p. 29	Detailed Explanation p. 196
2. **C**	Review Question p. 29	Detailed Explanation p. 196
3. **A, B, C, E**	Review Question p. 30	Detailed Explanation p. 197
4. **D**	Review Question p. 30	Detailed Explanation p. 197
5. **B**	Review Question p. 30	Detailed Explanation p. 198
6. **A**	Review Question p. 31	Detailed Explanation p. 198
7. **A**	Review Question p. 31	Detailed Explanation p. 199
8. **D**	Review Question p. 32	Detailed Explanation p. 199
9. **A**	Review Question p. 32	Detailed Explanation p. 200
10. **A, B, D**	Review Question p. 33	Detailed Explanation p. 200
11. **C**	Review Question p. 33	Detailed Explanation p. 201
12. **B**	Review Question p. 33	Detailed Explanation p. 201
13. **A**	Review Question p. 34	Detailed Explanation p. 202
14. **C**	Review Question p. 34	Detailed Explanation p. 202
15. **A**	Review Question p. 34	Detailed Explanation p. 203
16. **B**	Review Question p. 35	Detailed Explanation p. 203
17. **B**	Review Question p. 35	Detailed Explanation p. 203
18. **C**	Review Question p. 35	Detailed Explanation p. 204
19. **E**	Review Question p. 36	Detailed Explanation p. 205
20. **D**	Review Question p. 36	Detailed Explanation p. 205
21. **E**	Review Question p. 36	Detailed Explanation p. 206
22. **C**	Review Question p. 37	Detailed Explanation p. 206
23. **B, C**	Review Question p. 37	Detailed Explanation p. 207

24. **D**	Review Question p. 37	Detailed Explanation p. 207
25. **D**	Review Question p. 38	Detailed Explanation p. 208
26. **A, C**	Review Question p. 38	Detailed Explanation p. 208
27. **A**	Review Question p. 38	Detailed Explanation p. 209
28. **C**	Review Question p. 39	Detailed Explanation p. 209
29. **A, C, D**	Review Question p. 39	Detailed Explanation p. 210
30. **A, C**	Review Question p. 40	Detailed Explanation p. 210
31. **A, C, E**	Review Question p. 40	Detailed Explanation p. 211
32. **B**	Review Question p. 40	Detailed Explanation p. 211
33. **C**	Review Question p. 41	Detailed Explanation p. 212
34. **C**	Review Question p. 41	Detailed Explanation p. 212
35. **B**	Review Question p. 42	Detailed Explanation p. 213
36. **B, C**	Review Question p. 42	Detailed Explanation p. 213
37. See Explanation	Review Question p. 43	Detailed Explanation p. 214
38. See Explanation	Review Question p. 44	Detailed Explanation p. 214
39. See Explanation	Review Question p. 45	Detailed Explanation p. 214

Answers: Chapter 3

1. **D**	Review Question p. 46	Detailed Explanation p. 216
2. **C, D, E**	Review Question p. 46	Detailed Explanation p. 216
3. **B**	Review Question p. 47	Detailed Explanation p. 217
4. **C**	Review Question p. 47	Detailed Explanation p. 217
5. **D**	Review Question p. 47	Detailed Explanation p. 218
6. **C**	Review Question p. 48	Detailed Explanation p. 218
7. **A, B, D**	Review Question p. 48	Detailed Explanation p. 219
8. **E**	Review Question p. 48	Detailed Explanation p. 219
9. **C, D**	Review Question p. 49	Detailed Explanation p. 220
10. **C, D**	Review Question p. 49	Detailed Explanation p. 220
11. **A, D, E**	Review Question p. 49	Detailed Explanation p. 221
12. **D**	Review Question p. 50	Detailed Explanation p. 222
13. **B**	Review Question p. 50	Detailed Explanation p. 222
14. **C**	Review Question p. 50	Detailed Explanation p. 223
15. **E**	Review Question p. 51	Detailed Explanation p. 223
16. **B**	Review Question p. 51	Detailed Explanation p. 224
17. **E**	Review Question p. 51	Detailed Explanation p. 224
18. **B, C**	Review Question p. 52	Detailed Explanation p. 225
19. **D**	Review Question p. 52	Detailed Explanation p. 225
20. **D**	Review Question p. 52	Detailed Explanation p. 226
21. **D**	Review Question p. 53	Detailed Explanation p. 226
22. **D**	Review Question p. 53	Detailed Explanation p. 227
23. **D**	Review Question p. 54	Detailed Explanation p. 227

24. **D**	Review Question p. 54	Detailed Explanation p. 228
25. **B, C**	Review Question p. 54	Detailed Explanation p. 229
26. **C, E**	Review Question p. 55	Detailed Explanation p. 229
27. **A**	Review Question p. 55	Detailed Explanation p. 230
28. **A**	Review Question p. 55	Detailed Explanation p. 230
29. **C, D, E**	Review Question p. 56	Detailed Explanation p. 231
30. **A, C**	Review Question p. 56	Detailed Explanation p. 231
31. **C, E**	Review Question p. 56	Detailed Explanation p. 231
32. **B**	Review Question p. 57	Detailed Explanation p. 232
33. **A, D, E**	Review Question p. 57	Detailed Explanation p. 232
34. **A**	Review Question p. 57	Detailed Explanation p. 233
35. **D**	Review Question p. 58	Detailed Explanation p. 233
36. **C, D, E**	Review Question p. 58	Detailed Explanation p. 233
37. **D**	Review Question p. 58	Detailed Explanation p. 234
38. **A, B**	Review Question p. 59	Detailed Explanation p. 234
39. See Explanation	Review Question p. 60	Detailed Explanation p. 235
40. See Explanation	Review Question p. 61	Detailed Explanation p. 235
41. See Explanation	Review Question p. 62	Detailed Explanation p. 236
42. **B**	Review Question p. 63	Detailed Explanation p. 236
43. **D**	Review Question p. 64	Detailed Explanation p. 236
44. **C**	Review Question p. 65	Detailed Explanation p. 237
45. **C**	Review Question p. 66	Detailed Explanation p. 237
46. **C**	Review Question p. 67	Detailed Explanation p. 237
47. **A**	Review Question p. 68	Detailed Explanation p. 238
48. See Explanation	Review Question p. 70	Detailed Explanation p. 238

49. See Explanation	Review Question p. 71	Detailed Explanation p. 239
50. See Explanation	Review Question p. 73	Detailed Explanation p. 240
51. See Explanation	Review Question p. 74	Detailed Explanation p. 241
52. See Explanation	Review Question p. 75	Detailed Explanation p. 242
53. See Explanation	Review Question p. 76	Detailed Explanation p. 243
54. See Explanation	Review Question p. 77	Detailed Explanation p. 244
55. See Explanation	Review Question p. 78	Detailed Explanation p. 245
56. **A**	Review Question p. 78	Detailed Explanation p. 246
57. **C**	Review Question p. 79	Detailed Explanation p. 246
58. **B**	Review Question p. 79	Detailed Explanation p. 246

Answers: Chapter 4

1. See Explanation	Review Question p. 80	Detailed Explanation p. 248
2. **D**	Review Question p. 81	Detailed Explanation p. 248
3. **D**	Review Question p. 81	Detailed Explanation p. 249
4. **A, B, D**	Review Question p. 81	Detailed Explanation p. 249
5. **D**	Review Question p. 82	Detailed Explanation p. 250
6. **C**	Review Question p. 82	Detailed Explanation p. 250
7. **C**	Review Question p. 83	Detailed Explanation p. 251
8. **D**	Review Question p. 83	Detailed Explanation p. 251
9. **A, D, E**	Review Question p. 83	Detailed Explanation p. 252
10. **C**	Review Question p. 84	Detailed Explanation p. 252
11. **C**	Review Question p. 84	Detailed Explanation p. 253
12. **C**	Review Question p. 85	Detailed Explanation p. 254
13. **B**	Review Question p. 85	Detailed Explanation p. 254
14. **B**	Review Question p. 85	Detailed Explanation p. 255
15. **D**	Review Question p. 86	Detailed Explanation p. 255
16. **C**	Review Question p. 86	Detailed Explanation p. 256
17. **A**	Review Question p. 87	Detailed Explanation p. 256
18. **D**	Review Question p. 87	Detailed Explanation p. 257
19. **C**	Review Question p. 87	Detailed Explanation p. 257
20. **C**	Review Question p. 88	Detailed Explanation p. 258
21. **A**	Review Question p. 88	Detailed Explanation p. 258
22. **C**	Review Question p. 88	Detailed Explanation p. 259
23. **D**	Review Question p. 89	Detailed Explanation p. 259

24. **E**	Review Question p. 89	Detailed Explanation p. 260
25. **C**	Review Question p. 89	Detailed Explanation p. 260
26. **A, C, D**	Review Question p. 90	Detailed Explanation p. 261
27. **A, D**	Review Question p. 90	Detailed Explanation p. 261
28. **C**	Review Question p. 90	Detailed Explanation p. 262
29. **B**	Review Question p. 91	Detailed Explanation p. 262
30. **C, D**	Review Question p. 91	Detailed Explanation p. 262
31. **D**	Review Question p. 91	Detailed Explanation p. 263
32. **B**	Review Question p. 92	Detailed Explanation p. 263
33. **B**	Review Question p. 92	Detailed Explanation p. 264
34. **A, B**	Review Question p. 92	Detailed Explanation p. 264
35. **A, C**	Review Question p. 93	Detailed Explanation p. 265
36. **B, C, D**	Review Question p. 93	Detailed Explanation p. 265
37. **B**	Review Question p. 93	Detailed Explanation p. 265
38. **B**	Review Question p. 94	Detailed Explanation p. 266
39. **B, E**	Review Question p. 94	Detailed Explanation p. 266
40. **A**	Review Question p. 94	Detailed Explanation p. 267
41. **A, B**	Review Question p. 95	Detailed Explanation p. 267
42. **C**	Review Question p. 95	Detailed Explanation p. 267
43. **C**	Review Question p. 95	Detailed Explanation p. 268
44. **A, B**	Review Question p. 96	Detailed Explanation p. 268
45. **D**	Review Question p. 97	Detailed Explanation p. 268
46. **B, C, D**	Review Question p. 97	Detailed Explanation p. 269
47. **D**	Review Question p. 97	Detailed Explanation p. 269
48. **B**	Review Question p. 98	Detailed Explanation p. 270

49. **D**	Review Question p. 98	Detailed Explanation p. 270
50. **B**	Review Question p. 98	Detailed Explanation p. 271
51. **A, C, D**	Review Question p. 99	Detailed Explanation p. 271
52. **D**	Review Question p. 99	Detailed Explanation p. 272
53. **A**	Review Question p. 100	Detailed Explanation p. 272
54. **B**	Review Question p. 100	Detailed Explanation p. 273
55. **A, D**	Review Question p. 101	Detailed Explanation p. 273
56. **A, D**	Review Question p. 101	Detailed Explanation p. 274
57. See Explanation	Review Question p. 102	Detailed Explanation p. 275
58. See Explanation	Review Question p. 102	Detailed Explanation p. 275
59. See Explanation	Review Question p. 103	Detailed Explanation p. 276

Answers: Chapter 5

1. **B**	Review Question p. 104	Detailed Explanation p. 277
2. **A**	Review Question p. 104	Detailed Explanation p. 277
3. **A, B, C, D**	Review Question p. 105	Detailed Explanation p. 278
4. **B**	Review Question p. 105	Detailed Explanation p. 278
5. **A, B, C**	Review Question p. 105	Detailed Explanation p. 279
6. **C**	Review Question p. 106	Detailed Explanation p. 279
7. **C**	Review Question p. 106	Detailed Explanation p. 280
8. **A, B, C**	Review Question p. 106	Detailed Explanation p. 280
9. **B**	Review Question p. 107	Detailed Explanation p. 280
10. **A, B**	Review Question p. 107	Detailed Explanation p. 281
11. **B**	Review Question p. 107	Detailed Explanation p. 281
12. **A, B**	Review Question p. 108	Detailed Explanation p. 282
13. **D**	Review Question p. 108	Detailed Explanation p. 282
14. **A**	Review Question p. 108	Detailed Explanation p. 282
15. **A, E**	Review Question p. 109	Detailed Explanation p. 283
16. **D**	Review Question p. 109	Detailed Explanation p. 283
17. **C**	Review Question p. 109	Detailed Explanation p. 284
18. **B, C, D**	Review Question p. 110	Detailed Explanation p. 284
19. **A, B, D, E**	Review Question p. 110	Detailed Explanation p. 285
20. **A, C, D**	Review Question p. 110	Detailed Explanation p. 285
21. See Explanation	Review Question p. 111	Detailed Explanation p. 285

Answers: Chapter 6

1. **A**	Review Question p. 112	Detailed Explanation p. 287
2. **C**	Review Question p. 112	Detailed Explanation p. 287
3. **B, C, D**	Review Question p. 112	Detailed Explanation p. 287
4. **A, B, D**	Review Question p. 113	Detailed Explanation p. 288
5. **A, B, C, D**	Review Question p. 113	Detailed Explanation p. 288
6. **C**	Review Question p. 113	Detailed Explanation p. 289
7. **C**	Review Question p. 114	Detailed Explanation p. 289
8. **E**	Review Question p. 114	Detailed Explanation p. 290
9. **A, B, C**	Review Question p. 114	Detailed Explanation p. 290
10. **B**	Review Question p. 115	Detailed Explanation p. 291
11. **C**	Review Question p. 115	Detailed Explanation p. 291
12. **C**	Review Question p. 115	Detailed Explanation p. 292
13. **A, B, D**	Review Question p. 116	Detailed Explanation p. 292
14. **C**	Review Question p. 116	Detailed Explanation p. 293
15. **A, B, C**	Review Question p. 116	Detailed Explanation p. 293
16. **C**	Review Question p. 117	Detailed Explanation p. 294
17. **B, C**	Review Question p. 118	Detailed Explanation p. 294
18. **D**	Review Question p. 119	Detailed Explanation p. 295
19. **A, B**	Review Question p. 119	Detailed Explanation p. 295
20. **A, B**	Review Question p. 119	Detailed Explanation p. 296

Answers: Chapter 7

1. **C**	Review Question p. 120	Detailed Explanation p. 297
2. **C**	Review Question p. 120	Detailed Explanation p. 297
3. **D**	Review Question p. 121	Detailed Explanation p. 298
4. **C**	Review Question p. 121	Detailed Explanation p. 298
5. **E**	Review Question p. 122	Detailed Explanation p. 299
6. **D**	Review Question p. 122	Detailed Explanation p. 299
7. **A**	Review Question p. 123	Detailed Explanation p. 300
8. **E**	Review Question p. 123	Detailed Explanation p. 300
9. **C**	Review Question p. 123	Detailed Explanation p. 301
10. **E**	Review Question p. 124	Detailed Explanation p. 301
11. See Explanation	Review Question p. 124	Detailed Explanation p. 302
12. See Explanation	Review Question p. 125	Detailed Explanation p. 302
13. **A, C**	Review Question p. 126	Detailed Explanation p. 303
14. **A, C, D**	Review Question p. 127	Detailed Explanation p. 303

Answers: Chapter 8

1. **D**	Review Question p. 128	Detailed Explanation p. 305
2. **D**	Review Question p. 128	Detailed Explanation p. 305
3. **B**	Review Question p. 129	Detailed Explanation p. 306
4. **A, B, C**	Review Question p. 129	Detailed Explanation p. 306
5. **A, B, C**	Review Question p. 129	Detailed Explanation p. 307
6. **C**	Review Question p. 130	Detailed Explanation p. 307
7. **B**	Review Question p. 130	Detailed Explanation p. 307
8. **A**	Review Question p. 131	Detailed Explanation p. 308
9. **C**	Review Question p. 133	Detailed Explanation p. 308
10. **F**	Review Question p. 134	Detailed Explanation p. 309
11. **B**	Review Question p. 134	Detailed Explanation p. 309
12. **A**	Review Question p. 134	Detailed Explanation p. 310
13. **A**	Review Question p. 135	Detailed Explanation p. 310
14. **B**	Review Question p. 135	Detailed Explanation p. 311
15. **A, C**	Review Question p. 135	Detailed Explanation p. 311
16. **A**	Review Question p. 136	Detailed Explanation p. 312
17. **A**	Review Question p. 136	Detailed Explanation p. 312
18. **A**	Review Question p. 136	Detailed Explanation p. 312
19. **B**	Review Question p. 137	Detailed Explanation p. 313
20. **A**	Review Question p. 137	Detailed Explanation p. 313
21. **A**	Review Question p. 137	Detailed Explanation p. 314
22. **A**	Review Question p. 138	Detailed Explanation p. 314
23. **A**	Review Question p. 138	Detailed Explanation p. 314

24. **D**	Review Question p. 138	Detailed Explanation p. 315
25. **A**	Review Question p. 139	Detailed Explanation p. 315
26. **A, B, C**	Review Question p. 139	Detailed Explanation p. 316
27. **B**	Review Question p. 139	Detailed Explanation p. 316
28. **A, B**	Review Question p. 140	Detailed Explanation p. 317
29. **A**	Review Question p. 140	Detailed Explanation p. 317
30. **A, B**	Review Question p. 140	Detailed Explanation p. 318

Explanations: Chapter 1

1. Review Question p. 2

Answers: C

Explanation A. Incorrect. Ethernet cables can be significantly longer than 10 meters.

Explanation B. Incorrect. Ethernet cables can be significantly longer than 50 meters.

Explanation C. Correct. According to the IEEE 802.3 standard, Ethernet cables cannot be longer than 100 meters. Cable length limitations are posed by the propagation speed of EMW in UTP cables, and the possibility of late collision detection.

Explanation D. Incorrect. Ethernet cables need to be shorter than 200 meters - the standard specifies 100 meters.

Explanation E. Incorrect. Ethernet cables need to be shorter than 500 meters - the standard specifies 100 meters.

PrepLogic Question: 10980-109

2. Review Question p. 2

Answers: D

Explanation A. Incorrect. This technology is used in Token Ring networks, where a token is passed from station to station to indicate its turn to transmit data over the network.

Explanation B. Incorrect. Such an access technology does not exist.

Explanation C. Incorrect. This stands for Carrier Sense Media Access with Collision Avoidance. This media access method is not commonly in use.

Explanation D. Correct. Carrier Sense Media Access with Collision Detection is the full name of the technology, used for media access in Ethernet. Another common name for this technology is

Explanation E. Incorrect. Although the operation of Ethernet might seem a bit chaotic and unorganized, this is not the name of the media access technology. Switches turn the chaotic nature of Ethernet into a well-behaved technology.

PrepLogic Question: 10980-131

3. Review Question p. 2

Answers: A

Explanation A. Correct. This is the physical layer. Hubs (AKA repeaters or concentrators) operate at this layer. These devices are used to physically amplify signals, and they have no knowledge of frames or packets.

Explanation B. Incorrect. This is the data-link layer. Bridges and switches that don't incorporate MLS typically work at this layer.

Explanation C. Incorrect. This is the Network layer. Routers are a typical example of Layer 3 operation.

Explanation D. Incorrect. This is the transport layer. This layer is normally implemented by protocol stacks in hosts. The TCP protocol is an example of a protocol, working at layer 4.

Explanation E. Incorrect. This is the session layer. This layer is normally implemented by protocol stacks in hosts. Protocols such as Microsoft's SMB/CIFS implement session layer functionality.

PrepLogic Question: 10980-132

4. Review Question p. 3

Answers: C

Explanation A. Incorrect. The TCP protocol of the TCP/IP protocol family is used for reliable data transmissions. TCP is able to provide reliable data, flow control, and error-free delivery.

Explanation B. Incorrect. Transport protocols, such as UDP or TCP, are used to address network applications by means of TCP or UDP ports.

Explanation C. Correct. The ARP protocol is a relatively simple protocol used to resolve IP addresses into MAC addresses. Each host, using the TCP/IP protocol suite, has a local mapping table.

Explanation D. Incorrect. ARP is not used for the process of file transfers. The main role of the ARP protocol is to provide a mapping between network layer addresses and data-link addresses.

Explanation E. Incorrect. ARP is used in every TCP/IP LAN. ARP is normally not used on WAN links (however, its derivative InverseARP is used for similar purposes in Frame Relay, for example).

PrepLogic Question: 10980-141

5. Review Question p. 3

Answers: A, B, C

Explanation A. Correct. This IEEE specification defines the logical link control part (LLC) of the data-link layer. This part of the data-link layer is media independent, thus 802.2 encapsulation can be used in Ethernet, Token Ring, FDDI, and others.

Explanation B. Correct. IEEE 802.3 defines what we call Ethernet today. This standard is media dependant and it specifies methods and approaches on how to use the media to transfer data, and what the discipline of the shared Ethernet media is.

Explanation C. Correct. IEEE 802.5 defines Token Ring networks. This specification is media dependant, as it describes media access in ring topology networks that use a passing token.

Explanation D. Incorrect. The IP protocol is a typical network layer protocol - it provides features such as addressing, routing, fragmentation, and best effort delivery. Although the IP protocol sits directly upon the data link protocols, and relies on them, you won't troubleshoot IP when performing data-link layer troubleshooting.

Explanation E. Incorrect. ICMP is the diagnostic and control protocol of the Internet Protocol. Although ICMP does not provide for routing, addressing, and fragmentation, it sits on top of IP and provides network diagnostic functions; so it is still considered a network layer protocol.

PrepLogic Question: 10980-146

6. Review Question p. 3

Answers: A

Explanation A. Correct. The 802.1d protocol specifies the Spanning Tree Protocol. This standard is based on original Digital Equipment Corporation (DEC - now part of HP) research and development work.

Explanation B. Incorrect. The 802.1x protocol is an IEEE standard for port-based access control. This protocol is unrelated to the Spanning Tree Protocol (STP).

Explanation C. Incorrect. The 802.1Q protocol is an IEEE standard for trunking between switches. This protocol is supported by most of the switch vendors, including Cisco. It can be used in heterogeneous environments; however, this is a trunking protocol.

Explanation D. Incorrect. The IEEE 802.3 protocol specifies modern Ethernet networks. This protocol is based on a proposal, developed by Digital Equipment Corporation (DEC), Intel and Xerox.

Explanation E. Incorrect. The 802.11 protocol is an IEEE standard for wireless LANs. This protocol is used to specify the communications between an end node and an access point, or the direct communication between two end nodes or two access points.

PrepLogic Question: 10980-166

7. Review Question p. 4

Answers: D

Explanation A. Incorrect. The HDLC protocol provides a very simple encapsulation mechanism that works efficiently over WAN links. However, the HDLC protocol lacks some advanced encapsulation features, such as authentication.

Explanation B. Incorrect. GRE is a data-link encapsulation protocol used for tunneling. GRE cannot transfer frames over a WAN link by itself. GRE does not provide for authentication.

Explanation C. Incorrect. Frame Relay is a relatively complex technology that provides a rich set of WAN capabilities. However, Frame Relay does not provide for security, such as authentication.

Explanation D. Correct. The PPP protocol is a widely used WAN protocol that provides for modular configuration by means of the Link Control Protocol and Network Control Protocol. These protocols allow for

Explanation E. Incorrect. SLIP is a simple WAN protocol meant to transfer IP packets over WAN links. SLIP lacks many advanced features, and one of these features is authentication.

PrepLogic Question: 10980-187

8. Review Question p. 4

Answers: C

Explanation A. Incorrect. The IEEE 802.1 standards specify general networking recommendations and requirements, which are media and vendor neutral. 802.1 also specifies bridging/switching standards (802.1d and 802.1q, for example).

Explanation B. Incorrect. The IEEE 802.2 protocol specifies the Logical Link Control sublayer of the data link layer. It defines connectionless and connection-oriented

services provided by this layer. 802.2 does not specify a network media access technology and is media independent.

Explanation C. Correct. This IEEE standard specifies Ethernet. The original Ethernet specification, developed by Xerox (and jointly specified by DEC, Intel, and Xerox) is somewhat different from this standard.

Explanation D. Incorrect. The IEEE 802.5 standard specifies Token Ring networks, and is mostly based on specifications and development provided by IBM.

Explanation E. Incorrect. The IEEE 802.11 standard specifies today's wireless networks.

PrepLogic Question: 10980-189

9. Review Question p. 4

Answers: B

Explanation A. Incorrect. This is the physical layer. Hubs (AKA repeaters or concentrators) operate at this layer.

Explanation B. Correct. This is the data-link layer. Bridges and switches that do not incorporate MLS typically work at this layer.

Explanation C. Incorrect. This is the Network layer. Routers are a typical example for Layer 3 operation.

Explanation D. Incorrect. This is the transport layer. This layer is normally implemented by protocol stacks in hosts. The TCP protocol is an example of a protocol that works at layer 4.

Explanation E. Incorrect. This is the session layer. This layer is normally implemented by means of protocol stacks in hosts. Protocols such as Microsoft's SMB/CIFS implement session layer functionality.

PrepLogic Question: 10980-190

10. Review Question p. 5

Answers: B, D

Explanation A. Incorrect. Switch ports in listening state are not forwarding frames. A port in this mode is trying to determine whether it would cause data-link loops if it starts forwarding frames.

Explanation B. Correct. A switch in listening state is not forwarding frames. A port in this mode is trying to determine whether it would cause data-link loops if it starts forwarding frames.

Explanation C. Incorrect. Switches only care about MAC addresses. A switch in listening state will be listening for BPDUs, and will try to find out whether it is part of a loop.

Explanation D. Correct. A switch in listening state will be listening to BPDUs, and will try to find out whether it is part of a loop, or whether it would cause a routing loop.

Explanation E. Incorrect. A port in learning state or in forwarding state would collect MAC addresses. A port in listening state does not collect MAC address information.

PrepLogic Question: 10980-191

11. Review Question p. 5

Answers: B

Explanation A. Incorrect. There is no such thing as a switch designated to connect the LAN to the WAN.

Explanation B. Correct. The main function of the root bridge is to establish the root of a loop-free hierarchy of bridges using the Spanning Tree Algorithm.

Explanation C. Incorrect. This is a reference to the VTP protocol, and VTP servers, which are used to propagate VLAN information within the VTP domain. However, root bridge is a term used in conjunction with the spanning tree protocol, and it represents a concept other than VTP.

Explanation D. Incorrect. It might, or it might not. Within the STP specification, a requirement that the root bridge have direct connectivity with other switches does not exist.

Explanation E. Incorrect. The spanning tree protocol and switches only deal with LAN switching. The root bridge might or might not be a layer 2 switch, or a switch with direct connectivity to a router.

PrepLogic Question: 10980-192

12. Review Question p. 5

Answers: C

Explanation A. Incorrect. TCP is vendor neutral. The TCP packet does not carry

information about vendors, although the application (TCP port) or payload can be used to tell which vendor generated the packet.

Explanation B. Incorrect. TCP is vendor neutral. The TCP packet does not carry information about vendors, although the application (TCP port) or payload can be used to tell which vendor generated the packet.

Explanation C. Correct. The sending host informs the receiving host what buffer space it has at its disposal so that the packet that the receiving host composes in reply can fit into this buffer. TCP windowing is a form of flow control.

Explanation D. Incorrect. Windows size is sent from the sending host. The receiving host just takes it into consideration.

Explanation E. Incorrect. No such field exists in any industry standard protocol in today's networks.

PrepLogic Question: 10980-199

13. Review Question p. 6

Answers: E

Explanation A. Incorrect. The physical layer defines the physical processes and specifications for activating, maintaining, and deactivating the communications channel between communicating devices. Voltage levels, timing, data rates, maximum transmission distances, etc. are defined by the physical layer.

Explanation B. Incorrect. The application layer takes care of this. The application layer is where user data is generated. This data is encapsulated down the OSI layers, and as a result is sent over the network. Received packets are processed the other way around.

Explanation C. Incorrect. The transport layer is used for addressing applications by means of TCP/UDP ports. The TCP protocol is also able to provide guaranteed delivery. In addition, the transport layer segments data.

Explanation D. Incorrect. The network layer provides addressing. IP addressing is an example of network layer addressing. Other functions performed by the network layer are routing (in accordance with addressing) and packet fragmentation (takes into consideration the MTU).

Explanation E. Correct. The Presentation layer deals with data representation. If two devices use different data formats (such as ASCII table versus EBCDIC), they will be unable to communicate.

PrepLogic Question: 10980-203

14. Review Question p. 6

Answers: A, B, C

Explanation A. Correct. Protocol analyzers are usually software drivers and modules, which provide the option of capturing, viewing, analyzing, storing, and generating network packets. These devices cover a broad range of OSI layers, starting from the data-link layer, up to the application layer.

Explanation B. Correct. traceroute is a popular IP utility used to determine the path packets take to reach a particular destination. Unlike passive utilities, such as those displaying the routing table of a router or host, traceroute actively discovers the path by sending probe packets and expecting ICMP responses.

Explanation C. Correct. The ping command uses the ICMP protocol to perform network diagnostic functions. Although ICMP does not provide for routing, addressing, and fragmentation, it sits on top of IP and provides network diagnostic functions. It is still considered a network layer protocol.

Explanation D. Incorrect. Cable testers are specialized, but still relatively simple devices. They can troubleshoot problems, such as near-end crosstalk (NEXT), attenuation, and noise. Cable testers are meant to troubleshoot physical layer problems.

Explanation E. Incorrect. TDRs (Time Domain Reflectometers) are complex and efficient devices for cable testing purposes. They can quickly diagnose and locate open and short circuits, crimps, kinks, sharp bends, impedance mismatches, and other cable defects.

PrepLogic Question: 10980-205

15. Review Question p. 6

Answers: B, E

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Correct. Among other interface configuration information, this command displays the current LMI type in use, as well as LMI statistics. This includes the number of sent and received LMI messages and updates.

Explanation C. Incorrect. LMI can be considered interface specific, while this command is more DLCI (VC - virtual circuit) specific. It displays information about packets sent and received, including BECN, FECN, and DE for the particular PVC.

Explanation D. Incorrect. LMI can be considered interface specific, while this command is more DLCI (VC - virtual circuit) specific. It displays information about packets sent and received, including BECN, FECN, and DE for the particular SVC.

Explanation E. Correct. This command displays the current LMI type in use, as well as LMI statistics, such as the number of sent and received LMI messages and updates.

PrepLogic Question: 10980-210

16. Review Question p. 7

Answers: A

Explanation A. Correct. This is the correct command. By using this command, the router will display a list of any routes it receives from neighbor routers, and any route it sends to neighbor routers.

Explanation B. Incorrect. This command can be used to display information about the RIP routing protocol; however, it does not allow you to display routing updates as they are being sent to neighbor routers.

Explanation C. Incorrect. A very important and helpful troubleshooting rule states that at a certain step of the troubleshooting process you should perform is show running-config, and see whether or not the configuration looks as expected. However, this won't help in the process of monitoring real time updates being sent to neighbor routers.

Explanation D. Incorrect. This command does not exist in Cisco IOS.

Explanation E. Incorrect. This command does not exist in Cisco IOS.

PrepLogic Question: 10980-211

17. Review Question p. 7

Answers: C, D, E

Explanation A. Incorrect. BPDUs don't carry information about IP addresses. In fact, the 802.1D standard does not require switches to have IP addresses, as they are level 2 devices.

Explanation B. Incorrect. BPDUs don't carry information about hostnames. In fact, the 802.1D standard does not require switches to have hostnames, as they are level 2 devices.

Explanation C. Correct. Each bridge that takes part in the Spanning Tree Process must

have a Bridge ID. This parameter plays an important role in the process of Root bridge selection. This bridge ID is often derived from the switch MAC address.

Explanation D. Correct. The Spanning Tree Protocol tries to select an optimal loop-free topology. The shortest distance to the root switch is calculated for each switch based on the path cost.

Explanation E. Correct. BPDUs are exchanged periodically between switches. It is important that switches know the communication parameters of their neighbors to detect line and device failures. Each BPDU carries the configuration of the sending switch.

PrepLogic Question: 10980-224

18. Review Question p. 7

Answers: D

Explanation A. Incorrect. Hubs are typically used as connectivity concentrators and signal amplifiers. They forward broadcasts, thus are inappropriate here.

Explanation B. Incorrect. Repeaters (hubs) are typically used as connectivity concentrators and signal amplifiers. They forward broadcasts, thus are inappropriate here.

Explanation C. Incorrect. Bridges are used to separate collision domains within a LAN. However, bridges forward broadcast traffic and cannot be used in this scenario.

Explanation D. Correct. Creating separate broadcast domains is one of the most important router roles. Although routers can be configured to forward all, or a specific set of broadcast packets, routers normally block broadcast traffic between segments.

Explanation E. Incorrect. Proxies are usually a piece of software used to perform requests on behalf of clients, or other pieces of software. For example, Web proxies are used to perform HTTP requests on behalf of Web browsers. Proxies are unrelated to broadcast control.

PrepLogic Question: 10980-235

19. Review Question p. 8

Answers: D

Explanation A. Incorrect. It is possible that you would configure your routers to use separate routing protocols. Then, you will probably need to have points of redistribution between routing protocols. However, this technology is not known as split-horizon.

Explanation B. Incorrect. It is possible that you will split routers into separate autonomous systems. However, this is not referred to as split horizon.

Explanation C. Incorrect. The most essential part of the functionality of every router is to communicate. It is possible that this communication gets restricted by either access-lists, or routing table modifications; however, this is not split horizon.

Explanation D. Correct. The significance of split horizon is that it reduces routing loops in distance vector protocols. To achieve this, split horizon never advertises routes to the neighbor (in fact - to the subnet) from which the route was learned.

Explanation E. Incorrect. Some routers advertise routes to the Internet, others do not. However, this is unrelated to split horizon technology.

PrepLogic Question: 10980-244

20. Review Question p. 8

Answers: E

Explanation A. Incorrect. The PPP protocol cannot provide logical interfaces over a single physical link. PPP has a technology called Multilink, which does just the opposite - it can combine a couple of physical links into a single logical channel.

Explanation B. Incorrect. HDLC is a very simple encapsulation protocol that does not provide the capability of creating logical interfaces over the physical link.

Explanation C. Incorrect. SLIP is another simple protocol that does not provide for creating logical channels over a single physical link.

Explanation D. Incorrect. XMODEM is an old file transfer protocol. This protocol provides simple file transfer capabilities and is unable to perform network layer data encapsulation. It is unable to provide logical channels over a single physical link.

Explanation E. Correct. Frame Relay is a technology that provides for the use of Virtual Circuits (VCs). There can be two types of virtual circuits - Permanent (PVCs) and Switched (SVCs). Both provide the capability of creating logical channels over a single physical channel.

PrepLogic Question: 10980-246

21. Review Question p. 8

Answers: D

Explanation A. Incorrect. The IEEE 802.1 standard specifies general networking

recommendations and requirements, which are media and vendor neutral. 802.1 also specifies bridging/switching standards (802.1d and 802.1q for example).

Explanation B. Incorrect. The IEEE 802.2 protocol specifies the Logical Link Control sublayer of the data link layer. It defines connectionless and connection-oriented services provided by this layer. 802.2 does not specify a network media access technology, and is media independent.

Explanation C. Incorrect. This IEEE standard specifies Ethernet. The original Ethernet specification, developed by Xerox, and jointly specified by DEC, Intel, and Xerox, is somewhat different from this standard.

Explanation D. Correct. The IEEE 802.5 standard specifies Token Ring networks, and is mostly based on specifications and development provided by IBM.

Explanation E. Incorrect. The IEEE 802.11 standard specifies today's wireless networks.

PrepLogic Question: 10980-248

22. Review Question p. 9

Answers: C

Explanation A. Incorrect. This is the physical layer. Hubs (repeaters or concentrators) operate at this layer.

Explanation B. Incorrect. This is the data-link layer. Bridges and switches, which don't incorporate MLS, typically work at this layer.

Explanation C. Correct. This is the Network layer. Routers are a typical example of Layer 3 devices.

Explanation D. Incorrect. This is the transport layer. This layer is normally implemented by protocol stacks in hosts. The TCP protocol is an example of a protocol working at layer 4.

Explanation E. Incorrect. This is the session layer. This layer is normally implemented by protocol stacks in hosts. Protocols such as Microsoft's SMB/CIFS implement session layer functionality.

PrepLogic Question: 10980-249

23. Review Question p. 9

Answers: D, E

Explanation A. Incorrect. RIP v.1 is one of the most wide-spread routing protocols. It is a distance vector dynamic routing protocol.

Explanation B. Incorrect. RTMP is a distance vector routing protocol used in AppleTalk networks.

Explanation C. Incorrect. IGRP is a Cisco proprietary dynamic routing protocol that is somewhat similar to the RIP protocol. IGRP provides some interesting features such as composite metric and unequal path load balancing.

Explanation D. Correct. The OSPF protocol is a typical link-state protocol based on Dijkstra's Open Shortest Path First algorithm.

Explanation E. Correct. IS-IS is a link-state dynamic routing protocol, developed by ISO for its protocol suite. Some implementations use IS-IS for IP routing. This routing protocol is not very common in today's networks.

PrepLogic Question: 10980-254

24. Review Question p. 9

Answers: C

Explanation A. Incorrect. RIP routes are limited to 15 hops. 16 hops represent an unreachable destination.

Explanation B. Incorrect. RIP routes are limited to 15 hops. 16 hops represent an unreachable destination.

Explanation C. Correct. RIP routes are limited to 15 hops. 16 hops represent an unreachable destination.

Explanation D. Incorrect. RIP routes are limited to 15 hops. 16 hops represent an unreachable destination.

Explanation E. Incorrect. RIP routes are limited to 15 hops. 16 hops represent an unreachable destination.

PrepLogic Question: 10980-255

25. Review Question p. 10

Answers: E

Explanation A. Incorrect. Redistributing other routing protocols into OSPF is a function performed by the Autonomous System Boundary Routers (ASBRs).

Explanation B. Incorrect. These routers are simply called internal routers.

Explanation C. Incorrect. Routers internal to the backbone are simply called internal routers.

Explanation D. Incorrect. OSPF routers, which are also connected to non-OSPF networks, are called Autonomous System Boundary Routers (ASBRs).

Explanation E. Correct. An ABR is a router located on the border of one or more OSPF areas that connects those areas to the backbone network.

PrepLogic Question: 10980-256

26. Review Question p. 10

Answers: C

Explanation A. Incorrect. The IP protocol is the workhorse of the TCP/IP protocol family, and the Internet. This protocol does not establish sessions, and does not use a three-way handshake.

Explanation B. Incorrect. The ARP protocol is a relatively simple protocol used to map IP addresses to MAC addresses. This protocol does not establish sessions, and does not use a three-way handshake.

Explanation C. Correct. The TCP session establishment process is also known as TCP three-way handshake. During the handshake, communicating peers try to synchronize their operations in order to be able to provide reliable transmission.

Explanation D. Incorrect. The UDP protocol does not establish sessions. This protocol does not use the three-way handshake mechanism.

Explanation E. Incorrect. GRE (Generic Routing Encapsulation) is a tunneling protocol. This protocol does not establish three-way handshake sessions.

PrepLogic Question: 10980-257

27. Review Question p. 11

Answers: D

Explanation A. Incorrect. Within the UDP packet header, the destination port field specifies the receiving application of the UDP datagram.

Explanation B. Incorrect. Within the TCP packet header, the destination port field specifies the receiving application of the TCP segment.

Explanation C. Incorrect. Upper layer services and applications should use application level data to store and transmit application level data. The ToS field is specific to the network layer, where the IP protocol belongs.

Explanation D. Correct. This field is used by QoS to mark the packet with a specific precedence, or used by the more complex DSCP QoS technology. This is similar to the precedence approach, but values are standardized, and it allows for better granularity.

Explanation E. Incorrect. This field is used by QoS.

PrepLogic Question: 10980-258

28. Review Question p. 11

Answers: A

Explanation A. Correct. Switches inspect the source MAC address field of received unicast frames to learn where a device resides, and they map this MAC address to the port on which the packet was received.

Explanation B. Incorrect. The destination address of unicast frames is used to make forwarding decisions. The switch performs a lookup in the switching table to find whether it has an entry for the destination MAC address, and if found - forwards the frame to only the intended recipient, without flooding it out all ports.

Explanation C. Incorrect. The Type/length field is used by 802.3, and Ethernet II to specify either the length of the packet, or the type of its payload. This information is not useful for a layer 2 switch to make routing decisions.

Explanation D. Incorrect. Layer 2 switches don't make forwarding decisions based on layer 3 (network) addresses, such as IP addresses.

Explanation E. Incorrect. Layer 2 switches don't make forwarding decisions based on layer 3 (network) addresses, such as IP addresses.

PrepLogic Question: 10980-260

29. Review Question p. 11

Answers: C

Explanation A. Incorrect. The data-link layer has two sublayers, defined by IEEE: Logical Link Control (LLC) and Media Access Control (MAC). MAC is responsible for media access, and is media dependant. LLC describes frame transmission mechanisms, and may provide either reliable, or best-effort delivery.

Explanation B. Incorrect. The application layer takes care of that. This is where user data is generated. This data is encapsulated down the OSI layers, and as a result, is sent over the network. Received packets are processed the other way around.

Explanation C. Correct. The transport layer is used for addressing applications by means of TCP/UDP ports. The TCP protocol is able to provide guaranteed delivery. In addition, the transport layer segments data.

Explanation D. Incorrect. The network layer provides addressing. IP addressing is an example of network layer addressing. Other functions performed by the network layer are routing (in accordance with addressing) and packet fragmentation (takes into consideration the MTU).

Explanation E. Incorrect. Presentation layer deals with data representation. If two devices use different data formats (such as ASCII table versus EBCDIC) they will be unable to communicate.

PrepLogic Question: 10980-262

30. Review Question p. 12

Answers: D, E

Explanation A. Incorrect. This IEEE specification defines the logical link control part (LLC) of the data-link layer. This part of the data-link layer is media independent, thus 802.2 encapsulation can be used in Ethernet, Token Ring, FDDI, and others.

Explanation B. Incorrect. IEEE 802.5 defines Token Ring networks. This specification is media dependant, as it describes media access in ring topology networks that use a passing token.

Explanation C. Incorrect. The IP protocol is a typical network layer protocol - it provides features such as addressing, routing, fragmentation, and best effort delivery.

Explanation D. Correct. The UDP protocol provides for application addressing - it uses source and destination ports to specify communicating applications. Although UDP is a best-effort protocol and does not provide reliable data delivery services, it is considered a transport layer protocol.

Explanation E. Correct. The TCP protocol provides for application addressing - it uses source and destination ports to specify communicating applications. In addition, TCP provides for data retransmission, in-order delivery, error-checking, and flow control. So, it is a reliable transmission protocol.

PrepLogic Question: 10980-263

31. Review Question p. 12

Answers: B, D

Explanation A. Incorrect. Digital multimeters are general purpose devices that are used to measure physical network parameters, such as voltage, capacitance, current, or resistance.

Explanation B. Correct. Protocol analyzers are usually software drivers and modules, which provide the option of capturing, viewing, analyzing, storing, and generating network packets. These devices cover a broad range of OSI layers, starting from the data-link layer up to the application layer. They are not very useful at the physical layer.

Explanation C. Incorrect. The ping command uses the ICMP protocol to perform network diagnostic functions. Although ICMP does not provide for routing, addressing, and fragmentation, it sits on top of IP and provides network diagnostic functions. It is still considered a network layer protocol.

Explanation D. Correct. This show cdp neighbors command provides important physical, data-link, and network layer information about devices in a network.

Explanation E. Incorrect. Application specific tools usually work at the application layer, and they are not very helpful in resolving data-link layer problems.

PrepLogic Question: 10980-264

32. Review Question p. 12

Answers: E

Explanation A. Incorrect. Category 1 cabling was designed to support analog voice communication only. This category is not supported for conventional LAN communication, although some standards utilize this type of cabling for LAN-like connectivity.

Explanation B. Incorrect. Category 2 cabling was designed to support digital voice and data communication, but not at a rate of more than 4 Mbps. The technologies that work over Category 2 cables are not very popular.

Explanation C. Incorrect. This is the lowest grade of unshielded twisted-pair (UTP) cabling, which is acceptable for 10 Mbps connections. A lot of existing installations use this cabling for LAN communications.

Explanation D. Incorrect. This category is not commonly used for voice or data communications.

Explanation E. Correct. This type of cable is normally used in modern infrastructures

to support 100 Mbps connectivity. This is the highest and most commonly used grade of unshielded twisted-pair (UTP) cabling in networking today.

PrepLogic Question: 10980-283

33. Review Question p. 13

Answers: E

Explanation A. Incorrect. The only metric that RIP is capable of using is hop count. RIP cannot use bandwidth as a metric calculation parameter.

Explanation B. Incorrect. The only metric that RIP is capable of using is hop count. RIP cannot use bandwidth as a metric calculation parameter.

Explanation C. Incorrect. IGRP uses bandwidth and delay for its composite metric. Although IGRP can be configured to base its calculations solely on bandwidth, it is not so by default.

Explanation D. Incorrect. Similar to IGRP, EIGRP uses bandwidth and delay for the composite metric it uses. Although IGRP can be configured to base its calculations solely on bandwidth, it is not so by default.

Explanation E. Correct. OSPF's metric calculation is based on interface bandwidth by default. OSPF uses the FDDI speed as a basis for proportional (linear) calculations of the metric, depending on the bandwidth configured for the interface.

PrepLogic Question: 10980-301

34. Review Question p. 13

Answers: D

Explanation A. Incorrect. This is irrelevant to the real meaning of the poison reverse technology.

Explanation B. Incorrect. Poison reverse is a technology that relates to dynamic routing protocols. It has nothing to do with organizational issues, such as whether older technologies can be implemented.

Explanation C. Incorrect. Poison reverse is a technology that relates to dynamic routing protocols. It has nothing to do with organizational issues, such as whether you will be able to return defective warranty equipment to your vendor.

Explanation D. Correct. Poisoned reverse is used along with split horizon to minimize routing loops that appear in medium and large internetworks.

Explanation E. Incorrect. Whether routers will perform reverse DNS resolution is irrelevant to the poison reverse technology.

PrepLogic Question: 10980-302

35. Review Question p. 14

Answers: B, C

Explanation A. Incorrect. This is the physical layer. Hubs (such as repeaters or concentrators) operate at this layer.

Explanation B. Correct. This is the data-link layer. Bridges and switches that do not incorporate MLS typically work at this layer.

Explanation C. Correct. This is the Network layer. Routers are a typical example of Layer 3 operation.

Explanation D. Incorrect. This is the session layer. This layer is normally implemented by protocol stacks in hosts. Protocols such as Microsoft's SMB/CIFS implement session layer functionality. This layer is not implemented by means of switches.

Explanation E. Incorrect. This is the application layer. This layer is normally implemented by applications in hosts (for example, a Web browser). This layer is not implemented by means of switches.

PrepLogic Question: 10980-307

36. Review Question p. 14

Answers: C, E

Explanation A. Incorrect. The NTLM protocol is used for user authentication by Microsoft operating systems. However, this protocol is not used for dial-up authentication.

Explanation B. Incorrect. Kerberos is an authentication protocol, developed by MIT, which has a couple of successful implementations in products and operating systems. This protocol is not commonly used for PPP authentication.

Explanation C. Correct. PAP (Password Authentication Protocol) is a PPP authentication protocol that provides for user authentication. As this protocol transfers usernames and passwords in clear text, it is generally recommended that this protocol be avoided.

Explanation D. Incorrect. ABAP is the programming language used in SAP. This is not

an authentication protocol.

Explanation E. Correct. CHAP (Challenge-Handshake Authentication Protocol) is a popular protocol that is believed to provide a secure authentication mechanism for PPP connections.

PrepLogic Question: 10980-311

37. Review Question p. 14

Answers: B

Explanation A. Incorrect. Actually, it is the other way around. Link state protocols converge considerably faster than distance vector protocols.

Explanation B. Correct. Link state protocols are generally based on more complex algorithms, which consume more CPU cycles, but at the same time provide for faster convergence and reconvergence.

Explanation C. Incorrect. Link state protocols, due to the more complex algorithms, typically consume more CPU cycles than distance vector protocols.

Explanation D. Incorrect. One of the reasons why link state protocols were created is that distance vector protocols consume bandwidth even when no topology changes occur. Link state protocols are meant to solve this issue.

Explanation E. Incorrect. This is what distance vector protocols do - they send out portions of their routing tables to neighboring routers to inform them of routes they know.

PrepLogic Question: 10980-312

38. Review Question p. 15

Answers: C, D

Explanation A. Incorrect. As with any other distance vector protocol, RIP does not build neighbor adjacencies, and does not maintain neighbor state.

Explanation B. Incorrect. The EIGRP protocol uses feasible distances as part of the DUAL algorithm that it executes. RIP does not work with feasible distances.

Explanation C. Correct. A common technology for prevention/avoidance of routing loops is split horizon. This technology requires that no route is advertised to the same neighbor (actually - out the same interface) from which the route was learned.

Explanation D. Correct. The hold down timer is another technology used to help avoid routing loops and increase stability. Hold down timers ensure that routing information is propagated in a consistent manner in times of topology changes.

PrepLogic Question: 10980-313

39. Review Question p. 15

Answers: C, D, E

Explanation A. Incorrect. The HTTP protocol is based on TCP at the transport layer. In fact, most of the protocols used for bulk file transfers use TCP. TFTP and NFS are two notable exceptions of this rule.

Explanation B. Incorrect. The FTP protocol is based on TCP at the transport layer. In fact, most of the protocols used for bulk file transfers use TCP. TFTP and NFS are two notable exceptions of this rule.

Explanation C. Correct. The TFTP protocol uses UDP/69 for data transfers. Although the TFTP protocol may sometimes be used for bulk transfers, such as file transfers, the TFTP protocol is very easy to implement in low level devices, hence its popularity.

Explanation D. Correct. The DNS protocol uses UDP/53 for DNS queries/responses. As the DNS protocol does not transfer bulk objects, the UDP protocol is an acceptable and preferred transport.

Explanation E. Correct. The SNMP protocol uses UDP/161 for data delivery. As the SNMP protocol does not transfer bulk objects, the UDP protocol is an acceptable and preferred transport.

PrepLogic Question: 10980-315

40. Review Question p. 15

Answers: E

Explanation A. Incorrect. The TCP protocol, which runs atop of IP, is the protocol that is commonly used for reliable data transmission.

Explanation B. Incorrect. The ARP protocol is a relatively simple protocol used to resolve IP addresses to MAC addresses.

Explanation C. Incorrect. The DNS protocol is used for name resolution. It is common that the name resolution process is considered session layer functionality, while ICMP works at the network layer.

Explanation D. Incorrect. The IGMP protocol is used for basic multicast routing and membership management.

Explanation E. Correct. The ICMP protocol is used for diagnostics within the TCP/IP protocol family. Many diagnostic applications, such as ping and traceroute, rely upon the ICMP protocol. Another popular ICMP function is router discovery.

PrepLogic Question: 10980-316

41. Review Question p. 16

Answers: A

Explanation A. Correct. The physical layer defines the physical processes and specifications for activating, maintaining, and deactivating the communications channel between communicating devices. Voltage levels, timing, data rates, maximum transmission distances, etc. are defined by the physical layer.

Explanation B. Incorrect. The data-link layer has two sublayers defined by IEEE: Logical Link Control (LLC) and Media Access Control (MAC). MAC is responsible for media access and is media dependant. LLC describes frame transmission mechanisms, and may provide either reliable, or best-effort delivery.

Explanation C. Incorrect. The transport layer is used for addressing applications by means of TCP/UDP ports. The TCP protocol is also able to provide guaranteed delivery. In addition, the transport layer segments data.

Explanation D. Incorrect. The network layer provides addressing. IP addressing is an example of network layer addressing. Other functions performed by the network layer are routing (in accordance with addressing) and packet fragmentation (takes into consideration the MTU).

Explanation E. Incorrect. The presentation layer deals with data representation. If two devices use different data formats (such as ASCII table versus EBCDIC0), they will be unable to communicate.

PrepLogic Question: 10980-320

42. Review Question p. 16

Answers: A, C, D

Explanation A. Correct. Digital multimeters are general purpose devices that are used to measure physical network parameters, such as voltage, capacitance, current, or resistance.

Explanation B. Incorrect. Protocol analyzers are usually software drivers and modules that provide the option of capturing, viewing, analyzing, storing, and generating network packets. These devices cover a broad range of OSI layers starting from the data-link layer up to the application layer. They are not very useful at the physical layer.

Explanation C. Correct. Cable testers are specialized, but relatively simple devices. They can troubleshoot problems, such as near-end crosstalk (NEXT), attenuation, and noise. Cable testers are meant to troubleshoot physical layer problems.

Explanation D. Correct. TDRs (Time Domain Reflectometers) are complex and efficient devices for cable testing purposes. They can quickly diagnose and locate open and short circuits, crimps, kinks, sharp bends, impedance mismatches, and other cable defects.

Explanation E. Incorrect. The ping command uses the ICMP protocol to perform network diagnostic functions. Although ICMP does not provide for routing, addressing, and fragmentation, it sits on top of IP and provides network diagnostic functions. It is still considered a network layer protocol.

PrepLogic Question: 10980-322

43. Review Question p. 16

Answers: B

Explanation A. Incorrect. The star topology is also called hub and spoke. All traffic must pass through the central hub, creating a single point of failure.

Explanation B. Correct. A mesh topology provides redundant links, and provides multiple paths to reach a destination. Even if a link fails, there is an alternate path. It provides redundancy for every link.

Explanation C. Incorrect. A partial mesh provides for limited redundancy at certain locations. This ensures that high priority sites have the required redundancy.

Explanation D. Incorrect. The bus topology is an older technology where network nodes are attached to coaxial cable along the wire strand.

PrepLogic Question: 10980-400

44. Review Question p. 17

Answers: D

Explanation A. Incorrect. The Presentation Layer is responsible for providing and formatting data for applications. It consists of a presentation protocol and a presentation

service.

Explanation B. Incorrect. The Physical Layer actually defines the standards for how signals get from one point to another over a physical medium. It involves the physical means of using electricity or light to move data from point A to point B.

Explanation C. Incorrect. This is the layer on which user applications reside and operate.

Explanation D. Correct. The Transport Layer coordinates data transfer between hosts using protocols like TCP and UDP.

Explanation E. Incorrect: The Data Link Layer is concerned with physical addressing. It is broken into two sublayers: the MAC sublayer and the LLC sublayer.

Explanation F. Incorrect: The Network Layer provides connectivity and path selection between two end systems and deals with logical addressing. The Network Layer is the layer at which routing occurs.

PrepLogic Question: 10980-401

45. Review Question p. 17

Answers: C

Explanation A. Incorrect. The star topology is also called hub and spoke. All traffic must pass through the central hub. Star topologies do not provide any redundancy.

Explanation B. Incorrect. A mesh topology provides redundant links, and provides multiple paths to reach a destination. Even if a link fails, there is an alternate path. However, this topology is very expensive.

Explanation C. Correct. A partial mesh provides for limited redundancy at certain locations. This ensures that high priority sites have the required redundancy, and it does not have the high cost of the full mesh.

Explanation D. Incorrect. The bus topology is an older technology where network nodes are attached to coaxial cable along the wire strand.

PrepLogic Question: 10980-402

46. Review Question p. 17

Answers: C

Explanation A. Incorrect. 10Base5 has a maximum range of 500 m. It is also known as

Thicknet.

Explanation B. Incorrect. 10Base2 has a maximum range of 185 m, and uses a thin coax cable. It is also known as Thinnet.

Explanation C. Correct. 100BaseT has a maximum range of 100 m.

Explanation D. Incorrect. 100BaseFX has a maximum range of 400 m. It runs over fiber-optic cabling

Explanation E. Incorrect. 1000BaseZX has a maximum range of 100 km running over single mode fiber optics.

PrepLogic Question: 10980-403

47. Review Question p. 18

Answers: E

Explanation A. Incorrect. TCP port 119 is the Network News Transfer Protocol.

Explanation B. Incorrect. TCP port 23 is the Telnet port.

Explanation C. Incorrect. 110 is the POP port number, but it operates on TCP.

Explanation D. Incorrect. UDP port 69 is utilized by TFTP.

Explanation E. Correct. TCP port 110 is utilized by POP.

PrepLogic Question: 10980-404

48. Review Question p. 18

Answers: D

Explanation A. Incorrect. 10Base5 has a maximum range of 500 m.

Explanation B. Incorrect. 10Base2 has a maximum range of 185 m.

Explanation C. Incorrect. 100BaseT has a maximum range of 100 m.

Explanation D. Correct. 100BaseFX has a maximum range of 400 m.

Explanation E. Incorrect. 1000BaseZX has a maximum range of 100 km.

PrepLogic Question: 10980-405

49. Review Question p. 18

Answers: C

Explanation A. Incorrect. Frame Relay is a packet-switched technology.

Explanation B. Incorrect. ISDN would be a dedicated line WAN connection.

Explanation C. Correct. ATM is a cell-switched WAN connection type.

Explanation D. Incorrect. X.25 is a packet-switching technology.

PrepLogic Question: 10980-406

50. Review Question p. 19

Answers: A, D

Explanation A. Correct. Frame Relay is a packet-switched technology. Frame Relay provides connection-oriented Data Link Layer communication.

Explanation B. Incorrect. ISDN would be a dedicated line WAN connection.

Explanation C. Incorrect. ATM is a cell-switched WAN connection type.

Explanation D. Correct. X.25 is a packet-switching technology.

PrepLogic Question: 10980-407

51. Review Question p. 19

Answers: C, D

Explanation A. Incorrect. Hubs actually repeat network traffic and increase collisions.

Explanation B. Incorrect. Repeaters echo network traffic and actually increase collisions.

Explanation C. Correct. Switches provide separation of collision domains, and they can be thought of as multi-port bridges.

Explanation D. Correct. Bridges provide separation of collision domains.

Explanation E. Incorrect. Routers are used to separate networks and do not reduce collisions. Routers are used to separate broadcast domains.

PrepLogic Question: 10980-408

52. Review Question p. 19

Answers: C

Explanation A. Incorrect. Dedicated lines are extremely reliable, but also the most costly WAN option.

Explanation B. Incorrect. Circuit switched connections are great for intermittent traffic, but can get quite expensive for long term/high data transfer situations.

Explanation C. Correct. Packet switching connections, such as Frame Relay, are the most cost-effective WAN solution.

Explanation D. Incorrect. Wireless connections are not suitable for branch office connections due to short ranges.

PrepLogic Question: 10980-409

53. Review Question p. 20

Answers: B

Explanation A. Incorrect. The MAC address is not a layer 1 address, but lives within the Data Link Layer, or layer 2.

Explanation B. Correct. MAC addresses are Data Link Layer addresses that are burnt into the NIC, and are 48 bits in length. They are unique to each network interface card, assigned to the card by the manufacturer, and are used to deliver layer 2 frames. Network addresses reside at layer 3, and are logical addresses assigned by the network administrator.

Explanation C. Incorrect. IP/Network Layer addresses are assigned through the operating system by a network administrator.

Explanation D. Incorrect. Although MAC addresses are unique and burnt in by the manufacturer, Network Layer addresses are assigned by administrators. Network Layer addresses are unique to the network they are residing on but are logical and can change.

PrepLogic Question: 10980-413

54. Review Question p. 20

Answers: D

Explanation A. Incorrect. These are not in the proper order.

Explanation B. Incorrect. These are not in the proper order.

Explanation C. Incorrect. These are not in the proper order.

Explanation D. Correct. As information travels through the TCP/IP stack, each layer formats the information into its own language. When information travels up or down, it is decapsulated or encapsulated. The encapsulation follows the seven layers of the OSI Model:
Data: Application, Presentation, and Session Layers
Segments: Transport Layer
Packets: Network Layer
Frames: Data Link Layer
Bits: Physical Layer

PrepLogic Question: 10980-414

55. Review Question p. 20

Answers: B, E

Explanation A. Incorrect. UDP is a connectionless protocol, and relies on upper level protocols to ensure data delivery. Connectionless protocols have less overhead but rely on upper level protocols to manage reliability and transmission control. Certain types of data require the use of a connectionless protocol including voice and video streams.

Explanation B. Correct. TCP is a connection-oriented protocol that uses the "three-way handshake" to ensure communication reliability. If a packet is lost or dropped, a connection-oriented protocol has the capability to resend it to ensure all data is received.

Explanation C. Incorrect. IPX functions at layer 3, and relies on upper level protocols to ensure data delivery.

Explanation D. Incorrect. The IP protocol functions at layer 3, and focuses on addressing; it would rely on some other method to ensure reliable communications.

Explanation E. Correct. SPX provides connection-oriented communications at layer 4.

PrepLogic Question: 10980-415

56. Review Question p. 21

Answers: B, D

Explanation A. Incorrect. Bridges function at layer 2, forwarding frames to all ports.

Explanation B. Correct. Bridges are intelligent network filters that build forwarding tables to distinguish between local and remote destinations.

Explanation C. Incorrect. Bridges are intelligent devices that segment the network through filtering.

Explanation D. Correct. When a bridge does not have an address within its table, it sends the traffic to all ports.

PrepLogic Question: 10980-416

57. Review Question p. 21

Answers: A, B, D

Explanation A. Correct. The Transport Layer performs many functions, one of which is the assignment of port numbers.

Explanation B. Correct. Layer 4 performs the all-important duty of congestion and flow control. Flow control problems ensure that computers with limited memory are not overwhelmed by a flood of information from a larger computer. This is less of a problem as memory and bandwidth have become comparatively cheaper. Congestion avoidance ensures packets aren't dropped and lost when networks get overused.

Explanation C. Incorrect. The association of logical address would be a function of the Network Layer.

Explanation D. Correct. Depending on the protocol utilized, the retransmission function is assigned to layer 4.

PrepLogic Question: 10980-417

58. Review Question p. 21

Answers: B, C

Explanation A. Incorrect. Frame Relay does not operate at the Network Layer.

Explanation B. Correct. Frame Relay provides functionality at layer 2. Because Frame Relay operates at layer 2 and not layer 3, it has the ability to work with various protocols at the same time such as Ethernet and X.25.

Explanation C. Correct. Frame Relay is a data link switching, connection-oriented technology used for wide area network (WAN) connectivity; it provides functionality at layers 1 and 2.

Explanation D. Incorrect. Frame Relay does not perform at layer 4.

PrepLogic Question: 10980-418

59. Review Question p. 22

Answers: A, C, D

Explanation A. Correct. Half-duplex transmissions rely on nodes to detect collisions and perform retransmission, and therefore are susceptible to collisions.

Explanation B. Incorrect. Hubs require end devices to run at half-duplex.

Explanation C. Correct. Hubs rely on network nodes to detect collisions and retransmit.

Explanation D. Correct. On switched networks, full-duplex transmission allows transmissions in both directions, and provides point-to-point transmission. Because there is a dedicated connection between end nodes, collision detection is not required.

Explanation E. Incorrect. Half-duplex can attain around 50-60% of the bandwidth of a link due to collisions and retransmissions.

PrepLogic Question: 10980-419

60. Review Question p. 22

Answers: A, D

Explanation A. Correct. The MAC, or hardware, address is 48 bits in length. Every network device has a unique MAC address

Explanation B. Incorrect. The MAC address is a 48-bit, 12-hexadecimal-digit address that is set by the manufacturer. Twenty-four of the 48 bits of a hex MAC address are the manufacturer's code. This is referred to as the organizationally unique identifier (OUI).

Explanation C. Incorrect. The MAC address resides at layer 2.

Explanation D. Correct. The MAC address is burnt into the card at the manufacturer.

Explanation E. Incorrect. You cannot change the MAC address.

PrepLogic Question: 10980-427

61. Review Question p. 22

Answers: B, D, E

Explanation A. Incorrect. The OSI model provides a standard model for the industry, but cannot prevent devices from breaking.

Explanation B. Correct. The model provides a structured view for complex functionality.

Explanation C. Incorrect. Although it ensures standards in operation, it does not ensure interoperability.

Explanation D. Correct. The model provides a standardized view. Vendors use this model as a basis in the design of new protocols.

Explanation E. Correct. The layers can easily be translated into modular functionality.

PrepLogic Question: 10980-428

62. Review Question p. 23

Answers: A, B, D

Explanation A. Correct. The source port is on of the sections of the UDP header. The source port is the UDP port number of the sending network device.

Explanation B. Correct. The destination port is one of the sections of the UDP header. The destination port is the UDP port number of the receiving network device.

Explanation C. Incorrect. The sequence number is not a part of the UDP header; it is a part of the TCP header. Remember, UDP is connectionless, and therefore does not keep track of sequence.

Explanation D. Correct. The Checksum header is included in both TCP and UDP headers.

Explanation E. Incorrect. The window size is not included in the UDP header because UDP is a connectionless protocol.

PrepLogic Question: 10980-429

63. Review Question p. 23

Answers: D

Explanation A. Incorrect. Hubs would decrease the performance of the network by forwarding broadcast traffic to every port and using half-duplex transmissions.

Explanation B. Incorrect. Segmenting the network in this manner would help with performance by reducing collisions, but would not allow Windows broadcast traffic to reach all hosts.

Explanation C. Incorrect. Moving to a less "chatty" operating system would improve performance, but would create an end-user rebellion.

Explanation D. Correct. Partitioning the network into separate subnetworks and utilizing routing would provide the best possible network design and create a marked improvement in performance. Implementing switch ports eliminates collisions, and implementing separate routing segments shrinks broadcast domains.

PrepLogic Question: 10980-430

64. Review Question p. 23

Answers: C

Explanation A. Incorrect. The Access Layer is where end users connect to the network and all general network access is performed.

Explanation B. Incorrect. The Distribution Layer can also be called the Service Layer, and this is where filtering, QoS, and access lists are applied.

Explanation C. Correct. The Core Layer of the network is where it all comes together. The switches at this layer need to be the fastest to ensure maximum switching speed and reduced latency. The network links in the core are the most utilized on the network. A network requires its core switches to be the fastest and most powerful to ensure they can handle switching under high traffic loads.

Explanation D. Incorrect. The Routing Layer is not a layer in the Cisco Hierarchical Model.

PrepLogic Question: 10980-433

65. Review Question p. 24

Answers: B

Explanation A. Incorrect. The Access Layer is where end users connect to the network, and all general network access is performed. Placing access lists here would only affect those users connected to that particular device.

Explanation B. Correct. The Distribution Layer can also be called the Service Layer, and this is where filtering, QoS, and access lists are applied.

Explanation C. Incorrect. The Core Layer of the network is where it all comes together. The switches at this layer need to be the fastest to ensure maximum switching speed and reduced latency. Requiring these switches to perform processor-intensive functions such as QoS and access lists would be counterproductive.

Explanation D. Incorrect. The Switching Layer is not a layer in the Cisco Hierarchical Model, or in any Cisco model.

PrepLogic Question: 10980-434

66. Review Question p. 24

Answers: B, C

Explanation A. Incorrect. ISDN would not provide the bandwidth for remote backup, and would be too slow for remote server access for the branches. Furthermore, ISDN is no longer on the Cisco CCNA exam! But, just for your information, ISDN typically runs at speeds of up to 128 Kbps.

Explanation B. Correct. In this particular situation, where the branches are accessing remote servers, a dedicated line would provide the best performance. A dedicated T1 circuit provides bandwidth of 1.544 Mbps.

Explanation C. Correct. This configuration would provide a fast, flexible network with a GB backbone.

Explanation D. Incorrect. The Cisco 6500 series is a high performance switch that would be best suited for the Core Layer.

PrepLogic Question: 10980-449

67. Review Question p. 24

Answers: A, B

Explanation A. Correct. Ping can be used to test network performance and connectivity utilizing layer 3 addresses. Ping uses ICMP to determine if the host being pinged is active or inactive, response time, and packet loss.

Explanation B. Correct. Traceroute allows you to see a "hop-by-hop" trace of the network to discover the route taken to reach a specific destination. It shows layer 3 hops.

Explanation C. Incorrect. Telnet would not give you feedback on network performance, or give you data to analyze the network problems. Ping or traceroute would be the best utilities to perform testing at layer 3.

Explanation D. Incorrect. Nslookup allows you to test DNS connectivity and configuration, and perform hostname lookups.

PrepLogic Question: 10980-485

68. Review Question p. 25

Answers: C

Explanation A. Incorrect. Ping can be used to test network performance and connectivity utilizing layer 3 addresses.

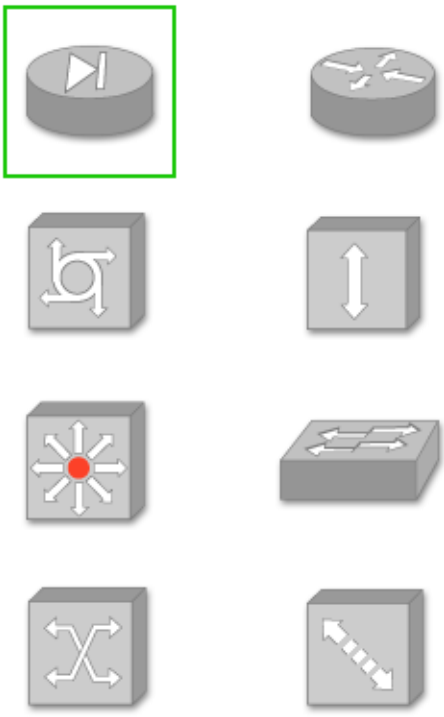
Explanation B. Incorrect. Traceroute allows you to see a "hop-by-hop" trace of the network from a host to a destination. It shows the layer 3 path to a specific destination.

Explanation C. Correct. Telnet is a great utility for testing layer 4 issues. By utilizing the command, "telnet 10.10.10.1 port number" you can check to see if the host responds to network inquiries for certain port numbers.

Explanation D. Incorrect. Although nslookup will show basic connectivity at layer 4, by utilizing DNS, UDP port 53, it will only let you test that port.

PrepLogic Question: 10980-486

69. Review Question p. 25
Answer:



Explanation: Cisco has standard icons for all different types of networking devices. These are the most commonly used. The correct answer in this case is the circle with the diode in the middle.

PrepLogic Question: 10980-533

70. Review Question p. 26

Answer:

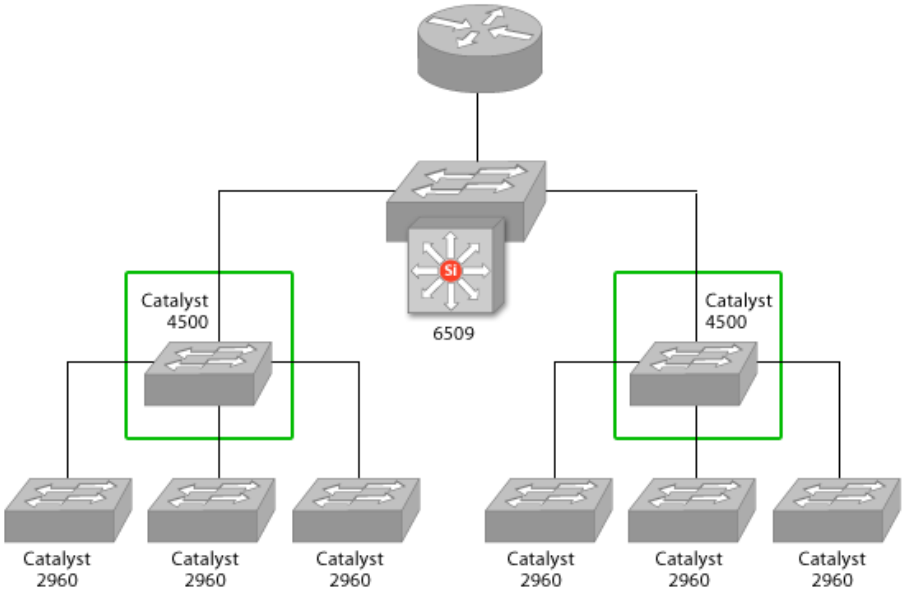
SMTP	DNS	HTTP	HTTPS
25	53	80	443

Explanation:

PrepLogic Question: 10980-534

71. Review Question p. 26

Answer:

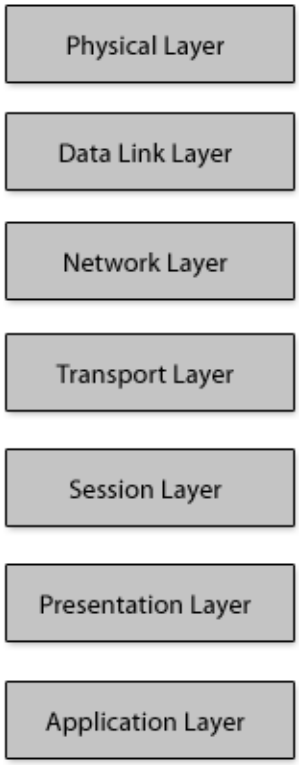


Explanation: Access lists would best be placed on the 4500 switches. Cisco's hierarchical design model includes three layers: Core, Distribution, and Access. The Core Layer's main goal is speed of switching. The fastest, most reliable switches are placed at this layer. The Distribution Layer is the middleman that performs all the intelligent tasks, alleviating any load that might be placed on the core by performing QoS and applying access lists and other security functions. The Access Layer is purely for end-user access. In this case, the 4500's are at the Distribution Layer.

PrepLogic Question: 10980-541

72. Review Question p. 27

Answer:

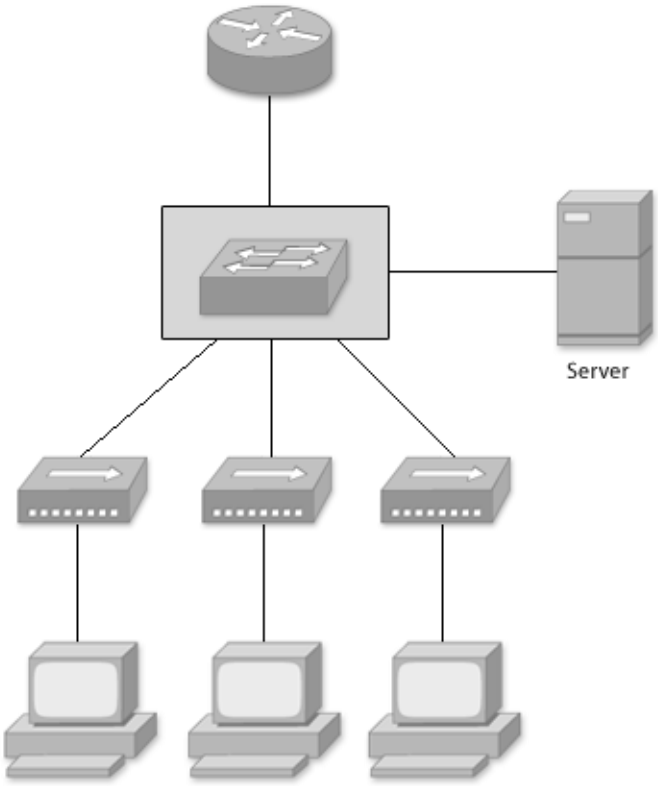


Explanation: The sequence in which a host receiving traffic will process data is: Physical, Data Link, Network, Transport, Session, Presentation, and Application. A sending host would process in the reverse order.

PrepLogic Question: 10980-542

73. Review Question p. 28

Answer:



Explanation: Switch. A switch will immediately provide performance improvements in a hub-based network. Another router would not provide improved performance. A bridge may provide performance improvement, but would not give the most flexibility for future plans. A PIX firewall would not provide performance improvements. A hub would just add to the network issues.

PrepLogic Question: 10980-545

Explanations: Chapter 2

1. Review Question p. 29

Answers: B

Explanation A. Incorrect. When a switch operates in VTP client mode, it is not possible to manage VLAN information on this switch. VTP clients receive configuration information from VTP servers over the network.

Explanation B. Correct. The switch, configured as VTP server, can create, modify, and delete VLANs. You can also specify VTP configuration parameters for the entire VTP domain. VTP Servers send configuration information to VTP clients.

Explanation C. Incorrect. The switch, configured as VTP Transparent, can create, modify, and delete VLANs. Any configuration changes, performed on a VTP transparent switch are local to the switch. This switch does not receive configuration information and does not send configuration information over the network. However, this switch will propagate configuration information from VTP Servers to VTP clients.

Explanation D. Incorrect. This VTP mode does not exist.

Explanation E. Incorrect. The VTP server mode is used to provide configuration information over the network; so, such a VTP mode does exist.

PrepLogic Question: 10980-110

2. Review Question p. 29

Answers: C

Explanation A. Incorrect. A port in blocking state won't forward frames, but it listens to BPDUs. This is the state that the port has when it powers up, and this is also the port state whenever redundant links are found.

Explanation B. Incorrect. A port in listening state listens to BPDUs to make sure that no loops will occur in the network once it starts forwarding.

Explanation C. Correct. This is an invalid port state.

Explanation D. Incorrect. A port in learning state inspects traffic to learn MAC addresses, but does not forward frames.

Explanation E. Incorrect. A port in forwarding state sends and receives frames, and performs normal bridging functions.

PrepLogic Question: 10980-133

3. Review Question p. 30

Answers: A, B, C, E

Explanation A. Correct. This important information allows switches to discover each other on the network, as well as to detect when a switch/bridge failure occurs.

Explanation B. Correct. This information is important because each switch/bridge needs to have a unique way to identify neighbor devices and their knowledge of the STP topology.

Explanation C. Correct. Each switch/bridge informs its neighbor about its proximity to the root bridge/switch. Based on this information, other switches (from lower levels) will calculate per port distance to the root bridge to determine which ports must be disabled.

Explanation D. Incorrect. Switches don't care about DNS names, and don't send this kind of information in BPDUs. DNS operates on layers 5-7 (from session to application layer).

Explanation E. Correct. Each switch needs to inform its neighbors about the switch that it considers a root bridge in the STP topology.

PrepLogic Question: 10980-134

4. Review Question p. 30

Answers: D

Explanation A. Incorrect. The routing table represents a layer 3 view of how packets should be forwarded. Routing tables are used by routers to make routing decision.

Explanation B. Incorrect. The ARP table is used by end devices and routers when they need to find the physical (MAC) address to use to establish a communication channel on a data-link layer. This table is not used by switches in the switching process.

Explanation C. Incorrect. Frame Relay mapping tables are used to map data-link layer Frame Relay addresses (DLCIs) to network layer addresses, such as IP addresses. Layer 2 switches don't normally use Frame Relay.

Explanation D. Correct. Switches use the CAM table to make forwarding decisions. In fact, switches learn MAC addresses from received packets,. They fill in these addresses in the CAM table, and then use the table during the switching process.

Explanation E. Incorrect. Such a term does not exist. This is a misleading answer.

PrepLogic Question: 10980-143

5. Review Question p. 30

Answers: B

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Correct. It displays a list of all the switch ports, their status (connected, or not), speed and duplex settings, VLAN assignment, and interface type.

Explanation C. Incorrect. This command does not exist in Cisco IOS.

Explanation D. Incorrect. Router configuration files definitely influence port status. However, when troubleshooting, you normally want to see the current status, and not what has been configured.

Explanation E. Incorrect. This command displays interface status for ports that have been included in EtherChannel bundles. It does not display status for other ports, neither does it display VLAN assignments.

PrepLogic Question: 10980-155

6. Review Question p. 31

Answers: A

Explanation A. Correct. This command displays useful spanning-tree information including a list of all the ports in each VLAN, and their spanning-tree state (whether they are forwarding, blocking, etc).

Explanation B. Incorrect. This command does not exist in Cisco IOS.

Explanation C. Incorrect. This command only shows information about inconsistent ports, and the type of inconsistency. It does not show forwarding interfaces.

Explanation D. Incorrect. This command does not exist in Cisco IOS.

Explanation E. Incorrect. Router configuration files definitely influence port status. However, when troubleshooting, you normally want to see the current status, and not what has been configured.

PrepLogic Question: 10980-156

7. Review Question p. 31

Answers: A

Explanation A. Correct. When a switch operates in VTP client mode, it is not possible to manage VLAN information locally on the switch. VTP clients receive configuration information from VTP servers over the network.

Explanation B. Incorrect. A switch configured as a VTP server can create, modify, and delete VLANs. You can also specify VTP configuration parameters for the entire VTP domain. VTP Servers send configuration information to VTP clients.

Explanation C. Incorrect. A switch configured as a VTP transparent mode device can create, modify, and delete VLANs. Any configuration changes performed on a VTP transparent switch are local to the switch. The switch does not receive configuration information and does not send configuration information over the network. However, this switch will propagate configuration information from VTP Servers to VTP Clients.

Explanation D. Incorrect. This VTP mode does not exist.

Explanation E. Incorrect. The VTP client mode is used to configure a switch to receive configuration information over the network.

PrepLogic Question: 10980-168

8. Review Question p. 32

Answers: D

Explanation A. Incorrect. Switching does not implement this functionality. Packet reordering and prioritization is performed by various upper layer QoS technologies.

Explanation B. Incorrect. Switching does not implement this functionality. Packet reordering and prioritization is performed by various upper layer QoS technologies.

Explanation C. Incorrect. In fact, these technologies are media-independent and both of them can potentially be used with Token Ring and Ethernet.

Explanation D. Correct. While store-and-forward switching waits for the complete frame to be received, checks its integrity, and forwards the frame, cut-through switching is able to forward the frame when the destination port can be determined.

Explanation E. Incorrect. There is no technology for preventing giant frames into the network. Actually, most of the switches just drop giant frames (frames bigger than 1514 bytes in Ethernet) whenever they receive them.

PrepLogic Question: 10980-188

9. Review Question p. 32

Answers: A

Explanation A. Correct. This command displays information about all the trunk ports, their status, the encapsulation they use, native VLAN (if applicable), and VLANs that are trunked on every port.

Explanation B. Incorrect. This command displays a list of all the switch ports, their status (connected, or not), speed and duplex settings, VLAN assignment, and interface type. However, this command does not display trunk encapsulation information.

Explanation C. Incorrect. This command does not exist in Cisco IOS.

Explanation D. Incorrect. Router configuration files definitely influence port status. However, when troubleshooting, you very often prefer to see the current status, and not what has been configured.

Explanation E. Incorrect. This command displays interface status for ports that have been included in EtherChannel bundles. It does not display status for other ports, and does not display trunking information.

PrepLogic Question: 10980-213

10. Review Question p. 33

Answers: A, B, D

Explanation A. Correct. This command configures a switch port to passively negotiate a trunking state. The port will use the DTP protocol to accomplish this. If the connected device proposes trunking, the port will switch to trunking state.

Explanation B. Correct. This command configures a switch port to actively try and negotiate a trunking state. The port will use the DTP protocol to accomplish this. If the connected device accepts the trunk proposal, the port will switch to trunking state.

Explanation C. Incorrect. This command does not exist in Cisco Catalyst IOS.

Explanation D. Correct. Issuing this command for a switch port turns on trunking unconditionally. The switch won't try to negotiate trunking state.

Explanation E. Incorrect. This command is used to specify that an end station (not a switch) is connected to the particular switch port. The result of this command is that neither 802.1Q, nor ISL encapsulations will be activated for this port.

PrepLogic Question: 10980-223

11. Review Question p. 33

Answers: C

Explanation A. Incorrect. When a switch operates in VTP client mode, it is not possible to manage VLAN information on this switch. VTP clients receive configuration information from VTP servers over the network.

Explanation B. Incorrect. The switch, configured as VTP server, can create, modify, and delete VLANs. You can also specify VTP configuration parameters for the entire VTP domain. VTP servers send configuration information to VTP clients.

Explanation C. Correct. The switch, configured as VTP server, can create, modify, and delete VLANs. Any configuration changes performed on a VTP transparent switch are local to the switch. This switch does not receive configuration information and does not send configuration information over the network. This switch will propagate configuration information from VTP servers to VTP clients.

Explanation D. Incorrect. This VTP mode does not exist.

Explanation E. Incorrect. The VTP transparent mode is used to configure a switch to use only its local configuration, without sharing this information with other switches.

PrepLogic Question: 10980-226

12. Review Question p. 33

Answers: B

Explanation A. Incorrect. A port in listening state does not forward frames - it tries to determine whether or not it would create a routing loop if it starts forwarding frames.

Explanation B. Correct. A switch in listening state is not forwarding frames - it tries to determine whether or not it would create a routing loop if it starts forwarding frames.

Explanation C. Incorrect. Switches only care about MAC addresses. A switch in listening state will be listening for BPDUs, and will try to find out whether or not it is part of a loop.

Explanation D. Incorrect. It is not forwarding any frames. A switch in listening state will be listening for BPDUs, and will try to find out whether it is part of a loop.

Explanation E. Incorrect. A port in learning state or in forwarding state would collect MAC addresses. A port in listening state does not collect MAC address information.

PrepLogic Question: 10980-250

13. Review Question p. 34

Answers: A

Explanation A. Correct. The lower the number, representing switch priority, the higher the probability that the switch would become a root bridge.

Explanation B. Incorrect. The lower the number, representing switch priority, the higher the probability that the switch would become a root bridge.

Explanation C. Incorrect. Bigger numbers represent lower priority to become a root bridge within the STP protocol. This is the default switch priority. If other switches are configured with the default priority, there would be no guarantee that this switch would become a root.

Explanation D. Incorrect. Bigger numbers represent lower priority to become a root bridge within the STP protocol.

Explanation E. Incorrect. Bigger numbers represent lower priority to become a root bridge within the STP protocol.

PrepLogic Question: 10980-251

14. Review Question p. 34

Answers: C

Explanation A. Incorrect. The switchport nonegotiate command does not disable the switch port, rather the DTP protocol operation on this port.

Explanation B. Incorrect. The switchport nonegotiate command does not influence link speed autonegotiation, rather the DTP protocol operation on this port.

Explanation C. Correct. Cisco uses the Dynamic Trunking Protocol (DTP) to allow for automatic configuration of trunking between interconnected switching. If the trunking status needs to be manually defined, it is recommended that DTP be turned off.

Explanation D. Incorrect. DTP does not try to negotiate an encapsulation protocol for the trunk, so this command does not influence the selection of any trunking protocol.

Explanation E. Incorrect. DTP does not try to negotiate an encapsulation protocol for the trunk, so this command does not influence the selection of any trunking protocol.

PrepLogic Question: 10980-281

15. Review Question p. 34

Answers: A

Explanation A. Correct. However, if a switch receives a domain name advertisement over a trunk link, or if it is manually configured for a VTP domain, the switch assumes the role of a VTP domain member.

Explanation B. Incorrect. You can't create or modify VLANs while the VTP server is in the no-management domain. A switch needs to be assigned a domain name, before VLAN configuration can be performed.

Explanation C. Incorrect. The VTP protocol was invented and developed by Cisco. This protocol cannot be used in multivendor networks.

Explanation D. Incorrect. VTP messages are only propagated over switch trunk ports, as these messages are only significant for the switches, and not for end nodes.

Explanation E. Incorrect. VTP has two versions - 1 and 2. Besides supporting Token Ring TrBRFs and TrCRFs, version 2 has some minor improvements over version 1.

PrepLogic Question: 10980-284

16. Review Question p. 35

Answers: B

Explanation A. Incorrect. The ip address command can be used to assign a management IP address and a subnet mask to a switch. However, this command cannot be used to assign the switch a default gateway.

Explanation B. Correct. The ip default-gateway global configuration command can be used to assign a switch a default gateway to use for management purposes.

Explanation C. Incorrect. Layer 2 switches do not support routing protocols. These switches only use IP address information as end nodes.

Explanation D. Incorrect. This command does not exist in Cisco IOS.

Explanation E. Incorrect. If you issue this command, it will configure your switch for dynamic configuration of all the settings, not just the default gateway.

PrepLogic Question: 10980-286

17. Review Question p. 35

Answers: B

Explanation A. Incorrect. Layer 2 switches are unable to create separate broadcast domains (VLANs). Also, layer 2 switches by themselves are unable to provide routing between these separate broadcast entities. Routers need to be used if the requirement to communicate between VLANs exists (and it normally does).

Explanation B. Correct. Switches are known for creating separate collision domains, as they don't just amplify network signals. Switches re-generate frames on outgoing ports and, as a result, isolate collisions.

Explanation C. Incorrect. This is totally irrelevant. DNS is a name to network layer address (and vice versa) resolution method.

Explanation D. Incorrect. Layer 2 switches only perform layer two functions, such as packet forwarding based on layer 2 addresses. Layer 3 switches are able to perform forwarding decisions based on network layer (layer 3) addresses. This is known as routing.

Explanation E. Incorrect. Switches don't normally have WAN ports; routers do. Switches are typically used for high density LAN connections.

PrepLogic Question: 10980-293

18. Review Question p. 35

Answers: C

Explanation A. Incorrect. As the frame check sequence (FCS) is located in the frame trailer, only store-and-forward switching, which buffers the whole frame before sending it, is able to perform such checks.

Explanation B. Incorrect. Although this statement is true about cut-through switching, it is also true about store-and-forward switching, so this is not an advantage. Switching works on layer 2 of the OSI model, so any layer 3 protocol can be switched by either technology.

Explanation C. Correct. Cut-through switching is faster because the switch does not wait for the whole frame to arrive before making switching decisions, nor does it check the frame for errors.

Explanation D. Incorrect. Although it might be able to detect errors in the frame headers, cut through switching is unable to detect errors in the frame payload, as it does not buffer the whole frame.

Explanation E. Incorrect. Although this statement is true about cut-through switching, it is also true about store-and-forward switching, so this is not an advantage. As

switching is a process local to the device, there can hardly be any incompatibility as long as the switched frames have a standard format when they leave the switch.

PrepLogic Question: 10980-305

19. Review Question p. 36

Answers: E

Explanation A. Incorrect. A port in blocking state won't forward frames, but it listens to BPDUs. This is the state that the port has when it powers up, and this is also the port state whenever redundant links are found.

Explanation B. Incorrect. A port in listening state listens to BPDUs to make sure that no loops will occur in the network once it starts forwarding.

Explanation C. Incorrect. This is an invalid port state.

Explanation D. Incorrect. A port in learning state inspects traffic to learn MAC addresses, but does not forward frames.

Explanation E. Correct. A port in forwarding state sends and receives frames, and performs normal bridging functions.

PrepLogic Question: 10980-308

20. Review Question p. 36

Answers: D

Explanation A. Incorrect. This is not a reason for STP to put a port into blocking state. The STP protocol does not manage faulty hardware conditions.

Explanation B. Incorrect. The STP protocol does not manage collisions, and it won't change port state even if very high collision conditions are encountered.

Explanation C. Incorrect. In fact, FastEtherchannel (or just EtherChannel) is a way to avoid ports being put into blocking state, in case you have more than one interconnect between switches.

Explanation D. Correct. The main job of the STP protocol is to find data-link loops within the Internetwork, and eliminate these loops to avoid various problems that can be caused by virtue of multiple paths between end nodes. Redundant paths are put into blocking state.

Explanation E. Incorrect. A duplicate MAC address, although unlikely, is a serious

problem within an Internetwork. However, the Spanning Tree Protocol does not handle such faulty conditions.

More Information:

Audio Explanation

PrepLogic Question: 10980-309

21. Review Question p. 36

Answers: E

Explanation A. Incorrect. Router configuration files definitely influence port status. However, when troubleshooting, you normally want to see the current status, and not what has been configured. This command won't display VTP information.

Explanation B. Incorrect. The above command displays information about the DTP protocol, but not about the VTP protocol.

Explanation C. Incorrect. This command displays a list of all the switch ports, their status (connected, or not), speed and duplex settings, VLAN assignment, and interface type. However, this command does not display information about VTP.

Explanation D. Incorrect. This displays a list of VLANs, their numbers, names, and status, as well as port assignments. However, it will not display VTP information.

Explanation E. This is the correct command. It displays the VTP protocol version, the VTP operating mode, the number of existing VLANs, VTP domain name, pruning information, and VTP configuration revision.

PrepLogic Question: 10980-329

22. Review Question p. 37

Answers: C

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Incorrect. This command displays the VTP protocol version, the VTP operating mode, the number of existing VLANs, VTP domain name, pruning information, and VTP configuration revision. However, it won't display information about the root bridge.

Explanation C. Correct. This command displays the bridging groups configured on the switch. It also displays information about bridge IDs, protocols, protocol parameters, etc, and per-VLAN information.

Explanation D. Incorrect. Router configuration files definitely influence port status. However, when troubleshooting, you normally want to see the current status, and not what has been configured.

Explanation E. Incorrect. This command displays the current status of the spanning-tree BackboneFast feature. However, it does not display information about the root bridge.

PrepLogic Question: 10980-330

23. Review Question p. 37

Answers: B, C

Explanation A. Incorrect. Store-and-forward switching places the entire frame in memory, and performs a CRC check before forwarding the frame. Erroneous frames are discarded.

Explanation B. Correct. Cut-through switching is the fastest switching mode, and will begin forwarding a frame before receiving all the data. Latency is reduced by eliminating error checking.

Explanation C. Correct. Store-and-forward switching will receive the entire frame before it forwards it to its destination. This LAN switch forwarding technology must be used if performing layer 3 switching.

Explanation D. Incorrect. Cut-through switching does not perform a CRC.

PrepLogic Question: 10980-410

24. Review Question p. 37

Answers: D

Explanation A. Incorrect. Spanning is not one of the steps in the STP process.

Explanation B. Incorrect. Election is not one of the steps in the STP process.

Explanation C. Incorrect. These are the correct steps in the STP process, but Blocking takes place prior to Listening.

Explanation D. Correct. In order to prevent loops, all ports start out Blocking. The port will remain blocked, unless it is determined that it is the best path to the root bridge. Listening is the next state, where the bridge listens for Bridge Protocol Data Units (BPDUs), to ensure a loop-free topology exists. Then it transitions to Learning, and this is where it begins to populate its forwarding table with MAC addresses. The switch does

not forward frames until it enters the Forwarding state. This is where the switch can send and receive frames.

PrepLogic Question: 10980-411

25. Review Question p. 38

Answers: D

Explanation A. Incorrect. VLANs provide the ability to segment networks for improved performance and security. Segmenting LANs provides security because it lets you divide the network and apply security controls based on VLAN and access requirements. They improve performance by reducing broadcast traffic and preventing broadcast storms from affecting all segments.

Explanation B. Incorrect. One of the primary benefits of VLANs is the ability to virtually segment networks.

Explanation C. Incorrect. VLANs provide vast flexibility in the design and operations of switched networks.

Explanation D. Correct. VLANs provide the ability to virtually segment networks, but separate devices would be required for physical segmentation.

PrepLogic Question: 10980-412

26. Review Question p. 38

Answers: A, C

Explanation A. Correct. This command is used to create a VLAN and enter the VLAN's configuration mode.

Explanation B. Incorrect. This command allows the administrator to name the VLAN. This step is optional, and is not required.

Explanation C. Correct. The switchport access command enables a VLAN for a particular interface.

Explanation D. Incorrect. This command designates a particular interface as a trunk port, and is not required for VLAN configuration. A trunk is used to transport data from multiple VLANs between devices.

PrepLogic Question: 10980-453

27. Review Question p. 38

Answers: A

Explanation A. Correct. VTP provides the means to configure switches within a ?domain,? allowing them to share VLAN information and reduce the configuration time necessary. When you configure a new VLAN on a VTP switch, the VLAN is distributed through all switches in the domain. This is correct for VTP v.1 and v.2.

Explanation B. Incorrect. This statement describes the process used by trunking protocols (ISL and 802.1q) as they tag or encapsulate frames with VLAN identifiers. 802.1q tags the frames and ISL encapsulates them.

Explanation C. Incorrect. The Spanning Tree Protocol (STP) algorithm provides loop prevention within a series of connected switches.

Explanation D. Incorrect. VTP functions within layer 2, and does not provide any routing information.

PrepLogic Question: 10980-454

28. Review Question p. 39

Answers: C

Explanation A. Incorrect. Server mode is normally set on a single switch that will be the ?master? for your VTP domain. All changes made on this device will be propagated to the entire network.

Explanation B. Incorrect. A device set to Client Mode will receive all changes from the server, but you cannot add, delete, or make changes on the device.

Explanation C. Correct. Transparent Mode will receive all changes from the server in the domain, and will forward them on, but will not accept those changes into its configuration. Changes made on the switch will only affect its settings.
The reason it is important that the lab switch does not propagate VTP information is that the network engineers are constantly making configuration changes to the VTP for testing purposes. This raises the VTP revision number. If a network engineer accidentally places the switch into the production VTP domain, the VTP revision number may be higher than the VTP domain server and can erase all VLAN information on the network.

Explanation D. Incorrect. Silent Mode is not a VTP mode of operation.

PrepLogic Question: 10980-455

29. Review Question p. 39

Answers: A, C, D

Explanation A. Correct. The "show interfaces" command will display many items, but in this case you will be able to see the negotiated speed and duplex settings, as well as examine the interface statistics. The statistics section will show errors if there are speed/duplex issues.

Explanation B. Incorrect. This command will show interface summary information and packet rates and queues, but no duplex/speed settings or error counts.

Explanation C. Correct. If there are duplex issues, you will see errors within the log. Any interface flapping will also show up. The log is always a great place to start.

Explanation D. Correct. The "show running-configuration" command will display all the current settings on the interface, and show duplex, speed, and auto settings.

Explanation E. Incorrect. This command will show packet totals for all the interfaces, and their direct connections. There is no information on speed or errors, which would require the "show interfaces" command.

PrepLogic Question: 10980-471

30. Review Question p. 40

Answers: A, C

Explanation A. Correct. The show vlan command is often the first step in troubleshooting VLAN issues. This command will show all the configured VLANs, their status and their member ports.

Explanation B. Incorrect. The show interfaces command will show interface statistics and other interface configuration information, but it does not display VLAN membership or configuration information.

Explanation C. Correct. This command will show the current running configuration, and the interface section will list interface configuration, including VLAN membership information.

Explanation D. Incorrect. This command shows routing protocol configuration and statistics. There will be routing information for VLAN interfaces, but no membership information displayed. On a layer 2 access switch, there will not be any routing information for the VLAN interfaces.

PrepLogic Question: 10980-475

31. Review Question p. 40

Answers: A, C, E

Explanation A. Correct. This command is the first place to look for performance issues. You will see the speed and duplex (negotiated), and also the error counts on the interface. Duplex errors will result in a high number of errors. If the duplex mismatch is causing the circuit to flap repeatedly, the interface may go into error-disable mode. The error disable status will show up on the "show interfaces" command.

Explanation B. Incorrect. This command will show packet counts for all the interfaces. Although this command is useful for analyzing interface traffic, it will not provide helpful information for troubleshooting duplex issues.

Explanation C. Correct. The "show log" command will display logging information when configured correctly. Duplex mismatches will be logged for the problem interface, as will interface flapping. If the duplex mismatch is causing the circuit to flap repeatedly, the interface may go into error-disable mode. This will show up in the logs.

Explanation D. Incorrect. The "show log history" command displays statistics about the log: messages logged, dropped, received, etc. The "show log" command would be far more useful when troubleshooting duplex mismatches.

Explanation E. Correct. This command will show all the interfaces, their status, VLAN, negotiated duplex, and speed and type.

PrepLogic Question: 10980-476

32. Review Question p. 40

Answers: B

Explanation A. Incorrect. The "show interfaces" command will show all the above, except VLAN membership information.

Explanation B. Correct. This command is a great troubleshooting tool for examining ports, and will show all the above information in a clear, concise format.

Explanation C. Incorrect. This command will show inbound and outbound packet counts, and cache information.

Explanation D. Incorrect. The "show protocols" command will show basic interface status and IP addressing information. It will show this information only on layer 3 enabled switches. On layer 2 access switches, this command will not show any information.

PrepLogic Question: 10980-477

33. Review Question p. 41

Answers: C

Explanation A. Incorrect. A default gateway is utilized as a path to remote networks. In this case, you are pinging hosts in the same network and a default gateway is not required, so the problem would lie elsewhere.

Explanation B. Incorrect. Spanning Tree is a protocol that prevents loops from occurring on bridges/switches. It automatically functions, providing a sequence of steps to ensure all ports are loop free. Occasionally administrative intervention is required to manually configure the spanning tree process.

Explanation C. Correct. In order to share VLANs across switches, you need to enable a trunk. The trunk acts as a conduit for VLAN information. You can also set up VTP. VTP simplifies the process of sharing VLAN information by having a master switch (the server), which propagates VLAN information to all other switches

Explanation D. Incorrect. Layer 3 switching will not help here, as the problem is related to sharing VLANs across multiple devices. Once trunking is set up, and all the switches have common VLANs, you may enable layer 3 switching to route packets between VLANs.

PrepLogic Question: 10980-482

34. Review Question p. 41

Answers: C

Explanation A. Incorrect. Layer 1 is the Physical Layer of the OSI model, providing physical standards for cabling, hardware, etc.

Explanation B. Incorrect. Layer 3 is the Network Layer, which primarily deals with logical addressing within a network. An example would be how hosts communicate via IP addresses.

Explanation C. Correct. VTP functions at layer 2, or the Data Link Layer. Remember that switches and bridges function at layer2, switching frames based on physical MAC addresses. VTP provides membership information between switching devices for VLANs, allowing a ?shared? VLAN strategy across multiple layer 2 devices in the same VTP domain.

Explanation D. Incorrect. Layer 6 is the Presentation Layer, responsible for formatting data for the Application Layer.

PrepLogic Question: 10980-483

35. Review Question p. 42

Answers: B

Explanation A. Incorrect. VTP pruning is a functionality that allows you to control which VLANs are propagated to switches. In this case, pruning would not be the problem.

Explanation B. Correct. In order for a switch to propagate VLAN information, it must be placed in server mode. This will send VLAN information to all switches in "client" mode. Transparent mode is for testing, or for use in labs where you can make changes without affecting other switches in the network.

Explanation C. Incorrect. As long as the domain name is the same on the switches, VLANs will propagate correctly. Note: This value is case sensitive, and must be the same on all switches.

Explanation D. Incorrect. VTP v2 mode is not required for the proper transmission of VLAN information. VTP v2 is only necessary for Token Ring VLANs.

PrepLogic Question: 10980-484

36. Review Question p. 42

Answers: B, C

Explanation A. Incorrect. The "show cdp neighbors" command will show device names, interfaces, capabilities, and platforms of directly connected Cisco devices with CDP enabled. You need to add the "detail" keyword to see VLAN and VTP information.

Explanation B. Correct. This command will show detailed information about directly connected neighbors running CDP, including IOS version, address, VTP domain, port VLAN information, and hostname.

Explanation C. Correct. This command will show all the VTP information, including operating mode, domain, and VLAN information.

Explanation D. Incorrect. The "show vtp" command has only two keywords, counters and status. "Domain" is not a keyword.

PrepLogic Question: 10980-487

37. Review Question p. 43

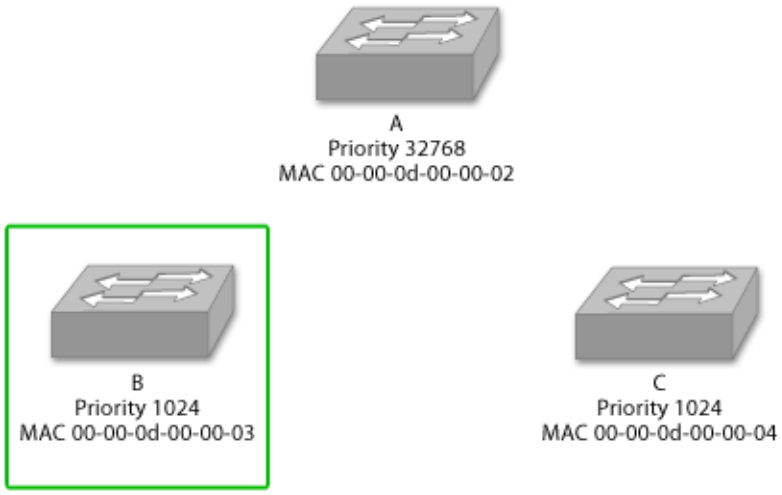
Answer: 3

Explanation: Correct answer is 3. In LAN technologies, routers, VLANs, and layer 3 switching can be used to isolate broadcasts. In switched networks, broadcasts are forwarded to every port, and large broadcast domains can create excessive traffic and network issues.

PrepLogic Question: 10980-532

38. Review Question p. 44

Answer:



Explanation: Switch B. Spanning Tree's basic function is to evaluate the network and create a loop-free topology. The root is the center of the topology, and all trees from the root are loop free. In the election, priority is the first item evaluated, and if there are switches with equal priority, the lowest MAC address wins the election.

PrepLogic Question: 10980-539

39. Review Question p. 45

Answer:

Collision Domains	0
IP Subnets	3
Broadcast Domains	3

Explanation: Collision Domains: 0. A collision domain is created when utilizing hubs, which transmit at half duplex. The switches are set at 100 Full, so there would be no collision domains. Broadcast Domains: 3. Broadcast domains can be created using VLANs, routers, or layer 3 switches. In this case, the separate VLANs, tied in with the L3 switching capabilities, have created three separate broadcast domains. IP Subnets: 3. Each VLAN would be its own subnet.

PrepLogic Question: 10980-537

Explanations: Chapter 3

1. Review Question p. 46

Answers: D

Explanation A. Incorrect. This command can be used on a Frame Relay switch to display the policy for switching DLCIs between interfaces. This is not related to DLCI to IP address mapping.

Explanation B. Incorrect. This command only displays statistical information about Frame Relay usage. This command does not display IP address to DLCI mapping.

Explanation C. Incorrect. This command displays all the Frame Relay PVCs a router knows about, as well as information about the status of the DLCIs and traffic. However, this command does not display DLCI to IP address mappings.

Explanation D. Correct. This is the correct command - it will display a list of static and dynamic mappings between IP addresses and Frame Relay DLCIs.

Explanation E. Incorrect. This command displays mappings between IP addresses and MAC addresses, primarily in Ethernet environments. This command is not useful for displaying Frame Relay mappings.

PrepLogic Question: 10980-152

2. Review Question p. 46

Answers: C, D, E

Explanation A. Incorrect. This command enables the OSPF process and assigns it a prcoess ID (100 in this particular case). This command does not allow you to influence the selection of a router ID.

Explanation B. Incorrect. This command is used to restore connectivity to a backbone area when no physical connectivity to it exists from a particular area. This command does not influence the selection of a router ID.

Explanation C. Correct. By default, OSPF selects a configured loopback interface as its router ID. This loopback interface will be the one with the highest IP address. If no loopback interface exists, the IP address on one of the other router interfaces will be selected.

Explanation D. Correct. By default, OSPF selects a configured loopback interface as its router ID. If no loopback interfaces are configured, OSPF will select an interface of any

kind. The selected interface will be the one with the highest IP address.

Explanation E. Correct. By using the router-id command in router configuration mode for OSPF, you can manually assign a router ID to a router. After the issuance of the command, you need to restart the OSPF process to force changes.

PrepLogic Question: 10980-159

3. Review Question p. 47

Answers: B

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Correct. This is the correct command used to configure RIP (as well as other routing protocols) to install up to five routes to a single destination in the routing table.

Explanation C. Incorrect. This command instructs a RIP router to generate default gateway information when it sends routing updates to neighbors. This command won't change the number of equal cost paths in use.

Explanation D. Incorrect. This command is able to configure the way traffic is shared among alternate paths, which is related to the equal cost paths in use. However, this command is not used to change the number of equal cost paths in use.

Explanation E. Incorrect. The version command is used to configure the RIP version that a router will use to send routing updates. Both version 1 and version 2 use 4 equal-cost paths by default.

PrepLogic Question: 10980-160

4. Review Question p. 47

Answers: C

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Incorrect. This command does not exist in Cisco IOS.

Explanation C. Correct. This single command allows you to configure both an IP address and a subnet mask on a particular router interface. In addition, you can use the secondary keyword to specify additional addresses for an interface.

Explanation D. Incorrect. This command specifies that all traffic for 192.168.2.1 255.255.255.255 will be routed to local interface loopback 0. This is not the same as

specifying an IP address for an interface.

Explanation E. Incorrect. This command creates a static ARP entry. This is not the same as specifying an IP address for an interface.

PrepLogic Question: 10980-161

5. Review Question p. 47

Answers: D

Explanation A. Incorrect. The OSPF metric is indicated in square brackets. It is the number that follows the slash symbol.

Explanation B. Incorrect. Each path to a specific destination is indicated on a separate line of the routing table. In addition, the OSPF protocol only supports 4 paths by default, and these paths need to have equal cost (metric).

Explanation C. Incorrect. The age of each route entry (within the routing table, and not according to the algorithm used by the routing protocol) is specified in standard time format near the end of the entry. It is located immediately before the interface or neighbor IP address.

Explanation D. Correct. Cisco routers use administrative distances as a preference of some routing protocols, and the routes generated by them, over other routing protocols. The OSPF process has 110 as its default administrative distance.

Explanation E. Incorrect. The OSPF protocol uses metric, instead of hop count. Although OSPF calculations can potentially reveal the number of hops (within its area) that a packet will traverse to reach a particular destination, this is not indicated in the routing table.

PrepLogic Question: 10980-163

6. Review Question p. 48

Answers: C

Explanation A. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

Explanation B. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

Explanation C. Correct. This mask provides for 6 subnet bits in the third octet. Because 2^6-2=64, this will accommodate 64 subnets. Calculating the subnet mask value in the

third octet with the first six bits raised to 1, we have 11111100B=252D. Of the 64 subnets, 2 will be used for Network and Broadcast, leaving 62 usable subnets with valid ip addresses for use.

Explanation D. Incorrect. This subnet mask provides for 7 subnet bits in the third octet, which will accommodate 128 subnets. This is more than you need.

Explanation E. Incorrect. This subnet mask provides for 8 subnet bits in the third octet, which will accommodate 256 (254 usable) subnets. This is more than you need.

PrepLogic Question: 10980-169

7. Review Question p. 48

Answers: A, B, D

Explanation A. Correct. The American National Standards Institute defines the ANSI LMI type as standard T1.617, Annex D. You can use it to communicate with some non-Cisco devices.

Explanation B. Correct. Cisco has its own proprietary LMI type, which is called Cisco LMI. This LMI type is used by default on Cisco routers and switches configured for Frame Relay.

Explanation C. Incorrect. This Frame Relay LMI type does not exist. Juniper is a Cisco competitor.

Explanation D. Correct. This LMI type is defined in ITU-T Q.933 Annex A, and is an industry standard, vendor neutral Frame Relay technology. You can use it to communicate with non-Cisco devices.

Explanation E. Incorrect. This Frame Relay LMI type does not exist. Frame Relay IETF encapsulation is used for Frame Relay frames, not as an LMI type.

PrepLogic Question: 10980-174

8. Review Question p. 48

Answers: E

Explanation A. Incorrect. 64 subnets require only 6 bits in the third octet. As only 6 bits are used in the fourth octet for host addresses, the number of subnets is larger.

Explanation B. Incorrect. 128 subnets require only 7 bits in the third octet. As only 6 bits are used in the fourth octet for host addresses, the number of subnets is larger.

Explanation C. Incorrect. 256 subnets require all the 8 bits in the third octet. As only 6 bits are used in the fourth octet for host addresses, the number of subnets is larger.

Explanation D. Incorrect. 512 subnets require 8 bits from the third octet, and one bit borrowed from the fourth octet. As only 6 bits are used in the fourth octet for host addresses, the number of subnets is larger.

Explanation E. Correct. The subnet mask for this question should be 255.255.255.192 or 192.168.0.0/26, which represents 2 bits for subnets (4 subnets with 62 hosts per subnet). Even though 6 bits for hosts generates 64 host addresses per subnet, host addresses are limited to 62 (the first address is the subnet address, the last is subnet broadcast ??? they are not usable as host addresses).

PrepLogic Question: 10980-180

9. Review Question p. 49

Answers: C, D

Explanation A. Incorrect. RIP v.1 only supports equal cost path load balancing on 4 ports by default. However, RIP v.1 can be configured to support up to 6 equal paths for load balancing.

Explanation B. Incorrect. RIP v.2 only supports equal cost path load balancing on 4 ports by default. However, RIP v.2 can be configured to support up to 6 equal paths for load balancing.

Explanation C. Correct. Both IGRP and EIGRP support unequal cost path load balancing. In other words, a router configured for some of these routing protocols is able to install more than a single autonomous system.

Explanation D. Correct. Both IGRP and EIGRP support unequal cost path load balancing. In other words, a router configured for some of these routing protocols is able to install more than a single autonomous system.

Explanation E. Incorrect. OPSF only supports equal cost path load balancing, over 4 paths by default, with the possibility to configure 6 equal cost paths.

PrepLogic Question: 10980-185

10. Review Question p. 49

Answers: C, D

Explanation A. Incorrect. RIP v.1 is one of the most wide-spread routing protocols. It is a distance vector dynamic routing protocol. Although RIP is able to support equal

cost path load balancing across multiple paths, RIP does not support unequal cost path load balancing.

Explanation B. Incorrect. RIP v.2 is another widespread routing protocol. It is a distance vector dynamic routing protocol. It is a successor of RIP v.1 and provides considerable improvements, such as multicast updates, subnet mask information in routing updates (VLSM support), and authentication. Although RIP is able to support equal cost path load balancing across multiple paths, RIP does not support unequal cost path load balancing.

Explanation C. Correct. IGRP is a Cisco proprietary protocol that uses a distance-vector algorithm. IGRP supports unequal cost path load balancing, which allows the protocol to install more than one route to a destination into the routing table, even though paths might differ in their metrics.

Explanation D. Correct. EIGRP is a Cisco proprietary protocol that uses the Diffusing Update Algorithm (DUAL). EIGRP supports unequal cost path load balancing, which allows the protocol to install more than one route to a destination into the routing table, even though paths might differ in their metrics.

Explanation E. Incorrect. The OSPF protocol is a typical link-state protocol based on Dijkstra's Open Shortest Path First algorithm.

PrepLogic Question: 10980-195

11. Review Question p. 49

Answers: A, D, E

Explanation A. Correct. One of the differences between RIP v.1 and RIP v.2 is that RIP v.2 is able to use both broadcast and multicast route advertisements, while RIP v.1 is limited to broadcast only.

Explanation B. Incorrect. Both RIP version 1 and RIP version 2 are distance vector protocols.

Explanation C. Incorrect. Both RIP version 1 and RIP version 2 are susceptible to routing loops. However, there are a couple of prevention mechanisms.

Explanation D. Correct. While RIP version 1 is unable to validate packets it receives from neighbors or malicious parties, RIP version 2 provides for simple but efficient route authentication.

Explanation E. Correct. RIP version 2 uses an unused field in RIP v.1 packets to carry network mask information. This is a major step towards classless interdomain routing

and variable length subnet masks.

PrepLogic Question: 10980-196

12. Review Question p. 50

Answers: D

Explanation A. Incorrect. Although OSPF can be statically configured with an arbitrary metric that takes into account network delay, by default, the Cisco OSPF implementation does not use delay.

Explanation B. Incorrect. Although OSPF can be statically configured with an arbitrary metric that takes into account network reliability, by default, the Cisco OSPF implementation does not use reliability.

Explanation C. Incorrect. Although OSPF can be statically configured with an arbitrary metric that takes into account network load, by default, the Cisco OSPF implementation does not use load.

Explanation D. Correct. By default, Cisco routers calculate the OSPF metric based on interface bandwidth, and the higher the bandwidth, the lower the metric. The metric is calculated by dividing a reference bandwidth by the interface bandwidth.

Explanation E. Incorrect. Hop count is used by some distance vector protocols, such as RIP. By default, the Cisco OSPF implementation does not use hop count.

PrepLogic Question: 10980-197

13. Review Question p. 50

Answers: B

Explanation A. Incorrect. The TCP protocol, which runs on top of IP, is the protocol that is commonly used for reliable data transmission. It also provides flow control and error recovery.

Explanation B. Correct. The user datagram protocol is another best effort protocol. It does not try to retransmit lost or out of order frames, and leaves these responsibilities to higher level applications.

Explanation C. Incorrect. The ICMP protocol is just a diagnostic protocol within the TCP/IP family. This protocol is used by some diagnostic utilities, such as ping and traceroute.

Explanation D. Incorrect. The ARP protocol is a relatively simple protocol used to

resolve IP addresses into MAC addresses. This protocol does not establish sessions.

Explanation E. Incorrect. The PPP protocol is a data-link protocol. Although, as with most of the data-link protocols, it is just an encapsulation method and does not really care for guaranteed delivery. Also, this protocol does not provide a means for addressing applications.

PrepLogic Question: 10980-198

14. Review Question p. 50

Answers: C

Explanation A. Incorrect. The OSPF network command uses wildcard bits, rather than subnet mask. Thus, to specify a match in the first three octets, one should specify 0.0.0.255 instead of 255.255.255.0

Explanation B. Incorrect. The OSPF network command uses wildcard bits, rather than subnet mask. Thus, to specify an exact match, one should specify 0.0.0.0 instead of 255.255.255.255.

Explanation C. Correct. The network command assigns a network (the first command parameter (192.168.1.0)), and specifies the wildcard bits (the second command parameter (0.0.0.255 - exact match)) to an area (the third command parameter (0 - Backbone)).

Explanation D. Incorrect. This command does not exist in Cisco IOS.

Explanation E. Incorrect. This command does not exist in Cisco IOS.

PrepLogic Question: 10980-217

15. Review Question p. 51

Answers: E

Explanation A. Incorrect. This command is used to enable the RIP protocol on a router. This command does not specify protocol version, or types of packets used in routing updates.

Explanation B. Incorrect. This command specifies the size of the input queue used by the RIP protocol. This command does not change the types of packets used for RIP update messages.

Explanation C. Incorrect. This command sets the number of concurrent paths to a destination that the routing protocol will install in the routing table. This command does

not change the types of packets used for RIP update messages.

Explanation D. Incorrect. This command is used to filter routing updates that are being sent or received from neighbor routers. This command does not change the types of packets used for RIP update messages.

Explanation E. Correct. The version command is used to configure the RIP version that a router will use to send routing updates. RIP v.1 uses broadcast updates, while RIP v.2 defaults to multicast updates.

PrepLogic Question: 10980-218

16. Review Question p. 51

Answers: B

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Correct. The cdp enable command allows you to specify that CDP will be disabled on a specific interface only. This command won't disable the CDP protocol for any interface other than the one for which it was issued.

Explanation C. Incorrect. This single command, issued in global configuration mode, allows you to completely disable CDP processing on any router interface. However, as you don't want to influence the operation of CDP on other interfaces, this command is inappropriate.

Explanation D. Incorrect. This command does not exist in Cisco IOS.

Explanation E. Incorrect. The CDP protocol is completely independent of the IP protocol. In addition, this command does not exist in Cisco IOS.

PrepLogic Question: 10980-220

17. Review Question p. 51

Answers: E

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Incorrect. This command does not exist in Cisco IOS.

Explanation C. Incorrect. This command is used to display telnet sessions you have established from a particular router to other hosts and devices. This command does not display an exhaustive list of Cisco routers and switches.

Explanation D. Incorrect. This command is used if you want to set a name for an existing connection to another router or host. The name can be used to invoke the connection. However, this command does not allow you to see a list of neighbor devices.

Explanation E. Correct. This command displays a list of all the Cisco routers and switches on the local segment that have the Cisco Discovery Protocol (CDP) enabled. This command also reveals the port each device is using to connect to the network, the IOS image it is running, network layer addresses, hostnames, etc.

PrepLogic Question: 10980-221

18. Review Question p. 52

Answers: B, C

Explanation A. Incorrect. An interface cannot be configured for ANSI Frame Relay encapsulation. ANSI specifies a Frame Relay LMI type in T1.617, Annex D.

Explanation B. Correct. This Frame Relay encapsulation method is defined in Internet Engineering Task Force (IETF) standard (RFC 1490). Use this encapsulation/keyword when connecting to another vendor's equipment across a Frame Relay network.

Explanation C. Correct. The default encapsulation used by Cisco interfaces configured for Frame Relay is Cisco. This is a Cisco proprietary encapsulation method, which is incompatible with third party implementations.

Explanation D. Incorrect. Q.933a is a Frame Relay LMI type, and not a Frame Relay encapsulation method. This LMI type is defined in ITU-T Q.933 Annex A, and is an industry standard, vendor neutral Frame Relay technology.

Explanation E. Incorrect. Q.931 is an ITU standard that specifies the ISDN protocol used for call setup and tear-down.

PrepLogic Question: 10980-232

19. Review Question p. 52

Answers: D

Explanation A. Incorrect. This subnet mask does not allow for any subnet bits in the fourth octet. Thus, it is inappropriate.

Explanation B. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

Explanation C. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

Explanation D. Correct. 192 in the fourth octet provides for exactly four subnet bits, which can be used for exactly two subnets (2^2-2).

Explanation E. Incorrect. This subnet mask allows for 3 subnet bits in the fourth octet of the given address space, which can accommodate 8 subnets (2^3).

PrepLogic Question: 10980-234

20. Review Question p. 52

Answers: D

Explanation A. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

Explanation B. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

Explanation C. Incorrect. This subnet mask does not allow for any subnet bits. A longer mask is required in this scenario.

Explanation D. Correct. This subnet mask would allow for 5 subnet bits, which can be used for 32 subnets. This accommodates the 28 subnets required.

Explanation E. Incorrect. This is not a valid mask, as subnet masks are required to be a series of ones followed by a series of zeros.

PrepLogic Question: 10980-238

21. Review Question p. 53

Answers: D

Explanation A. Incorrect. The RIP protocol (both versions) uses a distance vector algorithm - it sends portions of its routing table to neighbors, and receives neighbors' routing tables.

Explanation B. Incorrect. The RIP protocol (both versions) uses a distance vector algorithm - it sends portions of its routing table to neighbors, and receives neighbors' routing tables.

Explanation C. Incorrect. The IGRP protocol, like the RIP protocol, uses a distance vector algorithm - it sends portions of its routing table to neighbors, and receives

neighbors' routing tables.

Explanation D. Correct. OSPF is a link state protocol that uses Dijkstra's Shortest Path First algorithm. The OSPF protocol provides you with the ability to separate your network into areas, which make their own intra-area routing decisions. In addition, the OSPF protocol uses the concept of a backbone area through which inter-area traffic traverses.

Explanation E. Incorrect. EIGRP is a distance vector routing protocol, which also has some link-state characteristics. EIGRP does not provide you with the ability to use distinct zones, although this can be achieved using distinct autonomous systems, route summarization, and redistribution.

PrepLogic Question: 10980-243

22. Review Question p. 53

Answers: D

Explanation A. Incorrect. This is a valid command, used to assign an interface/network to the OSPF process. The parameters of this command are within the acceptable range.

Explanation B. Incorrect. The network command is used to assign an interface/network to the OSPF process. The command used to force OSPF to generate a default gateway is default-information originate.

Explanation C. Incorrect. This command does not specify a router ID. The router ID is either automatically selected from the active IP addresses, configured via a loopback interface, or manually specified with the router-id command.

Explanation D. Correct. Because the network command accepts a network as its first parameter (0.0.0.0 - any network), and wildcard bits as its second parameter (255.255.255.255 - don't care about any bit), the result of this command will be that all the interfaces that have IP enabled will be included in the OSPF process.

Explanation E. Incorrect. OSPF does not use broadcasts in its communications; OSPF uses multicasts. The multicast addresses that OSPF uses are standard and cannot be modified.

PrepLogic Question: 10980-275

23. Review Question p. 54

Answers: D

Explanation A. Incorrect. This Class A mask is usually used in supernets and

summaries, and not as a host subnet mask. In addition, this mask does not take into consideration the 256 subnets, which need to borrow subnet bits from the second octet.

Explanation B. Incorrect. This subnet mask is invalid for hosts. The single bit borrowed from the second octet can only be used to designate all-subnets and a broadcast address. It is typically not a usable subnet address (this behavior can vary depending whether you are using the ip subnet-zero setting). In addition, the question requires you to use 256 subnets.

Explanation C. Incorrect. This is not a valid subnet mask - the second octet contains a number that cannot be accommodated in 8 bits (1Byte) - 256 > 255 (the largest number you can store in 8 bits).

Explanation D. Correct. This is the correct subnet mask - it allows for 256 subnets (254 usable, or 255 usable with IP subnet zero) in the second octet, and host addresses in both octets three and four. Using the formula 2n-2= number of subnets (where n is the number of bits you borrowed from the Host portion, you can see that 2 to the power of 8 or 256 -2=254.)

Explanation E. Incorrect. This subnet mask can be used to accommodate a pretty large number of subnets - almost 65536. This is not what the question requires.

PrepLogic Question: 10980-292

24. Review Question p. 54

Answers: D

Explanation A. Incorrect. Class A networks allow for an IP address space of more than 16 million IP addresses, which is more than what your organization needs. This class only provides addresses for unicast communications. Class D needs to be used for multicast communications.

Explanation B. Incorrect. Class B allows for 65534 addresses within the internal network. This class only provides addresses for unicast communications. Class D needs to be used for multicast communications.

Explanation C. Incorrect. Class C allows for only 254 addresses per subnet, but this class only provides addresses for unicast communications. Class D needs to be used for multicast communications.

Explanation D. Correct. The whole Class D IP address class is reserved for multicast addresses. Note that there is a distracter in the question - unlike unicast transmissions, the number of multicast users does not directly correlate to the number of multicast IP addresses in use.

Explanation E. Incorrect. Class E is an experimental class, and is not assigned to hosts for the purpose of regular unicast or muticast communication.

PrepLogic Question: 10980-295

25. Review Question p. 54

Answers: B, C

Explanation A. Incorrect. Unless one is implementing a very small, single area internetwork, an OSPF backbone area must be used.

Explanation B. Correct. OSPF uses area 0 (or 0.0.0.0) as a backbone area. This behavior is by design, and cannot be altered. Any OSPF implementation should consider area 0 a backbone area.

Explanation C. Correct. Any routing information about routes, which reside in different areas, must traverse the backbone area. Any packet from one area to another passes through the backbone area.

Explanation D. Incorrect. Besides ABRs, the backbone area can also contain backbone internal routers, which are not ABRs.

Explanation E. Incorrect. Non-OSPF networks connect to the OSPF domain by means of ASBRs, which can be either members of the backbone area, or members of other areas.

PrepLogic Question: 10980-314

26. Review Question p. 55

Answers: C, E

Explanation A. Incorrect. This command displays Frame Relay PVC related information, such as DLCI numbers for each PVC, PVC state, FECN-BECN-DE information, general traffic information, etc. There is no notion of Frame Relay encapsulation.

Explanation B. Incorrect. As with PVCs, this command displays various SVC related information, but does not display the Frame Relay encapsulation used on a particular Frame Relay interface.

Explanation C. Correct. For each mapping, the Frame Relay encapsulation type for the mapping (IP to DLCI) will be displayed. This is very useful if you have both Cisco and third party equipment, and you want to see what Frame Type you are using on particular DLCIs.

Explanation D. Incorrect. This command is only applicable to Cisco routers configured as Frame Relay switches. It displays the Frame Relay switch forwarding table, but does not display encapsulation types.

Explanation E. Correct. Besides various other interface parameters, this command displays the encapsulation type in use on a particular interface. For interfaces running Frame Relay, Frame Relay encapsulation type will also be displayed.

PrepLogic Question: 10980-325

27. Review Question p. 55

Answers: A

Explanation A. Correct. This is the correct span of addresses for the class B address space.

Explanation B. Incorrect. The correct span of addresses for the class A address space is 1.0.0.0 to 126.0.0.0.

Explanation C. Incorrect. The correct span of addresses for the class C address space is 192.0.0.0 to 223.255.255.0.

Explanation D. Incorrect. The correct span of addresses for the class B address space is 128.0.0.0 to 191.255.0.0.

PrepLogic Question: 10980-431

28. Review Question p. 55

Answers: A

Explanation A. Correct. This is the correct format for an access list entry:
access-list number permit | deny protocol source-address source-port destination-address destination-port

Explanation B. Incorrect. This entry is not formatted correctly, because you need a source address, destination address, and port. This is also not an extended access list, which requires defined protocol and port numbers.

Explanation C. Incorrect. This entry would allow all traffic sourced from port 25 to hit the host, not a destination port of 25.

Explanation D. Incorrect. This entry would allow traffic from 192.168.1.25 to any host on SMTP.

PrepLogic Question: 10980-435

29. Review Question p. 56

Answers: C, D, E

Explanation A. Incorrect. Actually, all traffic from 10.1.1.1 will be allowed. Access lists are examined in sequential order. Because the permit 10.1.1.1 is above the deny 10.1.1.0 0.0.0.255 the traffic is allowed.

Explanation B. Incorrect. This list is a standard access list, which are numbered from 1-99.

Explanation C. Correct. Access for this host is not explicitly specified in the list, so traffic from this host will be denied due to the implicit deny statement at the end of every access list.

Explanation D. Correct. All access lists have an implicit deny at the end.

Explanation E. Correct. This list is a standard access list, which are numbered from 1-99.

PrepLogic Question: 10980-436

30. Review Question p. 56

Answers: A, C

Explanation A. Correct. This standard access list entry will allow all IP traffic from the consultant's computer. Other protocols will require different access lists to be applied to the interface.

Explanation B. Incorrect. This list is a standard access list, which are numbered from 1-99. 100 would designate an extended access list.

Explanation C. Correct. This extended access list would allow all traffic from the specified host to the destination network. It will allow all IP traffic but not other protocols.

Explanation D. Incorrect. For ?permit ip? access list entries, port numbers are not required. Remember, this is a general IP list, not UDP/TCP.

PrepLogic Question: 10980-437

31. Review Question p. 56

Answers: C, E

Explanation A. Incorrect. This is the correct range for a standard access list.

Explanation B. Incorrect. This is the correct range for an extended access list.

Explanation C. Correct. This is an incorrect range for standard access lists.

Explanation D. Incorrect. This is the correct range for a standard expanded access list.

Explanation E. Correct. The correct range for an IP standard expanded access list is 1300-1999

PrepLogic Question: 10980-438

32. Review Question p. 57

Answers: B

Explanation A. Incorrect. This entry is correct to identify the traffic, but would not log any of the traffic information. Without turning on the logging functionality, there is no way to identify the source of the DOS attack.

Explanation B. Correct. This IP extended access list identifies the correct traffic, and will log information into the buffer for examination.

Explanation C. Incorrect. This IP standard access list will not achieve the desired result.

Explanation D. Incorrect. You cannot specify protocol or packet type with an IP standard access list.

PrepLogic Question: 10980-441

33. Review Question p. 57

Answers: A, D, E

Explanation A. Correct. The Class A first octet ranges from 1-126.

Explanation B. Incorrect. The Class A first octet ranges from 1-126.

Explanation C. Incorrect. The Class B first octet ranges from 128-191.

Explanation D. Correct. The Class B first octet ranges from 128-191.

Explanation E. Correct. The Class D first octet ranges from 224-239.

Explanation F. Incorrect. The Class D first octet ranges from 224-239.

PrepLogic Question: 10980-443

34. Review Question p. 57

Answers: A

Explanation A. Correct. A /30 network will leave 2 bits for addressing, using the 2n - 2 equation. A /30 is also displayed as 255.255.255.252.

Explanation B. Incorrect. A /31 only leaves one bit for addressing.

Explanation C. Incorrect. a /29 will give you six host addresses.

Explanation D. Incorrect. A /28 will give you 14 host addresses.

PrepLogic Question: 10980-444

35. Review Question p. 58

Answers: D

Explanation A. Incorrect. A /25 would not meet the desired goals.

Explanation B. Incorrect. A /24 would not meet the desired goals.

Explanation C. Incorrect. A /21 would not meet the desired goals.

Explanation D. Correct. A /26 would provide 6 bits for the host portion, which would give you 62 hosts (6n - 2). It will also provide for four networks:
172.16.32.0/26
172.16.32.64/26
172.16.32.128/26
172.16.32.192/26
This will provide the exact amount of hosts, without wasting IPs.

PrepLogic Question: 10980-445

36. Review Question p. 58

Answers: C, D, E

Explanation A. Incorrect. Standard IP access lists are numbered from 1-99; extended IP access lists are from 100-199.

Explanation B. Incorrect. All IP traffic will be permitted from this host.

Explanation C. Correct. This host is not specifically identified within the access list, and the implicit deny will be applied.

Explanation D. Correct. All access lists have an implicit deny at the end.

Explanation E. Correct. Standard access lists are numbered from 1-99; extended access lists are from 100-199.

PrepLogic Question: 10980-448

37. Review Question p. 58

Answers: D

Explanation A. Incorrect. This is not a correct interface-level command.

Explanation B. Incorrect. This command is in the proper format, but would filter outbound traffic.

Explanation C. Incorrect. This command is missing the 'ip'.

Explanation D. Correct. After you create an access list, you must apply it to an interface before the router will use it. The command to apply the list to an interface is 'ip access-group' followed by the access list number, and then the direction in which to filter the traffic.

PrepLogic Question: 10980-465

38. Review Question p. 59

Answers: A, B

Explanation A. Correct. This would command the device to log the source address when an ACL entry is matched. You need to issue logging buffered to enable the buffer log.

Explanation B. Correct. This keyword logs the source address, as well as the layer 2 address of the source. The MAC address or DLCI will be entered into the log.

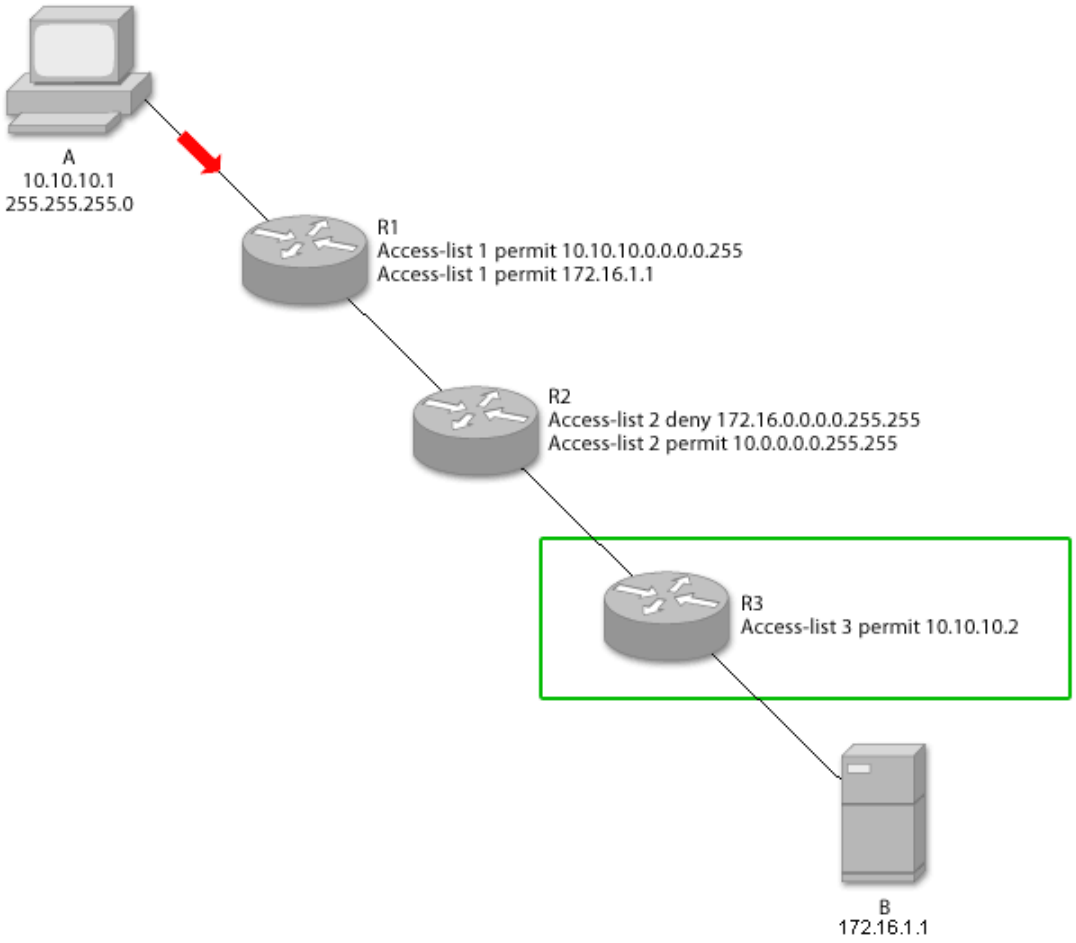
Explanation C. Incorrect. Just issuing this command will not present ACL matches unless you have ACL entries with log? or log-input assigned, or set debugging for a specific access list.

Explanation D. Incorrect. This command will not enable debugging for a specific access list. You must issue the debug ip packet 100 command, and need to have the debug level of logging enabled.

PrepLogic Question: 10980-480

39. Review Question p. 60

Answer:



Explanation: The traffic will be filtered by R3. The implicit deny at the end of the access list will block traffic from host A. All of the other access lists will permit traffic sourced from Host A.

PrepLogic Question: 10980-530

40. Review Question p. 61

Answer: 255.255.255.192

Explanation: The requirement your boss gave you was to have subnets of equal size that meet the needs of the network diagram. The largest host requirement is 50 users so the

255.255.255.192 is the smallest subnet that meets the requirements. The subnet can provide for 4 subnets with 62 hosts in each network.

PrepLogic Question: 10980-546

41. Review Question p. 62

Answer: 255.255.248.0

Explanation: The requirement is to have subnets of equal size that meet the needs of the network diagram. The largest host requirement is 2000 users so the 255.255.248.0 is the smallest subnet that meets the requirements. The subnet can provide for 32 subnets with 2046 hosts in each network.

PrepLogic Question: 10980-547

42. Review Question p. 63

Answers: B

Explanation A. Incorrect - The subnet mask is the same as the mask of the router gateway.

Explanation B. Correct. The IP addressed configured on the host is on a different subnet than the gateway. The IP address range of the 192.168.37.0/28 is 192.168.37.1 to 192.168.37.14

Explanation C. Incorrect - The default gateway is properly configured for 192.168.37.1 -just like the router interface.

Explanation D. Incorrect - The switch is a layer 2 device which does not need to be configured with a layer 3 IP address. The router is the correct device to have an IP address assigned to it for use by hosts as the gateway.

PrepLogic Question: 10980-550

43. Review Question p. 64

Answers: D

Explanation A. Incorrect - The subnet mask is the same as the mask of the router gateway.

Explanation B. Incorrect - The subnet mask is the same as the mask of the router gateway.

Explanation C. Incorrect - The subnet mask is the same as the mask of H2.

Explanation D. Correct - The IP address of 192.168.2.5 does not fall in the proper /30 range of the R1 fa0/1 interface. The correct IP address should be 192.168.2.1/30.

PrepLogic Question: 10980-551

44. Review Question p. 65

Answers: C

Explanation A. Incorrect - The subnet mask of H1 is the same as H2 and the router interface.

Explanation B. Incorrect - A network switch operates at layer 2 and does not need to have an IP address assigned to it for it to operate properly.

Explanation C. Correct - Since H1's interface is configured with the broadcast address of the entire network, it won't be able to communicate with H2 or the router and, thus, the outside world.

Explanation D. Incorrect - The IP address configured on H1 is the same IP address as the fa0/0 interface on router R1.

PrepLogic Question: 10980-553

45. Review Question p. 66

Answers: C

Explanation A. Incorrect - The subnet mask is the same as the mask of the router gateway.

Explanation B. Incorrect - The IP address falls within the network range of the gateway router.

Explanation C. Correct - The default gateway of the PC is configured for the management interface on the Layer 2 switch. The default gateway should be the IP address of the router Interface which is 192.168.37.2

Explanation D. Incorrect - The switch is the default gateway for the PC and must be configured with an IP address.

PrepLogic Question: 10980-554

46. Review Question p. 67

Answers: C

Explanation A. Incorrect - The subnet mask is the same as the mask of the fa0/0 interface on R1.

Explanation B. Incorrect - The subnet mask is the same as the mask of the router gateway.

Explanation C. Correct - The IP address of 128.113.1.20 does not fall in the proper /28 range of the R1 fa0/0 interface. The correct IP address should be in the range of 128.113.1.2-14

Explanation D. Incorrect - The network between R1 and R2 is correctly configured for the 192.168.2.0/32 network.

PrepLogic Question: 10980-555

47. Review Question p. 68

Answers: A

Explanation A. Correct - The subnet of H1 is a /30 while H2 and the router interface are on a /29. Because the subnet is incorrect on H1, it is in the wrong network.

Explanation B. Incorrect - A network switch operates at layer 2 and does not need to have an IP address assigned to it for it to operate properly.

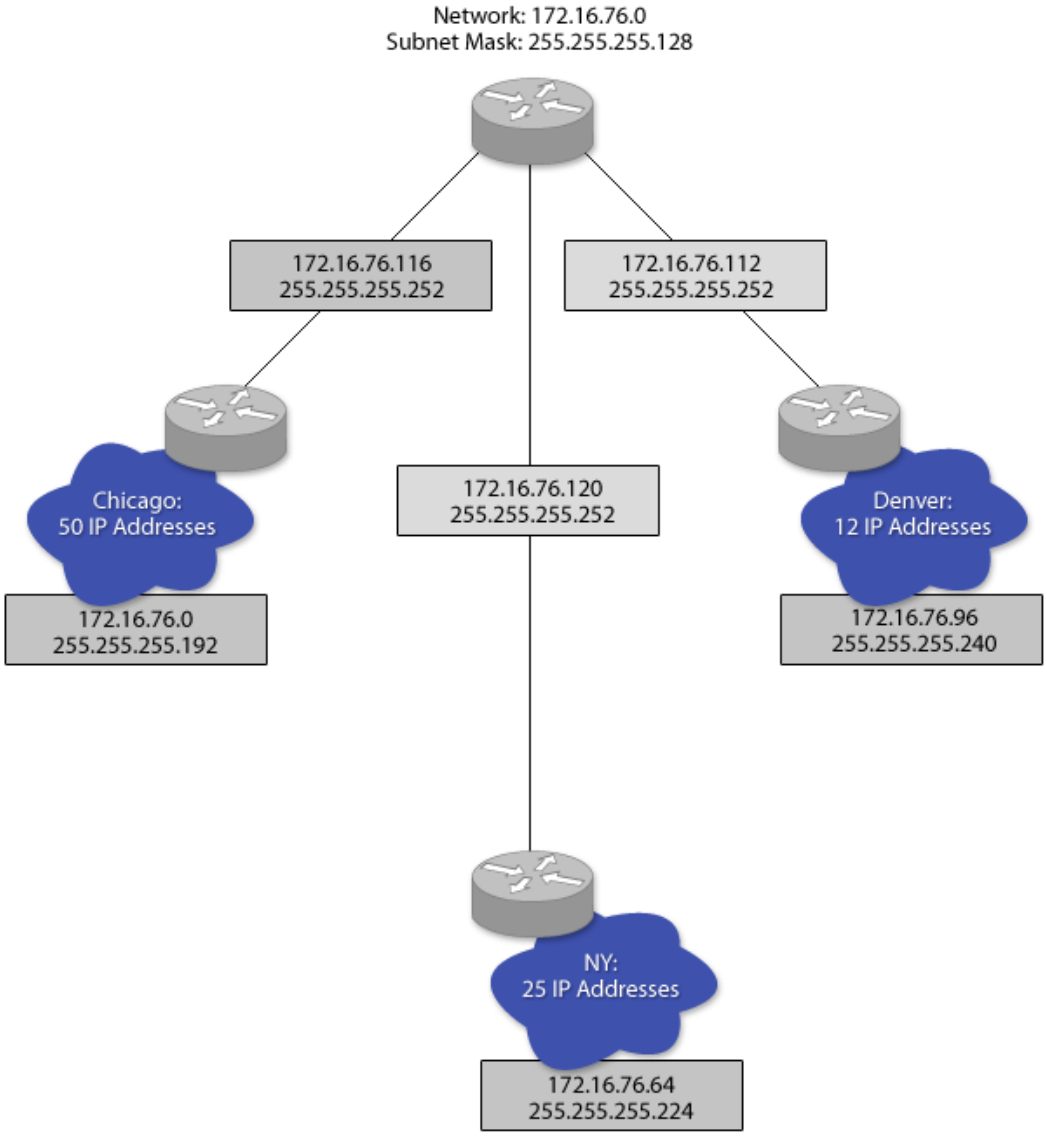
Explanation C. Incorrect - H2 is working properly. Nothing needs to be changed on H2.

Explanation D. Incorrect - The IP address configured on H1 is the same IP address as the fa0/0 interface on router R1.

PrepLogic Question: 10980-557

48. Review Question p. 70

Answer:

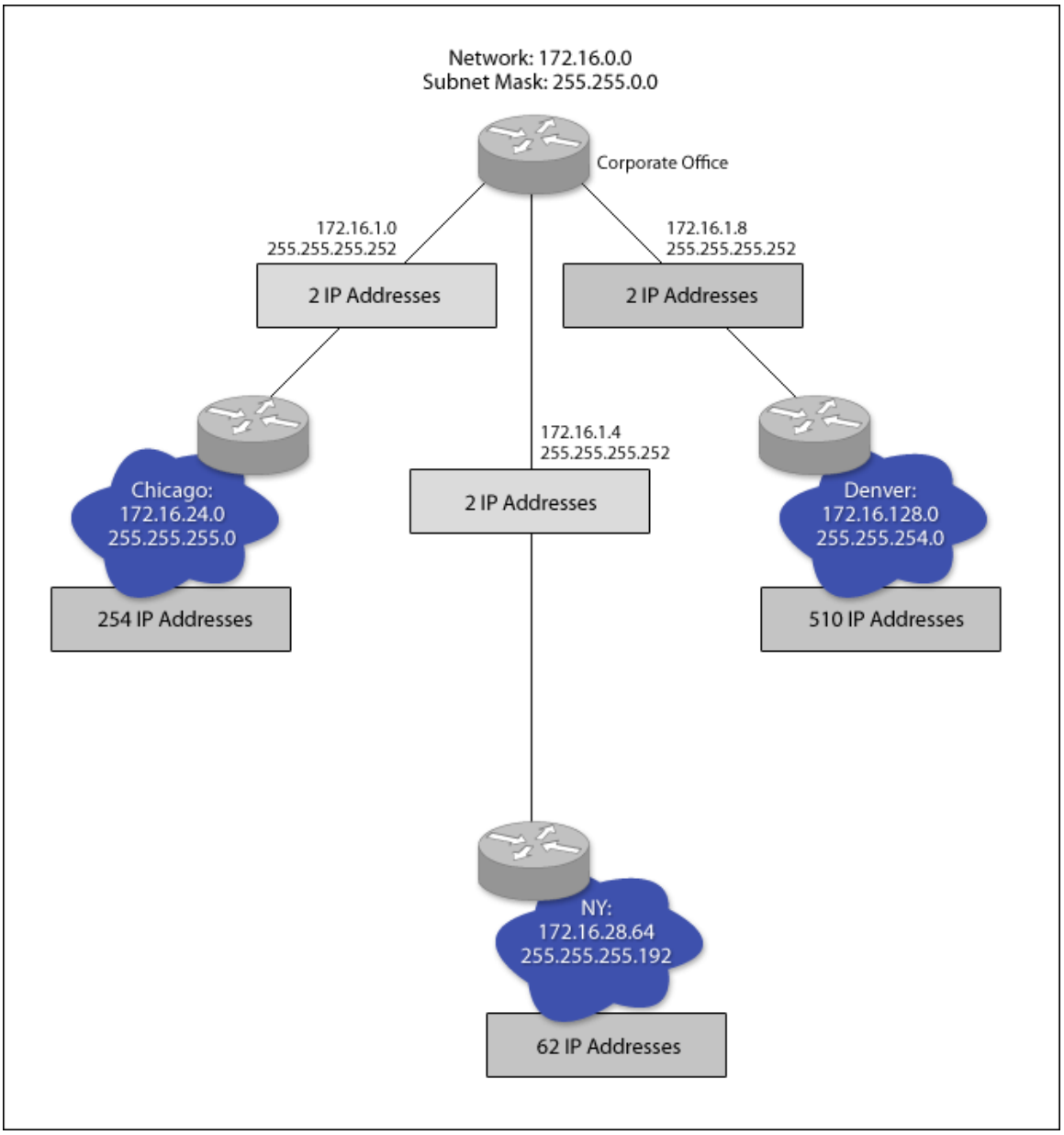


Explanation:

PrepLogic Question: 10980-558

49. Review Question p. 71

Answer:

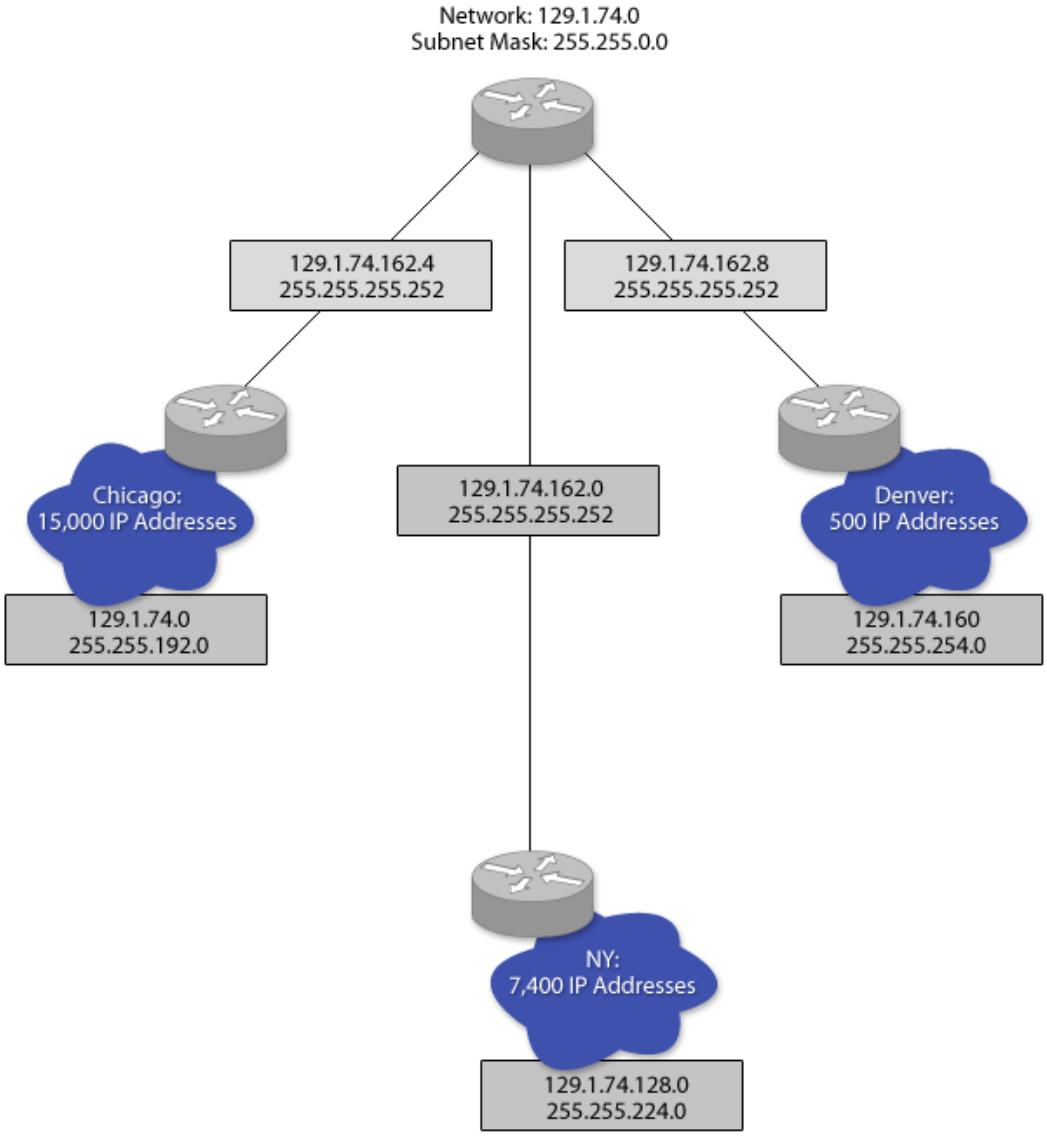


Explanation:

PrepLogic Question: 10980-559

50. Review Question p. 73

Answer:

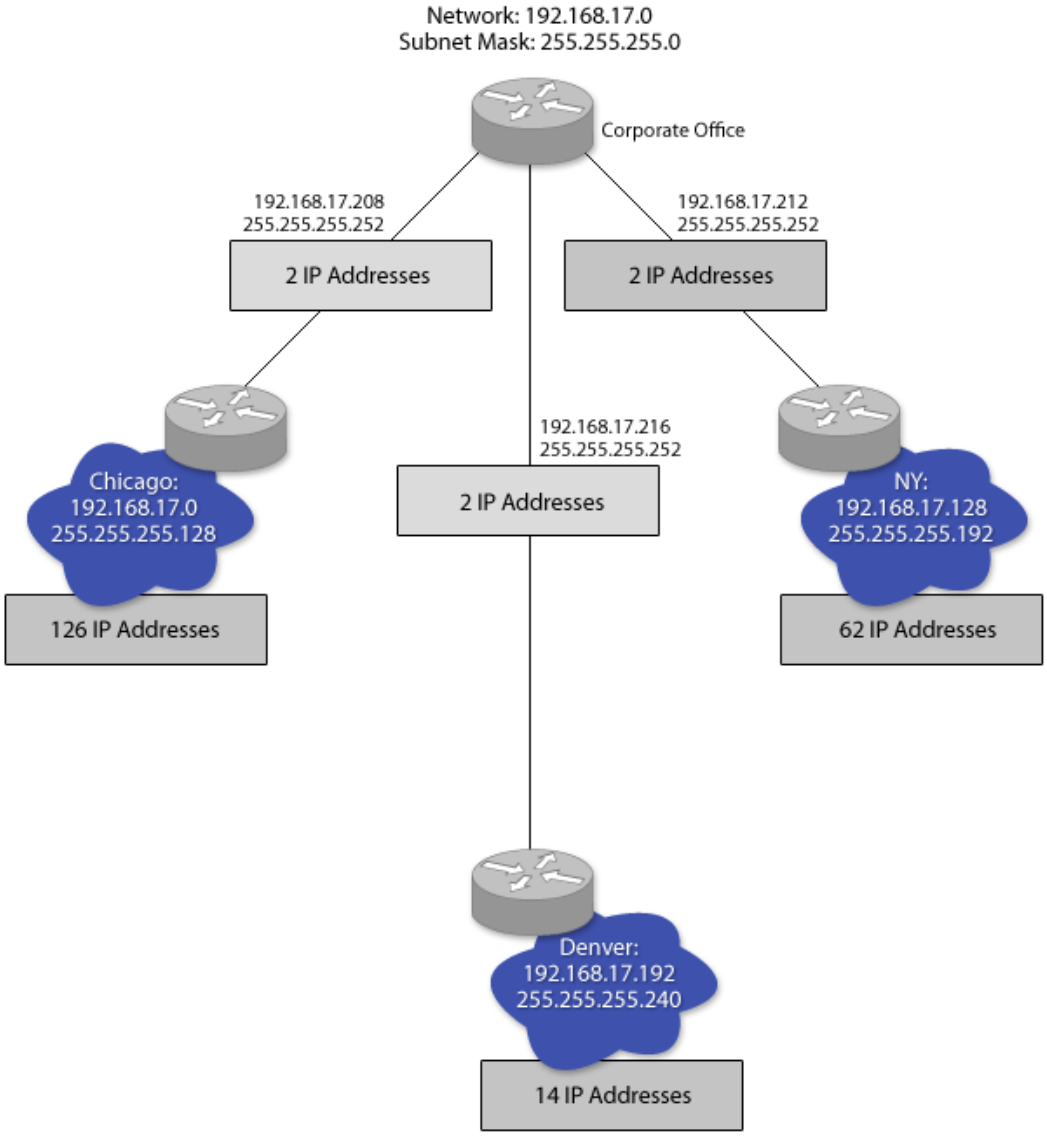


Explanation:

PrepLogic Question: 10980-560

51. Review Question p. 74

Answer:

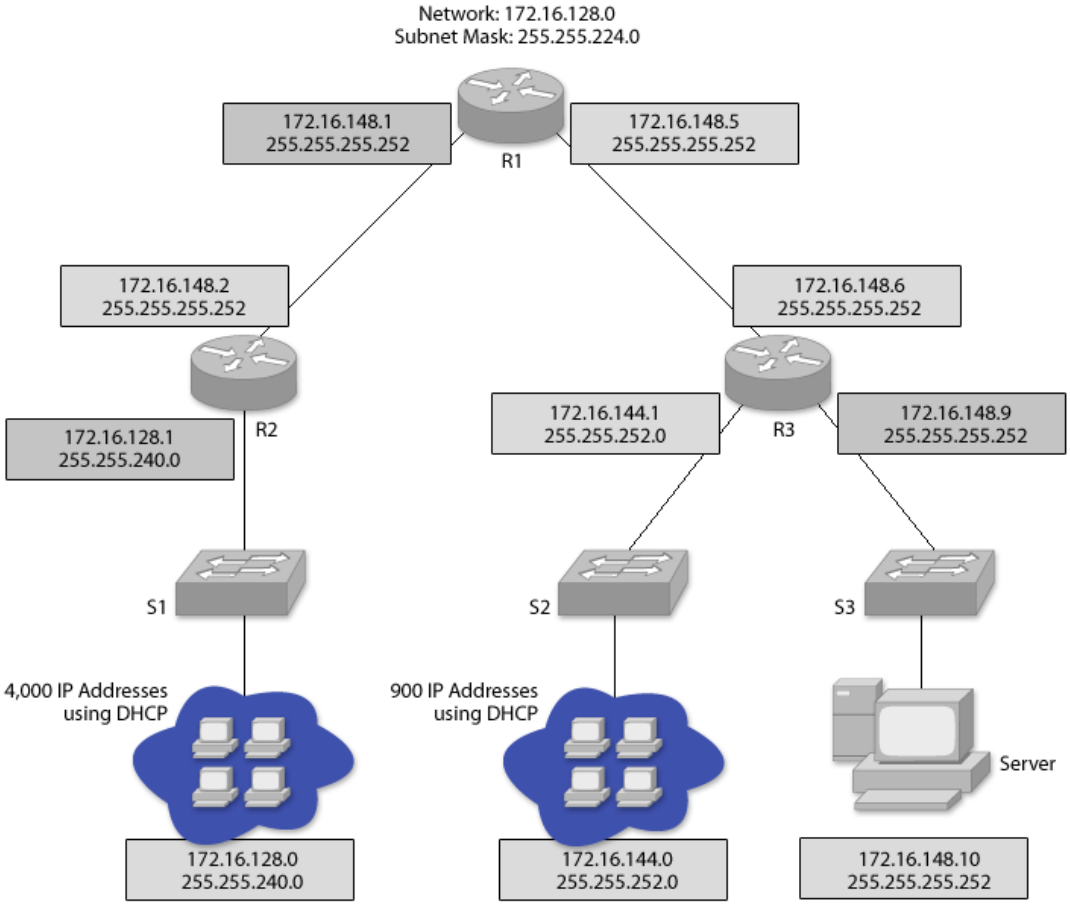


Explanation:

PrepLogic Question: 10980-561

52. Review Question p. 75

Answer:

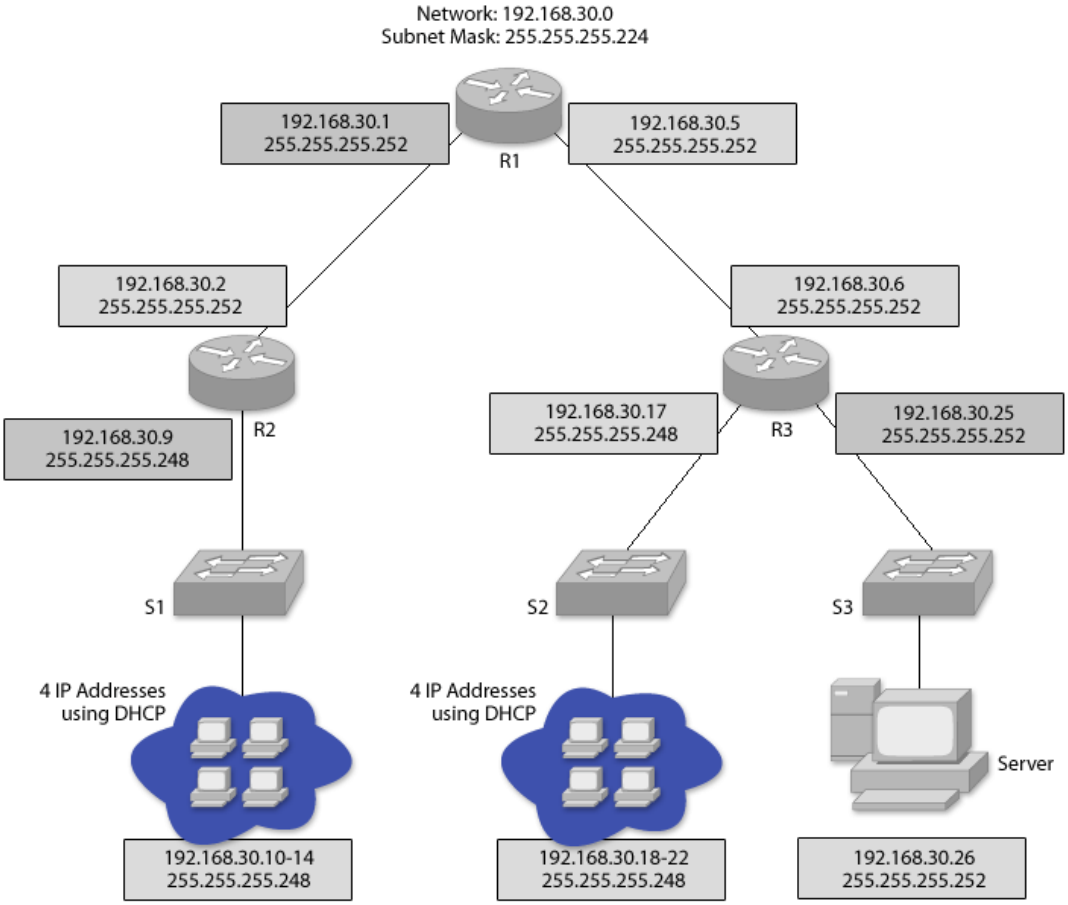


Explanation:

PrepLogic Question: 10980-562

53. Review Question p. 76

Answer:

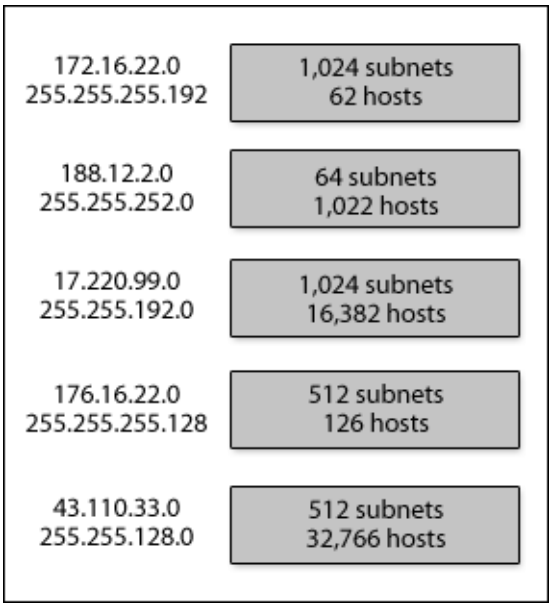


Explanation:

PrepLogic Question: 10980-563

54. Review Question p. 77

Answer:

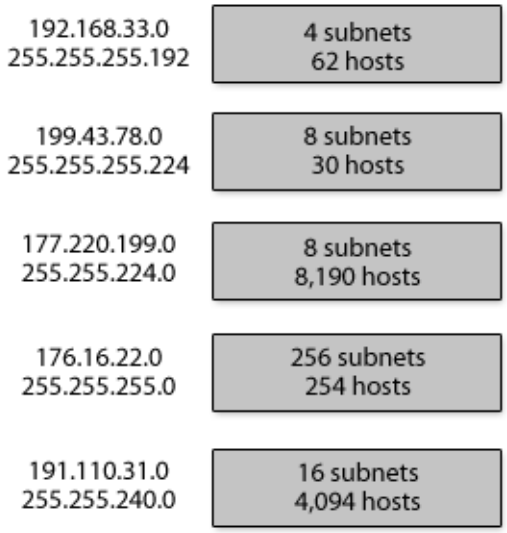


Explanation:

PrepLogic Question: 10980-564

55. Review Question p. 78

Answer:



Explanation:

PrepLogic Question: 10980-565

56. Review Question p. 78

Answers: A

Explanation A. Correct. RSTP has redefined the different types of connections that can exist within a network Connections between switch are now called "links" and connections between end-user devices are now called "edges." Additionally, the concept of "shared" connections has been established, but RSTP sees this as virtually the same thing as an edge.

Explanation B. Incorrect. Link-State is a type of router metric, Point to Point by itself is a type of connection used for WAN and LAN communications, and there is no such thing as Shared Point to Point.

Explanation C. Incorrect. With the exception of Link State, which is a type of measurement used for routers, none of these exist.

Explanation D. Incorrect. P2P stands for "Peer to Peer" and is used for file sharing networks, Solid State is a type of memory, and Link to Point does not exist.

PrepLogic Question: 10980-574

57. Review Question p. 79

Answers: C

Explanation A. Incorrect. Learning mode exists in both STP and RSTP. However, RSTP makes much less use of it than STP. The only time RSTP utilizes learning mode is when it is moving a port from a Discarding state to a Forwarding state.

Explanation B. Incorrect. Forwarding exists in both STP and RSTP. Forwarding means that the switch is forwarding all data frames sent to it to the rest of the switches on the network.

Explanation C. Correct. Listening state only exists in STP and doesn't exist with 802.1w, RSTP.

Explanation D. Incorrect. The Discarding RSTP state means that the port is only listening for BDUs, but disregards all other information. It works very similarly to the Listening STP state.

PrepLogic Question: 10980-575

58. Review Question p. 79

Answers: B

Explanation A. Incorrect. Learning mode exists in both STP and RSTP. However, RSTP makes much less use of it than STP. The only time RSTP utilizes learning mode is when it is moving a port from a Discarding state to a Forwarding state.

Explanation B. Correct. In STP, PortFast skipped you straight to forwarding mode. In RSTP, you can simply enable this feature to activate edge-type connections. It greatly enhances the speed of convergence deployment.

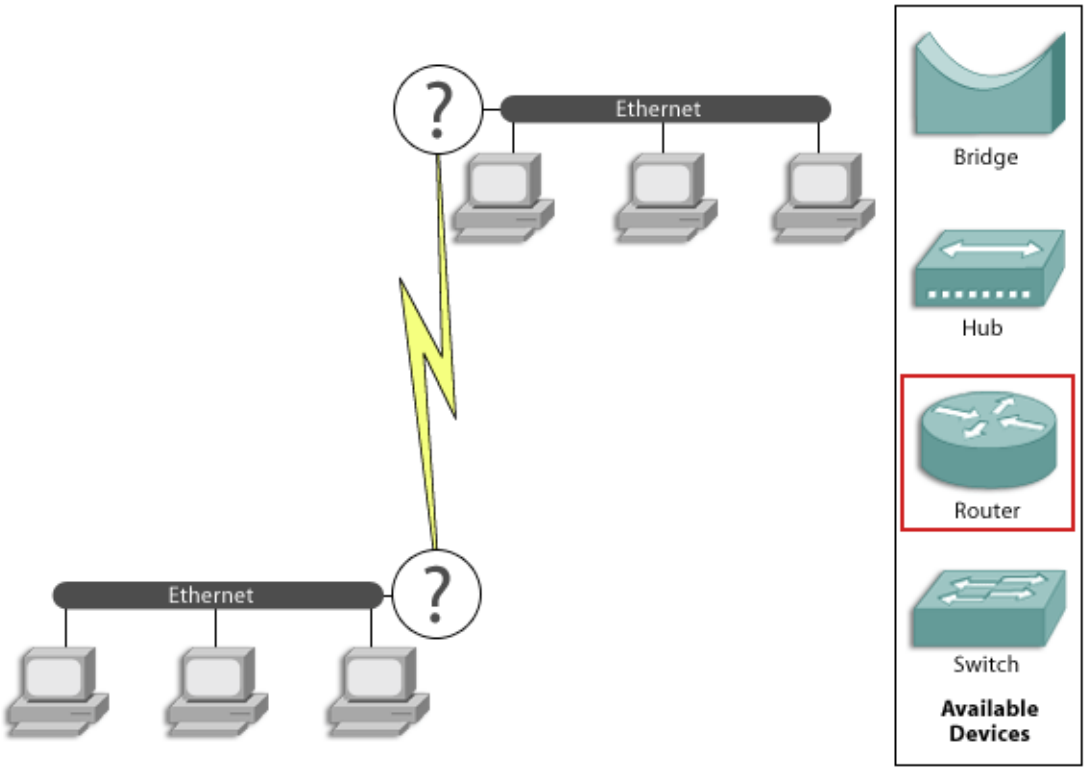
Explanation C. Incorrect. Convergence cannot be simply enabled, it has to be setup and engineered by the administrator.

Explanation D. Incorrect. Alternate ports in RSTP simply provide an alternate to a root port. While it doesn't have anything to do with convergence, it does have a lot to do with backup and efficiency.

PrepLogic Question: 10980-576

Explanations: Chapter 4

1. Review Question p. 80
   Answer:



Explanation: Routers are used to connect to the WAN. In this particular example, two routers are used to interconnect the two sites using a leased line.

PrepLogic Question: 10980-14

2. Review Question p. 81
   Answers: D

   Explanation A. Incorrect. Unlike EIGRP and IGRP, OSPF does not use the concept of autonomous system. OSPF uses areas to separate routers within the OSPF routing domain.

   Explanation B. Incorrect. Unlike EIGRP and IGRP, OSPF does not use the concept of autonomous system. OSPF uses areas to separate routers within the OSPF routing domain. In addition, although OSPF uses router IDs, they should be unique.

Explanation C. Incorrect. Although OSPF uses router IDs, which must be unique within the OSPF domain, they are either automatically selected, or specified by means of the router-id command.

Explanation D. Correct. A process ID needs to be assigned to any OSPF process. This process ID only has local significance, and routers that have different process IDs can still belong to the same OSPF routing domain.

Explanation E. Incorrect. This is a misleading answer, it refers to the architecture of some operating systems, such as Windows NT, VMS, and modern UNIX, which use a process and thread model for process management. This is not relevant to the Cisco IOS; you don't specify a thread ID.

PrepLogic Question: 10980-101

3. Review Question p. 81

Answers: D

Explanation A. Incorrect. Although routing loops sometimes exist in internetworks, the routing table does not specify whether or not a route causes a loop. If routers were able to automatically detect routing loops, they could disable such routes; unfortunately, they aren't.

Explanation B. Incorrect. Obsolete routing entries are simply removed from the routing table. Some protocols, such as RIP and IGRP, indicate routes as suspicious but they don't use the O symbol in the beginning of the line to indicate this.

Explanation C. Incorrect. The term invalid is not used by Cisco for route entries. This is a misleading answer.

Explanation D. Correct. Every routing protocol has its own symbol to indicate its routing entries. Routes, which the OSPF protocol inserts into the routing table, are indicated with the O symbol in the beginning of the line.

Explanation E. Incorrect. Every routing protocol has its own symbol to indicate its routing entries. Routes generated by the ODS protocol are indicated by a small letter o in the beginning of the line, while the capital O is reserved for OSPF.

PrepLogic Question: 10980-105

4. Review Question p. 81

Answers: A, B, D

Explanation A. Correct. RIP v.1 is one of the most wide-spread routing protocols. It is

a distance vector dynamic routing protocol.

Explanation B. Correct. RIP v.2 is another wide-spread routing protocol. It is a distance vector dynamic routing protocol. It is a successor of RIP v.1 and provides considerable improvements, such as multicast updates, subnet mask information in routing updates (VLSM support), and authentication.

Explanation C. Incorrect. The OSPF protocol is a typical link-state protocol based on Dijkstra's Open Shortest Path First algorithm.

Explanation D. Correct. IGRP is a Cisco proprietary dynamic routing protocol that is somewhat similar to the RIP protocol. IGRP provides some interesting features such as composite metric and unequal path cost load balancing.

Explanation E. Incorrect. IS-IS is a link-state dynamic routing protocol, developed by ISO for its protocol suite. Some implementations use IS-IS for IP routing. This routing protocol is not very common in today's networks.

PrepLogic Question: 10980-137

5. Review Question p. 82

Answers: D

Explanation A. This is incorrect. An ABR is a router located on the border of one or more OSPF areas that connects those areas to the backbone network.

Explanation B. Incorrect. Routers used to create a virtual link to the backbone area in order to restore the integrity of the backbone are typically ABRs. In some cases ABRs and ASBRs can be collocated, however, the statement above is not true in general.

Explanation C. This is incorrect. Routers internal to the backbone are simply called internal routers.

Explanation D. Correct. Connecting to, and redistributing other routing protocols into OSPF and from OSPF is a function performed by the Autonomous System Boundary Routers (ASBRs).

Explanation E. Incorrect. Although ASBRs might generate default routes into OSPF, they don't always do it, so this is not a very good description of what an ASBR does.

PrepLogic Question: 10980-139

6. Review Question p. 82

Answers: C

Explanation A. This is incorrect. Flash memory is used for storing IOS images. NVRAM is used for storing device configuration files.

Explanation B. This is incorrect. RAM is used as a fast access buffer in Cisco routers and switches. NVRAM is used to store configuration files.

Explanation C. Correct. NVRAM is a type of memory, which due to its relatively low power consumption can be used as a non-volatile device configuration storage.

Explanation D. This is incorrect. NVRAM is used to store configuration files. Images normally get stored in flash, and if there is room for more than one image, a couple of IOS images can be stored in flash.

Explanation E. Incorrect. NVRAM is used to only store configuration information, and is not suitable for being a fast cache.

PrepLogic Question: 10980-142

7. Review Question p. 83

Answers: C

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Incorrect. This command does not exist in Cisco IOS.

Explanation C. Correct. This is the correct command. By using this command, the router will display a list of any route it receives from neighbor routers, and any route it sends to neighbor routers.

Explanation D. Incorrect. This command is meant to provide detailed network level (IP protocol) packet debugging. This command might provide a lot of output; however, the contents of RIP updates won't be displayed.

Explanation E. Incorrect. This command allows an administrator to debug IP policy routing. This is not related to IP RIP routing.

PrepLogic Question: 10980-153

8. Review Question p. 83

Answers: D

Explanation A. Incorrect. This command will display policy routing settings, configured for the particular router, on which the command is being executed. This is not related to dynamic routing protocols.

Explanation B. Incorrect. This frequently used command is used to display the routing table on a router. Although it can give some understanding about the routing protocols running on the system, this information would be far from being exhaustive, and some routing protocols may be missing.

Explanation C. Incorrect. This command will display IP policy routing cache information. This is not related to IP routing protocols.

Explanation D. Correct. The show ip protocols command displays a list of all the routing protocols, configured on a router, routing protocol specific configuration settings, interfaces, on which the routing protocol is running (some protocols) and neighbors (some protocols).

Explanation E. Incorrect. This command will provide a list of all the interfaces on a router, and will indicate their network layer addresses. This information is not related to IP routing protocols.

PrepLogic Question: 10980-154

9. Review Question p. 83

Answers: A, D, E

Explanation A. Correct. FTP is a popular file transfer protocol used in the Internet. You can use the FTP protocol to transfer the IOS image from flash to a network server running the FTP protocol.

Explanation B. Incorrect. The HTTP protocol is not supported for network copying of images and configuration files in Cisco IOS.

Explanation C. Incorrect. Microsoft's SMB/CIFS protocol is a popular file transfer protocol used by Microsoft Windows operating systems and ported to UNIX (SAMBA). However, Cisco does not support SMB file transfers.

Explanation D. Correct. TFTP is a popular file transfer protocol used in the Internet. You can use the TFTP protocol to transfer the IOS image from flash to a network server running the TFTP protocol.

Explanation E. Correct. RCP is a popular file transfer protocol used by various UNIX implementations. You can use the RCP protocol to transfer the IOS image from flash to a network server running the RCP protocol.

PrepLogic Question: 10980-171

10. Review Question p. 84

Answers: C

Explanation A. Incorrect. This is a valid command; however, this would only copy the configuration used to start the router. As the running configuration has not yet been saved to this file, you need to issue another command.

Explanation B. Incorrect. This command will copy the configuration used to start the router to a network location. This is not what you are requested to do.

Explanation C. Correct. This is the correct command. As the currently running configuration is stored in the running-config file, this command will make a backup copy of current configuration settings to flash.

Explanation D. Incorrect. This command will only copy the running configuration file to an FTP server. This is not what you are required to perform.

Explanation E. Incorrect. This set of commands will definitely work, but it would require that you make an ftp server available, copy the configuration file over the network, and then copy it back. This requires more administrative effort.

PrepLogic Question: 10980-172

11. Review Question p. 84

Answers: C

Explanation A. Incorrect. This is not the correct syntax of the access-list command. An extended access list, which is required here, should have a number, followed by the permit or deny keyword, followed by the protocol, then source and destination designators.

Explanation B. Incorrect. This is not the correct syntax of the access-list command. An extended access list, which is required here, should have a number, followed by the permit or deny keyword, followed by the protocol, then source and destination designators.

Explanation C. Correct. It permits any IP traffic from any host to a host with an IP address of 192.168.1.1

Explanation D. Incorrect. This command permits traffic in the opposite direction - from host 192.168.1.1 to any host. The question requires that traffic be permitted the other way around.

Explanation E. Incorrect. This access list permits any ip traffic from host 192.168.1.1 to host 192.168.1.1. Assuming that the IP address 192.168.1.1 does not belong to the router itself, traffic from host 192.168.1.1 to host 192.168.1.1 would never reach the

router. This access list is useless for traffic restrictions.

PrepLogic Question: 10980-182

12. Review Question p. 85

Answers: C

Explanation A. Incorrect. The above set of commands is invalid in Cisco IOS.

Explanation B. Incorrect. This command is invalid in Cisco IOS. The correct syntax of the command is router igrp 55.

Explanation C. Correct. To configure IGRP in autonomous system 55, you need to specify the AS number as a single and mandatory command line parameter of the router igrp statement. You are then taken to router configuration mode.

Explanation D. Incorrect. The network command is used to add a network and an interface (or a couple of interfaces) to the IGRP routing process. The required parameter is an IP address, so the above set of commands is invalid.

Explanation E. Incorrect. This command is invalid in Cisco IOS. The correct command is router igrp 55.

PrepLogic Question: 10980-216

13. Review Question p. 85

Answers: B

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Correct. You need to specify the IP address of the default gateway that you want to use. This command is used only when IP routing is disabled on a router (this might be the case on a terminal server, for instance).

Explanation C. Incorrect. This command can be used to specify interface IP address and subnet mask. However, this command does not allow you to specify the address of a default gateway.

Explanation D. Incorrect. This command is used to enable the IP routing process on a router. However, you don't want to enable routing, you just want to use your router as a host and specify its default gateway. You should use another command.

Explanation E. Incorrect. This command does not exist in Cisco IOS.

PrepLogic Question: 10980-219

14. Review Question p. 85

Answers: B

Explanation A. Incorrect. If you are connected to a router remotely (via telnet, for example), and you issue the router escape sequence, you will be temporarily disconnected from the router, but the setup command will continue to run and expect your input.

Explanation B. Correct. Anytime during the initial system configuration dialog or the execution of the setup command, you can use the Ctrl-C sequence to interrupt the dialog without saving changes.

Explanation C. Incorrect. This key sequence has no effect in the initial system configuration dialog, or the execution of the setup command.

Explanation D. Incorrect. This key sequence returns you to the beginning of user input. It is useful when editing your input. However, it won't interrupt the configuration dialog.

Explanation E. Incorrect. This key sequence puts the cursor at the end of user input. It is useful when editing your input. However, it won't interrupt the configuration dialog.

PrepLogic Question: 10980-227

15. Review Question p. 86

Answers: D

Explanation A. Incorrect. Authenticated FTP sessions for file transfers are supported by Cisco routers and switches. Authentication information needs to be specified in global configuration mode.

Explanation B. Incorrect. This parameter of the copy command does not exist in Cisco IOS.

Explanation C. Incorrect. This parameter of the copy command does not exist in Cisco IOS.

Explanation D. Correct. You need to use the above two commands in global configuration mode to setup a default username and password to be used by the router when performing FTP file transfers. Note that this username and password are used by the router for all FTP file transfers, and not just per session.

Explanation E. Incorrect. The above commands do not exist in Cisco IOS.

PrepLogic Question: 10980-229

16. Review Question p. 86

Answers: C

Explanation A. Incorrect. This command will configure the router to download its IOS image from a TFTP network server. However, you are required to download the device configuration file, not the IOS image.

Explanation B. Incorrect. This command will configure the router to download its IOS image from an FTP network server. However, you are required to download the device configuration file, not the IOS image. In addition, you need to use TFTP.

Explanation C. Correct. This is the command that will configure the router to download its configuration file from a TFTP network server. The filename used to configure the router needs to be specified as a parameter.

Explanation D. Incorrect. This command will configure the router to download its configuration file from an FTP network server. However, you are not required to download the device configuration file from an FTP server, rather from a TFTP server.

Explanation E. Incorrect. This command configures the router to use a specific bootstrap image file, which needs to be downloaded from a TFTP server. You are required to download a device configuration file, but not a bootstrap image.

PrepLogic Question: 10980-230

17. Review Question p. 87

Answers: A

Explanation A. This is the correct syntax. This access list will deny UDP traffic on port 500 from any host to any UDP port on host 172.16.1.1.

Explanation B. Incorrect. The above access list will deny UDP traffic from port 500 from the host 172.16.1.1 to any UDP port on any host, which is not the requirement of this question.

Explanation C. Incorrect. The above access list will deny UDP traffic from host 172.16.1.1 to any host on UDP port 500, which is not the requirement of this question.

Explanation D. Incorrect. The above access list will block any traffic to UDP port 500 to any host. In addition, this access list will deny traffic sourced from 172.16.1.1 to any

host. This is not the requirement of this question.

Explanation E. Incorrect. The above access list will deny any UDP traffic to port 500, and it will allow host 172.16.1.1 to communicate with any other host using the udp protocol. This is not the requirement of this question.

PrepLogic Question: 10980-242

18. Review Question p. 87

Answers: D

Explanation A. Incorrect. ROMmon is a piece of ROM memory. It usually gets loaded if the router fails to load, and does not provide any monitoring or management functions in regards to ROM memory.

Explanation B. Incorrect. ROMmon is a piece of ROM memory. It usually gets loaded if the router fails to load, and does not provide any monitoring or management functions in regards to ROM memory.

Explanation C. Incorrect. Device configuration can only be performed once the user has connected to the device and authenticated. Authentication methods will vary, depending on the client.

Explanation D. Correct. ROMmon is a failover helper image with very limited operational parameters. It is used in emergency cases to change basic router settings (such as console speed, for example), enlist IOS images in flash, etc.

Explanation E. Incorrect. ROMmon is a local emergency tool. ROMmon does not attempt to defragment ROM memory.

PrepLogic Question: 10980-259

19. Review Question p. 87

Answers: C

Explanation A. Incorrect. This command can be used on a Frame Relay switch to display the policy for switching DLCIs between interfaces. This won't show PVC status.

Explanation B. Incorrect. This command only displays statistical information about Frame Relay usage. This command does not display PVC status.

Explanation C. Correct. This command is used very often in Frame Relay environments, as it displays information about the status of the PVC, packets sent and received, BECN, FECN, and DE for the particular PVC.

Explanation D. Incorrect. This command will display a list of static and dynamic mappings between IP addresses and Frame Relay DLCIs. However, this command does not display PVCs and their status.

Explanation E. Incorrect. This command does not exist in Cisco IOS.

PrepLogic Question: 10980-268

20. Review Question p. 88

Answers: C

Explanation A. Incorrect. This frequently used command is used to display the routing table on a router. However, as your routing table is huge, you don't want to see all the routing protocol entries - you just want to see some entries.

Explanation B. Incorrect. This command will display only this portion of the IP routing table, which has been generated by the RIP protocol. However, you are required to only display some routes, no matter by which routing protocol they were generated.

Explanation C. Correct. This command allows you to specify an access list, which describes the routes you are interested in seeing. This command will display all the routes that match the access list, regardless of the routing protocol.

Explanation D. Incorrect. This command will display policy routing settings, configured for the particular router, on which the command is being executed. This is not related to dynamic routing protocols.

PrepLogic Question: 10980-270

21. Review Question p. 88

Answers: A

Explanation A. Correct. The Ctrl-Break key combination needs to be pressed immediately after the router starts. This will interrupt the boot process and put the router in ROMmon mode, which allows you to modify the router's configuration register.

Explanation B. Incorrect. This key sequence is not valid during boot.

Explanation C. Incorrect. This key sequence is not valid during boot.

Explanation D. Incorrect. Some older Cisco products, such as previous versions of Cisco PIX, require a special image to be used for password recovery. This is not the case with routers, which have ROMmon as part of the router ROM.

PrepLogic Question: 10980-273

22. Review Question p. 88

Answers: C

Explanation A. Incorrect. This key sequence returns you to the beginning of user input. It is useful when editing your input. It won't display help information.

Explanation B. Incorrect. This key sequence puts the cursor in the end of user input. It is useful when editing your input. It won't display help information.

Explanation C. Correct. This help facility also provides help text for each prompt. To access help text, press the question mark (?) key at the prompt.

Explanation D. Incorrect. If you type in the ! symbol, it will be accepted as part of your user input.

Explanation E. Incorrect. If you type in help, it will be accepted as part of your user input.

PrepLogic Question: 10980-285

23. Review Question p. 89

Answers: D

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Incorrect. The erase command is used to erase the contents of flash, NVRAM or RAM. This command cannot be used to verify the integrity of Cisco IOS images.

Explanation C. Incorrect. The dir command is used to list the contents of a file system, such as the flash file system, or NVRAM. This command cannot be used to verify image integrity, although it is able to display file sizes.

Explanation D. Correct. You can use the verify EXEC command to verify that the image is in Flash memory. Microcode images in flash always have 0x0000 as their checksum, so no numeric result is displayed if the file is fine.

Explanation E. Incorrect. The squeeze command allows you to permanently delete files from flash that are marked as deleted. This command is only available on some platforms. It does not allow you to display checksums.

PrepLogic Question: 10980-287

24. Review Question p. 89

Answers: E

Explanation A. Incorrect. This command is used to specify static route entries. This command can map IP addresses to specific router interfaces to be used as outgoing interfaces for the specified subnet; however, no mapping to DLCIs is possible with this command.

Explanation B. Incorrect. The arp command is used to manage the IP address to MAC address mapping table. This command is mostly useful in LAN environments, and cannot be used in WANs to map IP addresses to DLCIs.

Explanation C. Incorrect. This command is used on physical interfaces, or subinterfaces, to assign DLCIs. However, this command is not used on routers to specify IP to DLCI mappings.

Explanation D. Incorrect. This command is used on Cisco routers configured as Frame Relay switches. It specifies the switching policy that the Frame Relay switch will implement. This command is not used on routers to specify IP to DLCI mappings.

Explanation E. This is the correct command. When Inverse ARP is disabled, or when it is inapplicable (in partial mesh Frame Relay it is not always applicable) you can use the frame-relay map command to statically implement IP address to DLCI mappings.

PrepLogic Question: 10980-290

25. Review Question p. 89

Answers: C

Explanation A. Incorrect. Flash memory is normally used for storing router images, not configuration files. It is technically possible to store any type of file in flash.

Explanation B. Incorrect. Flash is not used in the process of sending and/or receiving packets over the network.

Explanation C. Correct. The most important role of flash in Cisco routers is to store Cisco IOS images. When a router boots, by default, it will try to find a Cisco IOS image in flash.

Explanation D. Incorrect. Flash does not really care about packets being sent or received. Flash is used to store Cisco IOS images in a non-volatile device store.

Explanation E. Incorrect. Flash is an internal component of the router, which is used for storing Cisco IOS images.

PrepLogic Question: 10980-317

26. Review Question p. 90

Answers: A, C, D

Explanation A. Correct. The running-config configuration file is stored in RAM. As RAM is a volatile storage area, running-config needs to be saved to NVRAM if you want to make it persistent.

Explanation B. Incorrect. The running-config configuration file is stored in RAM. As RAM is a volatile storage, running-config needs to be saved to NVRAM if you want to make it persistent.

Explanation C. Correct. A portion of RAM is reserved for packet buffers. Packets that need to be processed and switched are stored temporarily in RAM.

Explanation D. Correct. RAM is used by the running IOS image (on most platforms) and for processes that run on the router, as well as for their data structures.

Explanation E. Incorrect. RAM is volatile, and is not used as a persistent IOS storage. Flash is typically used as a persistent storage for IOS images.

PrepLogic Question: 10980-318

27. Review Question p. 90

Answers: A, D

Explanation A. Correct. Path determination uses algorithms to analyze metrics and choose the best path from the source to the destination. Path determination metrics vary depending on which method of routing is being used (i.e., static, RIP, OSPF, etc.).

Explanation B. Incorrect. The fragmentation of packets is not a principle of routing. It is handled at the Transport Layer of the OSI Model. Routing is handled at the Network Layer.

Explanation C. Incorrect. Protocol identification is not a function of routing, but is provided by different levels throughout the TCP/IP stack.

Explanation D. Correct. Switching is the forwarding of packets throughout a network. Packets are always forwarded to the next hop, which is determined through the process of routing.

PrepLogic Question: 10980-420

28. Review Question p. 90

Answers: C

Explanation A. Incorrect. Routers are layer 3 devices, and analyze the best path by utilizing logical network addresses.

Explanation B. Incorrect. While the routing protocol determines the optimal path through the network, the switching algorithm is used to move the actual packets from device to device, and is not used in determining the best path.

Explanation C. Correct. The routing protocol is the primary means by which a router determines the optimal path to a destination. By evaluating the metrics provided for each path, the device can choose the least cost, or best path. The actual metrics used to select the optimal path depend on the routing method or protocol being used (i.e., static, OSPF, RIP, etc.).

Explanation D. Incorrect. Layer 4 information is not used in the determination of the best path.

PrepLogic Question: 10980-421

29. Review Question p. 91

Answers: B

Explanation A. Incorrect. Optimality refers to the capability of the routing algorithm to select the best route, which depends on the metrics and metric weightings used to make the calculation.

Explanation B. Correct. Routing protocols try to create the fastest possible convergence in order to provide accurate information. Especially when a network change occurs, the protocol needs to propagate changes in a timely manner.

Explanation C. Incorrect. Stability ensures that the protocol will provide accurate information, under all situations.

Explanation D. Incorrect. Today's networks are complex, and ever changing. The protocol must be able to adapt to new changes and additions to the enterprise.

PrepLogic Question: 10980-422

30. Review Question p. 91

Answers: C, D

Explanation A. Incorrect. Link-state protocols are known for their fast convergence

time.

Explanation B. Incorrect. Link-state algorithms place a high load on the device CPU, and can have very poor performance in unstable networks.

Explanation C. Correct. Link-state protocols have much faster convergence times than distance-vector protocols.

Explanation D. Correct. Link-state protocols are built to scale, and can handle very large networks, if implemented properly. Once the topology is built, only periodic updates are sent to keep the routing table current.

Explanation E. Incorrect. Link-state protocols are very efficient, and only pass required link information to other devices.

PrepLogic Question: 10980-423

31. Review Question p. 91

Answers: D

Explanation A. Incorrect. This does not describe split horizon.

Explanation B. Incorrect. Hold down forces the router to ignore information about a network for a certain time period when a network is deemed unreachable. The hold down default timers are different depending on the routing protocol that is being used.

Explanation C. Incorrect. This is the definition of poison reverse.

Explanation D. Correct. Split horizon is used to prevent routing loops, and prevents a router from advertising a learned route out the same interface on which it was discovered.

PrepLogic Question: 10980-424

32. Review Question p. 92

Answers: B

Explanation A. Incorrect. The routing metric is the primary means by which a routing protocol determines the best path. This is always displayed in the table.

Explanation B. Correct. Routing is a layer 3 function and is not concerned with the hardware address. The hardware address can be found in the ARP table on a router.

Explanation C. Incorrect. Administrative distance is displayed in the routing table.

Explanation D. Incorrect. The next-hop device is displayed in the routing table.

Explanation E. Incorrect. The routing table will show the source of the learned route such as static route, RIP, OSPF, etc.

PrepLogic Question: 10980-425

33. Review Question p. 92

Answers: B

Explanation A. Incorrect. The link-state database is the result of running the algorithm. The path to a certain network with the best OSPF metrics is then placed in the routing table.

Explanation B. Correct. The link-state, or topology, database is the output of running the link-state algorithm.

Explanation C. Incorrect. The cost of an interface in OSPF is an indication of the overhead required to send packets across a certain interface or link. The faster the link speed of a link, the lower the cost.

Explanation D. Incorrect. The neighbor database is a list of all the OSPF neighbors a router has established communications with.

PrepLogic Question: 10980-426

34. Review Question p. 92

Answers: A, B

Explanation A. Correct. OSPF supports classless routing and has extremely fast convergence time.

Explanation B. Correct. EIGRP supports classless routing and has extremely fast convergence time.

Explanation C. Incorrect. RIP is not considered a fast protocol when it comes to convergence because updates are sent on a timed basis. Also, RIP version 1 only supports classful routing.

Explanation D. Incorrect. Although RIP version 2 supports classful routing, it is a distance vector routing protocol and sends out timed updates; thus it is slow to converge.

PrepLogic Question: 10980-432

35. Review Question p. 93

Answers: A, C

Explanation A. Correct. OSPF is a link state routing protocol with extremely fast convergence, and almost unlimited scalability (if implemented correctly).

Explanation B. Incorrect. RIP is a distance-vector routing protocol that is well suited for smaller networks due to the fact that it has a maximum router hop count of 15. It does not provide the fastest convergence, due to timed updates.

Explanation C. Correct. EIGRP is a distance-vector hybrid protocol that is suitable for larger networks, with fast convergence.

Explanation D. Incorrect. IGRP is a distance-vector routing protocol, that is well suited for smaller networks. IGRP can actually scale to a fairly large size (100 hops). The main issue is its slow convergence, due to timed updates. It is also no longer supported on newer versions of the Cisco IOS.

PrepLogic Question: 10980-442

36. Review Question p. 93

Answers: B, C, D

Explanation A. Incorrect. Both RIP and OSPF are RFC standards that are supported by the majority of device vendors.

Explanation B. Correct. OSPF is a link-state routing protocol with extremely fast convergence times.

Explanation C. Correct. OSPF supports the use of variable-length subnet masking. Cisco's implementation of RIP version 2 supports variable-length subnet masks (VLSMs).

Explanation D. Correct. RIP updates can be quite large in vast networks because the protocol sends the entire routing table, whereas OSPF sends only update or change information.

PrepLogic Question: 10980-446

37. Review Question p. 93

Answers: B

Explanation A. Incorrect. This is one of the key features of EIGRP.

Explanation B. Correct. EIGRP is a hybrid distance-vector and link-state protocol,

taking the best from both to create extremely powerful routing functionality

Explanation C. Incorrect. EIGRP does not have the high overhead of a pure distance-vector protocol, and keeps network bandwidth to a minimum by sending only routing updates and not the entire routing table to its neighbors.

Explanation D. Incorrect. EIGRP is one of the only routing protocols that support multiple protocols.

PrepLogic Question: 10980-447

38. Review Question p. 94

Answers: B

Explanation A. Incorrect. This is the default value, and specifies to load the first image in flash.

Explanation B. Correct. This value will cause the router to bypass the startup configuration file (contents of NVRAM) where the passwords are stored.

Explanation C. Incorrect. This value will boot the router into ROMmon mode.

Explanation D. Incorrect. This value will perform a NetBoot if available; otherwise, it will boot into ROMmon.

PrepLogic Question: 10980-450

39. Review Question p. 94

Answers: B, E

Explanation A. Incorrect. This places you in line configuration mode for your VTY lines.

Explanation B. Correct. This command puts you into line configuration mode for the console port. It would be used if you wanted to set the password on the console port.

Explanation C. Incorrect. The login command forces password entry for the specific line.

Explanation D. Incorrect. This command enables a password on the chosen line or port. In this case, it would be cisco.

Explanation E. Correct. The service password-encryption command will encrypt all clear-text passwords within the configuration files. Although this is generally a good

practice, it is not a required command for enabling telnet connections.

PrepLogic Question: 10980-451

40. Review Question p. 94

Answers: A

Explanation A. Correct. This will copy from a TFTP server to the flash memory of your router. IOS images reside on your flash memory.

Explanation B. Incorrect. This command would copy a file from your flash memory to a TFTP server. You would use this to back up an image.

Explanation C. Incorrect. This would copy your startup configuration to a TFTP server.

Explanation D. Incorrect. restore is not a valid Cisco IOS command.

PrepLogic Question: 10980-452

41. Review Question p. 95

Answers: A, B

Explanation A. Correct. You can route all packets destined for a remote host using this command.

Explanation B. Correct. This is the correct syntax for a default route entry.

Explanation C. Incorrect. The correct syntax of the ip route statement is ip route network mask ip.

Explanation D. Incorrect. The correct syntax of the ip route statement is ip route network mask interface.

PrepLogic Question: 10980-456

42. Review Question p. 95

Answers: C

Explanation A. Incorrect. BGP only supports IP-based networks.

Explanation B. Incorrect. OSPF only supports IP-based networks.

Explanation C. Correct. EIGRP supports all of the network protocols listed.

Explanation D. Incorrect. IGRP only supports IP.

Explanation E. Incorrect. RIP only supports IP and IPX.

PrepLogic Question: 10980-457

43. Review Question p. 95

Answers: C

Explanation A. Incorrect. The word mask is not required.

Explanation B. Incorrect. In the command, ip address should not be hyphenated.

Explanation C. Correct. To assign an IP to an interface, you must first enter the interface configuration mode. Once in the ?config-if?, you then enter the ip command in the following format. Enter configuration mode first (config t) and then enter interface configuration mode.
ip address address mask

Explanation D. Incorrect. The subnet mask needs to be specified after the IP address.

PrepLogic Question: 10980-460

44. Review Question p. 96

Answers: A, B

Explanation A. Correct. 'show ip interface brief' will give you all the IP interfaces on a router or layer 3 switch, their IP addresses, and current state. This is a great command to get an overall check on a router's state.

Explanation B. Correct. 'show interfaces' will give specific interface details, such as speed and duplex settings, errors, and transmitted packets.

Explanation C. Incorrect. This is not a command by itself, but is a prefix for many useful commands.

Explanation D. Incorrect. This command will give an overall summary of the interface, but not the IP. It shows queuing, drops, and transmit/receive data at a glance for all interfaces.

PrepLogic Question: 10980-461

45. Review Question p. 97

Answers: D

Explanation A. Incorrect. This command would just activate the routing protocol.

Explanation B. Incorrect. In order to ensure that router A learns all the connected networks on router B, you must use the network command for each interface, and directly connnected interfaces.

Explanation C. Incorrect. ?enable router rip? is not a correct command.

Explanation D. Correct. The ?router rip? command activates RIP as the routing protocol. The ?network? command then activates RIP processing for interfaces associated with the networks. In order for router B to propagate and receive information, both the 192.168.1.0 and 172.16.0.0 network statements must be present.

PrepLogic Question: 10980-462

46. Review Question p. 97

Answers: B, C, D

Explanation A. Incorrect. To enable EIGRP, you need to add an autonomous system number to this command.

Explanation B. Correct. In EIGRP, networks must be specified to activate updates on a specific network/interface.

Explanation C. Correct. In EIGRP, networks must be specified to activate updates on a specific network/interface.

Explanation D. Correct. EIGRP is configured much like RIP, with one exception: the need to specify an autonomous system number. This is seen in the command ?router eigrp [as number]?.

PrepLogic Question: 10980-463

47. Review Question p. 97

Answers: D

Explanation A. Incorrect. The enable password command would achieve this.

Explanation B. Incorrect. This is accomplished through the line con 0 command.

Explanation C. Incorrect. This command does not encrypt an entry. The correct command to encrypt clear-text passwords is service password-encryption.

Explanation D. Correct. In order to allow telnet access, you must place a password on the "virtual terminal" lines. If no password is set, when you try and telnet to the router, you will get the following message: Password required, but none set.

PrepLogic Question: 10980-466

48. Review Question p. 98

Answers: B

Explanation A. Incorrect. The enable password command would achieve this.

Explanation B. Correct. This command will set a password for console access.

Explanation C. Incorrect. This command does not encrypt an entry. The correct command to encrypt clear-text passwords is service password-encryption.

Explanation D. Incorrect. To configure the vty, or telnet/ssh password, you would use the "line vty" command, and then enter the password.

PrepLogic Question: 10980-467

49. Review Question p. 98

Answers: D

Explanation A. Incorrect. This is not the correct boot sequence.

Explanation B. Incorrect. This is not the correct boot sequence.

Explanation C. Incorrect. This is not the correct boot sequence.

Explanation D. Correct. The following is the router boot sequence:
1. The router checks the boot field of the configuration register. This value will dictate the next step the router takes, and specifies how it should boot.
2. By default, the router will examine the configuration in NVRAM, and boot using the first boot system command. The boot system command can be used to boot from flash, ROM, or a TFTP server, or other storage locations such as bootflash, slot, etc.
3. If no boot system commands are found, the router will boot the first image it finds in the router's default flash memory.
4. If there are no valid images in flash, the router will attempt to download its IOS from the network using TFTP.
5. If it cannot locate a network image, the router will load a scaled down version of the IOS, or the RXBOOT file.
6. Finally, if all else fails, the router will boot the ROM Monitor, or ROMmon, from ROM.

PrepLogic Question: 10980-468

50. Review Question p. 98

Answers: B

Explanation A. Incorrect. This command is missing the area at the end.

Explanation B. Correct. Once you enable OSPF on the router with the "router ospf process-id" command, you will then need to identify the networks/interfaces that will participate in the process. The command is "network [address wildcard-mask] [area process-id]". The process ID is independent to each router.

Explanation C. Incorrect. OSPF utilizes an inverse mask, where 0 is a match and 255 is a network wildcard. In this question, 0.0.0.255 matches 172.16.1, and does not care about the final portion of the address.

Explanation D. Incorrect. You need to enter the interfaces/networks after the "router ospf 1" command.

PrepLogic Question: 10980-469

51. Review Question p. 99

Answers: A, C, D

Explanation A. Correct. The "tracert" command would provide you a trace-route to each of the hops the packets are taking in the network to reach the destination IP address. This could show you any intermediate problems between the host and the destination.

Explanation B. Incorrect. Although this is usually a great tool to check DNS functionality, this user can resolve hostnames, so there is probably not a DNS resolution problem, unless the PC uses a localhost file. In that case, the user may not be able to resolve anything outside the localhost file.

Explanation C. Correct. A good first step is always to ping the local interface, and then the gateway. This checks basic network connectivity, and then will ensure the gateway can be reached. It won't ensure that the gateway can be reached if the user pings a device on the same subnet.

Explanation D. Correct. The "ipconfig" command will show the IP address, network mask, and gateway. On statically addressed hosts, it is very easy to mistype a mask or gateway, which will cause issues when trying to reach remote hosts.

Explanation E. Incorrect. The "arp -a" command will show the ARP cache on the

machine, or the table of IP-to-MAC address mappings. In this case, the user can see all the local hosts, so there is probably not an ARP issue.

PrepLogic Question: 10980-470

52. Review Question p. 99

Answers: D

Explanation A. Incorrect. 116 would represent the sum of the administrative distance and the metric for the above network. This does not represent a value that the router would use.

Explanation B. Incorrect. The value of 0 has no meaning to the route specified. If you examine the routing table, you can see that several routes have a metric of zero, which is assigned to static routes.

Explanation C. Incorrect. 6 represents the metric for the specified route. The metric is utilized by the routing protocol to make routing decisions.

Explanation D. Correct. The administrative distance is a measure of the "quality" of a route. The router uses this value to choose between competing routes to the same destination, from different routing sources. The lower the administrative distance value, the higher the preference. In this case, the route was learned through OSPF, which has an AD of 110.

PrepLogic Question: 10980-472

53. Review Question p. 100

Answers: A

Explanation A. Correct. Routing metrics are used by a routing protocol to determine the best path to a network. Think of the metric as the distinguishing characteristic among routes that are using the same protocol. Common metrics include hop count, cost (based on bandwidth), and a composite (based on many parameters, such as load, delay, bandwidth, etc.).

Explanation B. Incorrect. 110 is an example of administrative distance. This is used to determine the trustworthiness of a route, and distinguishes between routes that are learned from different protocols. The AD isn't used to determine the trustworthiness of a route, but the trustworthiness of the routing protocol.

Explanation C. Incorrect. The E1 on the specified route is a designator on OSPF routes that indicates the route was an external route.

Explanation D. Incorrect. 121 would be the sum of the administrative distance (110) and the metric (11) from the route. These two values are evaluated independently to decide on the best route.

PrepLogic Question: 10980-473

54. Review Question p. 100

Answers: B

Explanation A. Incorrect. OSPF routes have an administrative distance of 110, and the router will select the route with the lowest administrative distance. Internal EIGRP have lower values in this case.

Explanation B. Correct. Routers judge routes from different sources using administrative distance. If several routes exist to the same destination, the administrative distance hierarchy kicks in, and the router will choose the route with the lowest administrative distance. In this case, internal EIGRP has an administrative distance of 90, and is the lowest and most preferable route. External EIGRP has an AD of 170.

Explanation C. Incorrect. RIP has the second highest administrative distance of the protocols listed, 120. This would make the route learned through RIP the second worst choice.

Explanation D. Incorrect. External EIGRP would have an administrative distance of 170.

PrepLogic Question: 10980-474

55. Review Question p. 101

Answers: A, D

Explanation A. Correct. The "logging" command allows you to specify how and where messages are logged. To log to the display while connected via telnet, you need to utilize the "monitor" command. Telnet or other connection methods like SSH.

Explanation B. Incorrect. The "logging console" command will display all messages to the console. You have to be connected via a console cable that is connected directly to this port.

Explanation C. Incorrect. There is no "telnet" command for logging; the correct destinations for logging are: monitor, console, buffered, trap, and ip address.

Explanation D. Correct. This command will enable logging, and begin the stream of messages to the specified destination. Logging is disabled by default.

Explanation E. Incorrect. The correct command to enable logging is "logging on". The following are the options for the logging command:
Hostname or A.B.C.D IP address of the logging host
buffered - Set buffered logging parameters
cns-events - Set CNS Event logging level
console - Set console logging level
facility - Facility parameter for syslog messages
file - Set logging file parameters
history - Configure syslog history table
monitor - Set terminal line (monitor) logging level
on - Enable logging to all supported destinations
source-interface - Specify interface for source address in logging transactions
trap - Set syslog server logging level

PrepLogic Question: 10980-478

56. Review Question p. 101

Answers: A, D

Explanation A. Correct. The "logging" command allows you to specify how and where messages are logged. To log to the buffer, you need to utilize the "buffered" command.

Explanation B. Incorrect. The "logging console" command will display all messages to the console. You have to be connected via cable directly to this port.

Explanation C. Incorrect. There is no "memory" command for logging. The correct destinations for logging are: monitor, console, buffered, trap, and ip address.

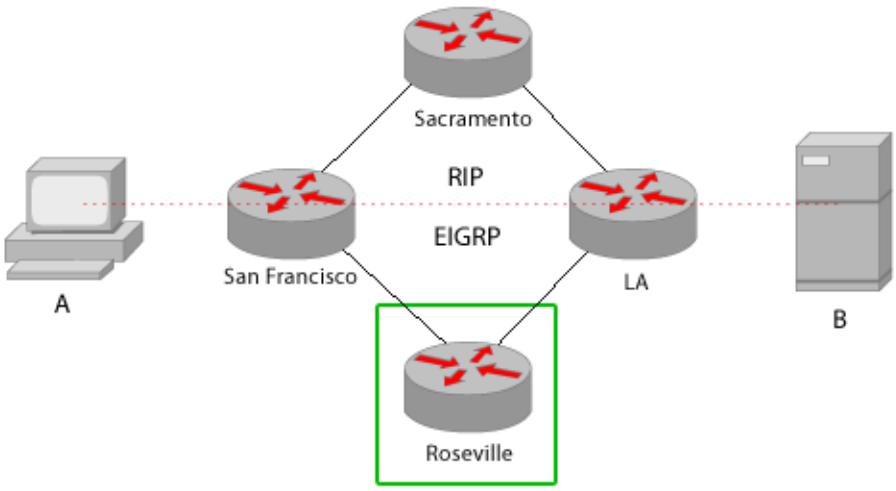
Explanation D. Correct. This command will enable logging, and begin the stream of messages to the specified destination. Logging is disabled by default.

Explanation E. Incorrect. The correct command to enable logging is "logging on". The following are the options for the logging command:
Hostname or A.B.C.D IP address of the logging host
buffered - Set buffered logging parameters
cns-events - Set CNS Event logging level
console - Set console logging level
facility - Facility parameter for syslog messages
file - Set logging file parameters
history - Configure syslog history table
monitor - Set terminal line (monitor) logging level
on - Enable logging to all supported destinations
source-interface - Specify interface for source address in logging transactions
trap - Set syslog server logging level

PrepLogic Question: 10980-479

57. Review Question p. 102

Answer:



Explanation: The next hop en route to LA will be the Roseville router. If a router participates in several routing protocols and the destination traffic has separate paths using the different routing protocols, it will utilize the administrative distance of the routing protocol as a tiebreaker to determine the next hop path. The route with the lowest administrative distance will win. In this case, EIGRP routes have an admin distance of 90, where RIP is 120.

PrepLogic Question: 10980-531

58. Review Question p. 102

Answer:

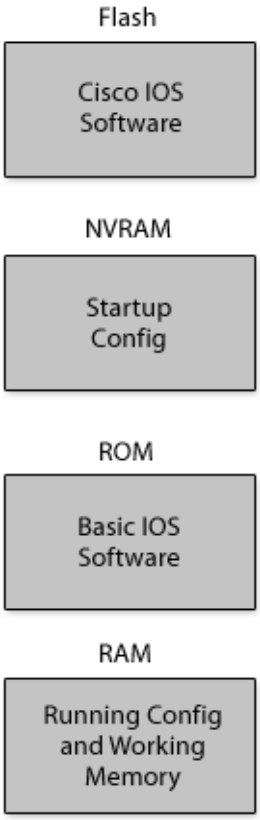
Static Route	EIGRP (internal)	OSPF	EIGRP (external)
1	90	110	170

Explanation: Administrative distance is the feature that routers use in order to select the best path when there are two or more different routes to the same destination from two different routing mechanisms. Administrative distance defines the reliability of a routing protocol. Each routing protocol is prioritized in order of most to least reliable (believable) with the help of an administrative distance value.

PrepLogic Question: 10980-535

59. Review Question p. 103

Answer:



Explanation: Cisco devices have several types of memory, each of which is vital to device operation. RAM is used to store the running configuration, and as working memory for device operations. Flash is where the Cisco IOS software is stored and loaded into RAM during startup. ROM holds a special "lite" version of the Cisco IOS. NVRAM holds the startup configuration for the device.

PrepLogic Question: 10980-544

Explanations: Chapter 5

1. Review Question p. 104

Answers: B

Explanation A. Incorrect. An IBSS is two or more 802.11 workstations communicating directly with each other in a peer-to-peer fashion. There is no backbone supporting the wireless communication. This is also known as an ad hoc network.

Explanation B. Correct. A BSS is a group of wireless stations that communicate together through a specialized station called an access point (AP). The AP can provide wireless-only connectivity, or may be connected to a router or switch.

Explanation C. Incorrect. An ESS is an array of BSSs connected by their uplink ports to the entire distribution system (DS). The uplink can be a wired connection, or in some cases, a wireless link.

Explanation D. Incorrect. The SSID is a unique identifier within a wireless LANs that is transmitted from all stations, and receivers use this identifier to filter signals.

PrepLogic Question: 10980-490

2. Review Question p. 104

Answers: A

Explanation A. Correct. An IBSS is a group of 802.11 workstations communicating directly with each other in a peer-to-peer fashion. It is also known as an "ad hoc" wireless network, with communication taking place from network card to network card.

Explanation B. Incorrect. A BSS is a group of wireless stations that communicate together through an access point (AP). The AP can provide wireless-only connectivity, or may be connected to a "hard wired" Ethernet network. A BSS is also referred to as an Infrastructure BSS.

Explanation C. Incorrect. An ESS is an array of BSSs connected by their uplink ports to the entire distribution system (DS). The uplink can be a wired connection, or in some cases, a wireless link.

Explanation D. Incorrect. The only topology types for wireless are the IBSS, BSS, and ESS. The AHSS is not a topology type, but ad hoc does describe this type of network.

PrepLogic Question: 10980-491

3. Review Question p. 105

Answers: A, B, C, D

Explanation A. Correct. Before a wireless station transmits, it must sense whether the medium is in use. There are two methods for determining this:
- Checking the Physical Layer, or PHY, to see if a carrier is present
- Using the Network Allocation Vector (NAV), which is a transmission timer

Explanation B. Correct. The DCF (distributed coordination function) is an IEEE access mechanism for controlling wireless medium access. DCF prevents two stations that sense a lull in traffic from sending information at the same time through the use of a random backoff timer.

Explanation C. Correct. Acknowledgment frames notify a sending station that a transmission has been received, and receive special treatment in the wireless world. These frames are not subject to any of the backoff timers, and their timely delivery helps avoid needless retransmissions.

Explanation D. Correct. RTS/CTS are special control frames that are used when communicating with an access point, and provide a "two-way" handshake method of transmission control.

Explanation E. Incorrect. Frame fragmentation is part of the 802.11 medium access control, but it is not directly a part of CSMA/CA. It allows for the breakup of frames into smaller pieces to reduce media contention.

PrepLogic Question: 10980-492

4. Review Question p. 105

Answers: B

Explanation A. Incorrect. Acknowledgment frames notify a sending station that a transmission has been received, and receive special treatment in the wireless world. These frames are not subject to any of the backoff timers, and their timely delivery helps avoid needless retransmissions.

Explanation B. Correct. Before a wireless station transmits, it must sense whether the medium is in use. There are two methods for determining this:
- Checking the Physical Layer, or PHY, to see if a carrier is present
- Using the Network Allocation Vector (NAV), which is a transmission timer

Explanation C. Incorrect. Frame fragmentation is part of the 802.11 medium access control, but it is not directly a part of CSMA/CA. It allows for the breakup of frames into smaller pieces to reduce media contention.

Explanation D. Incorrect. RTS/CTS are special control frames that are used when communicating with an access point, and provide a "two-way" handshake method of transmission control.

PrepLogic Question: 10980-493

5. Review Question p. 105

Answers: A, B, C

Explanation A. Correct. A repeater AP functions much like its wired relative, echoing signals and retransmitting packets. This extends the range of your wireless network, but can also create the issues of overlapping wireless broadcast domains and compatibility issues with older clients.

Explanation B. Correct. A universal client (UC) is one of the devices that can translate wired packets to wireless packets and vice versa. The UC is usually associated with a single network device like a printer.

Explanation C. Correct. A workgroup bridge provides a wireless connection to a group of wired clients or devices. An example might be a distant corner of a warehouse with three PCs and a printer wired to a workgroup bridge that wirelessly connects to your network.

Explanation D. Incorrect. The access point is defined as a standard by the 802.11 standard to ensure the utmost in vendor interoperability and reliability.

PrepLogic Question: 10980-494

6. Review Question p. 106

Answers: C

Explanation A. Incorrect. A wireless station broadcasts a probe request frame to search for an AP across wireless channels. The probe frame includes information about the station, speed supported, and service set membership.

Explanation B. Incorrect. The authentication process utilizes open authentication and shared-key authentication to determine whether the device is allowed on the network.

Explanation C. Correct. The 802.11 association process is initiated by the wireless station, and provides for a means by which the AP maps wireless connectivity.

Explanation D. Incorrect. The 802.11 MAC Layer operation surrounding station connectivity does not include a verification process; it includes scanning, authentication, and association processes.

PrepLogic Question: 10980-495

7. Review Question p. 106

Answers: C

Explanation A. Incorrect. This field relays the MAC and PHY layer capabilities of the AP.

Explanation B. Incorrect. This field contains the Service Set Identifier (SSID) configured on the AP. The SSID acts as a filter for wireless stations, identifying wireless traffic.

Explanation C. Correct. The support rates element provides all the data rates supported by the access point.

Explanation D. Incorrect. This element provides PHY-specific information to the station.

PrepLogic Question: 10980-496

8. Review Question p. 106

Answers: A, B, C

Explanation A. Correct. These frame types facilitate the transmission of data during 802.11 exchanges. They include RTS, CTS, Ack PS-Poll, CF-End, and CF-End+CF-Ack frames.

Explanation B. Correct. Management Frames provide authentication and status control, facilitating wireless connectivity. These frames utilize information element fields to transfer pertinent information.

Explanation C. Correct. These frames carry data from transmitter to receiver.

Explanation D. Incorrect. The Ack Frame is not a primary category within the 802.11 MAC standard. It is part of the CSMA/CA portion of the standard, and used to acknowledge transmissions. It is an 802.11 subframe type.

PrepLogic Question: 10980-497

9. Review Question p. 107

Answers: B

Explanation A. Incorrect. Scrambling is a method used by transmitters to randomize data to provide for high speed data transfer.

Explanation B. Correct. Coding provides for a method to transmit data over noisy channels. It provides a means to identify data streams and eliminate errors.

Explanation C. Incorrect. Interleaving is a method of spreading out bit sequences, and introducing specific bit sequences to make sequences easier to identify. It is used to improve bit-error rate performance.

Explanation D. Incorrect. Modulation applies the bit stream to a carrier wave, allowing for ease of coding/decoding.

PrepLogic Question: 10980-498

10. Review Question p. 107

Answers: A, B

Explanation A. Correct. The 802.11g standard supports data rates up to 54 Mbps, and provides backward compatibility support for slower transmission rates. It runs in the 2.4 GHz range.

Explanation B. Correct. 802.11a provides support for rates up to 54 Mbps and runs in the 5 GHz range.

Explanation C. Incorrect. 802.11b was the first standard introduced in 1999, and provided support for up to 11 Mbps.

Explanation D. Incorrect. 802.11z is not a wireless standard. Currently, there are 802.11a, 802.11b, 802.11g, 802.11n, 802.11h, and 802.11j.

PrepLogic Question: 10980-499

11. Review Question p. 107

Answers: B

Explanation A. Incorrect. The wireless standards were released in the following sequence: 802.11b (1999), 802.11a (late 1999), 802.11g (2003), and 802.11n (in progress).

Explanation B. Correct. Support for Wireless 802.11b was provided before 802.11a. The wireless standards were released in the following sequence: 802.11b (1999), 802.11a (late 1999), 802.11g (2003), and 802.11n (in progress).

Explanation C. Incorrect. 802.11g is one of the most recently implemented standards. The wireless standards were released in the following sequence: 802.11b (1999), 802.11a (late 1999), 802.11g (2003), and 802.11n (in progress).

Explanation D. Incorrect. Wireless "n" is the newest standard in the works, and allows wireless transmissions at 100 Mbps. The wireless standards were released in the following sequence: 802.11b (1999), 802.11a (late 1999), 802.11g (2003), and 802.11n (in progress).

PrepLogic Question: 10980-500

12. Review Question p. 108

Answers: A, B

Explanation A. Correct. WEP supports both 40- and 128-bit key lengths, and the same key is configured on both clients and infrastructure devices. 64-bit WEP uses a 40-bit key while 128-bit WEP uses a 128-bit key.

Explanation B. Correct. WEP supports 128- and 40-bit key lengths, and up to four keys can be entered on a device, with only one providing encryption.

Explanation C. Incorrect. Only 40- and 128-bit keys are supported.

Explanation D. Incorrect. Only 40- and 128-bit keys are supported.

PrepLogic Question: 10980-501

13. Review Question p. 108

Answers: D

Explanation A. Incorrect. The MIC prevents attacks on wireless encrypted packets called bit-flip attacks, and is one of the additional security features of WEP. Bit flipping is a method whereby packets are intercepted and altered.

Explanation B. Incorrect. TKIP is an additional security feature of WEP (aka WEP key hashing) and provides a ?random? factor that prevents predictive hacking.

Explanation C. Incorrect. This is also an additional security feature of WEP, and provides a dynamic key rotation on an interval.

Explanation D. Correct. MAC-based authentication or filtering is not a feature of WEP, but is included on almost all wireless devices, and provides the ability to allow/deny network access based on MAC addresses.

PrepLogic Question: 10980-502

14. Review Question p. 108

Answers: A

Explanation A. Correct. This authentication type utilizes the Extensible Authentication Protocol (EAP) to authenticate against a RADIUS server to provide the highest level of security for a wireless network.

Explanation B. Incorrect. This authentication type matches the wireless card MAC address to a predefined list of MAC addresses. This list can be configured directly on the AP.

Explanation C. Incorrect. Open Authentication allows any device to communicate with an access point (AP), but communication will continue only if keys match.

Explanation D. Incorrect. Shared key authentication is an 802.11b standard, but Cisco recommends avoiding this method due to some inherent security flaws. It consists of several exchanges between client and AP to determine a shared key.

PrepLogic Question: 10980-503

15. Review Question p. 109

Answers: A, E

Explanation A. Correct. This authentication type utilizes the Extensible Authentication Protocol (EAP) to interact with a RADIUS server to provide the highest level of security for a wireless network. It can also use a TACACS+ server for authentication.

Explanation B. Incorrect. This authentication type can relay requests to a RADIUS server that matches the station MAC to an access list, but the list can also be configured directly on the AP.

Explanation C. Incorrect. Open Authentication allows any device to communicate with an access point (AP), but communication will continue only if keys match.

Explanation D. Incorrect. Shared key authentication is an 802.11b standard, but Cisco recommends avoiding this method due to some inherent security flaws. It consists of several exchanges between client and AP to determine a shared key.

Explanation E. Correct. This authentication type combines MAC, EAP, and Open Authentication to provide the utmost in security, utilizing a RADIUS server for key and MAC information.

PrepLogic Question: 10980-504

16. Review Question p. 109

Answers: D

Explanation A. Incorrect. WPA requires support at the AP to facilitate the negotiation and authentication process.

Explanation B. Incorrect. Software support is required at the client to ensure proper communication with the AP.

Explanation C. Incorrect. The NIC driver functions as the middle-man between the AP and client software, and must be certified to the WPA standard to ensure proper operation.

Explanation D. Correct. WEP support is not a required component for WPA operations.

PrepLogic Question: 10980-505

17. Review Question p. 109

Answers: C

Explanation A. Incorrect. Both WPA 1 and 2 can utilize either TKIP or CCMP encryption.

Explanation B. Incorrect. WPA 1 and 2 both support AES and TKIP ciphers.

Explanation C. Correct. WPA 2 has been improved through the use of information elements within the beacons, association frames, and four-way handshakes. The handshake process has been improved to pass more information, without extra transmissions.

Explanation D. Incorrect. WPA 1 and 2 have both been built for all different network types.

PrepLogic Question: 10980-506

18. Review Question p. 110

Answers: B, C, D

Explanation A. Incorrect. 40-bit keys are not supported by AES, but are supported by WEP.

Explanation B. Correct. The AES encryption standard supports 128-, 192-, and 256-bit keys.

Explanation C. Correct. AES supports 192-bit key lengths, and is a much stronger

algorithm than RC4.

Explanation D. Correct. AES supports 256-bit keys for the strongest security.

PrepLogic Question: 10980-507

19. Review Question p. 110

Answers: A, B, D, E

Explanation A. Correct. WPA was designed to overcome the many flaws of WEP, and is the key choice for providing secure network access over wireless.

Explanation B. Correct. The SSID is the first bit of information a hacker will try to ascertain when capturing wireless frames. These two steps will make it more difficult.

Explanation C. Incorrect. WEP has some basic security flaws, including the ability to utilize a 40-bit key. It is best to utilize WPA for secure networks.

Explanation D. Correct. Allowing administrative access through the wireless network can provide intruders with a gateway to the configuration of your infrastructure. It is always best to secure or restrict this method of administration.

Explanation E. Correct. Windows and doors act as conduits for wireless networks, and can allow access to your wireless network from a long distance.

PrepLogic Question: 10980-508

20. Review Question p. 110

Answers: A, C, D

Explanation A. Correct. The SSID field provides the client with a network identifier, and instructs the antenna to receive all frames on this network.

Explanation B. Incorrect. The majority of wireless networks utilize DHCP.

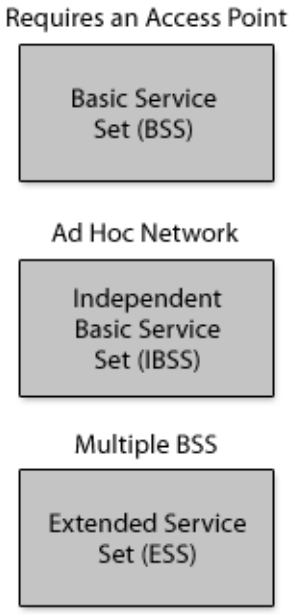
Explanation C. Correct. You must set the method to WPA.

Explanation D. Correct. For WPA, you must choose AES or TKIP as your cipher.

PrepLogic Question: 10980-509

21. Review Question p. 111

Answer:



Explanation: IBSS: An IBSS is a group of wireless stations communicating with each other, and is referred to as an ad hoc network. BSS: A BSS is a group of wireless stations communicating with each other through the use of a wireless access point. ESS: An ESS is a group of BSSs connected to form an entire system.

PrepLogic Question: 10980-543

Explanations: Chapter 6

1. Review Question p. 112

Answers: A

Explanation A. Correct. Digital certificates are a way to prove that an entity's public key is valid. The standard in digital certificates is the X.509 standard.

Explanation B. Incorrect. This is the definition of a Certificate Authority (CA). The CA manages the distribution, enrollment process, and expiration of digital certificates.

Explanation C. Incorrect. This defines a digital signature (DS). DSs are designed to confirm the identity of a sender and protect the integrity of the document.

Explanation D. Incorrect. This is a digital certificate, but does not relate to network security.

PrepLogic Question: 10980-510

2. Review Question p. 112

Answers: C

Explanation A. Incorrect. Authorization is the mechanism that grants the user access and rights.

Explanation B. Incorrect. This ensures that data is not altered or destroyed by those who do not have the rights.

Explanation C. Correct. Confidentiality makes certain that data is unreadable, except by those who have the right to see it in usable format. Only the intended and authorized recipients, individuals, processes, or devices may read the data.

Explanation D. Incorrect. Access control limits the flow of information from a system to only those authorized systems or individuals on the network.

PrepLogic Question: 10980-511

3. Review Question p. 112

Answers: B, C, D

Explanation A. Incorrect. SSH functions at the Transport Layer.

Explanation B. Correct. This provides confidentiality, integrity, and server

authentication for SSH. It is a simple, flexible solution that provides strong security.

Explanation C. Correct. The User Authentication Protocol authenticates the client to the server through the use of keys.

Explanation D. Correct. The Connection Protocol multiplexes the encrypted tunnel between client and server into several channels to make communication fast, efficient, and secure.

PrepLogic Question: 10980-512

4. Review Question p. 113

Answers: A, B, D

Explanation A. Correct. This command will generate a crypto key for use with SSH.

Explanation B. Correct. The SSH protocol requires a hostname be configured. The hostname is associated with the key.

Explanation C. Incorrect. This command enables a session timeout for SSH sessions, limiting them to 30 seconds. Although not required, this is a best practice when securing a router.

Explanation D. Correct. Once SSH has been enabled on the router, if the VTY lines have "transport input all", both telnet and ssh sessions will be accepted. The above command will restrict inbound sessions to SSH.

Explanation E. Incorrect. This command will disconnect a session if an erroneous password is entered three times. It is not required, but is a best practice when securing a router.

PrepLogic Question: 10980-513

5. Review Question p. 113

Answers: A, B, C, D

Explanation A. Correct. You need to generate an SSH key to enable the protocol.

Explanation B. Correct. The SSH protocol requires a hostname be configured. The hostname is associated with the key.

Explanation C. Correct. SSH requires that a domain name be configured, as it is used in the key exchange process.

Explanation D. Correct. Once SSH has been enabled on the router, the SSH transport must be enabled on the VTY lines.

Explanation E. Incorrect. This command will disconnect a session if an erroneous password is entered three times. It is not required, but is a best practice when securing a router.

PrepLogic Question: 10980-514

6. Review Question p. 113

Answers: C

Explanation A. Incorrect. The "enable secret password" command encrypts the enable password. It hashes the password with the MD5 algorithm, which has yet to be broken.

Explanation B. Incorrect. VTY passwords are not encrypted by default. You must utilize the "service password-encryption" command to encrypt these clear text passwords.

Explanation C. Correct. This command encrypts all clear text passwords with the MD5 algorithm. When you examine the passwords in the configuration files, they will be hashed.

Explanation D. Incorrect. The "username secret" command is used to encrypt username passwords within the configuration file, and has no effect on the VTY passwords.

PrepLogic Question: 10980-515

7. Review Question p. 114

Answers: C

Explanation A. Incorrect. The packet filtering firewall, also know as a screening router, either blocks or permits traffic based on Access Control Lists (ACLs), which examine source or destination address or port. This first-generation firewall type operates at the Network or Transport Layer. This type of firewall does not maintain a state table.

Explanation B. Incorrect. An application-level firewall is also known as a proxy server. These devices are always dual homed, and transfer data from one network to another, obscuring the data's origin. These devices are second-generation firewalls, and can be plagued with performance issues in high traffic networks.

Explanation C. Correct. These devices capture information at the Network Layer where it is queued for an inspection engine that examines the traffic at all layers of the OSI model. By examining the state and context of the traffic, the firewall can filter

UDP-based traffic. This is a third-generation firewall.

Explanation D. Incorrect. This type of firewall dynamically examines the network traffic, and maintains traffic information mostly for the processing of UDP traffic. This fourth-generation device provides adaptive security rules to interpret and analyze network traffic.

PrepLogic Question: 10980-516

8. Review Question p. 114

Answers: E

Explanation A. Incorrect. The packet filtering firewall, also know as a screening router, either blocks or permits traffic based on Access Control Lists (ACLs), which examine source or destination address or port. This first-generation firewall type operates at the Network or Transport Layer.

Explanation B. Incorrect. An application-level firewall is also known as a proxy server. These devices are always dual homed, and transfer data from one network to another, obscuring the data's origin. These devices are second-generation firewalls, and can be plagued with performance issues in high traffic networks.

Explanation C. Incorrect. These devices capture information at the Network Layer where it is queued for an inspection engine that examines the traffic at all layers of the OSI model. By examining the state and context of the traffic, the firewall can filter UDP-based traffic. This is a third-generation firewall.

Explanation D. Incorrect. This type of firewall dynamically examines the network traffic, and maintains traffic information mostly for the processing of UDP traffic. This fourth-generation device provides adaptive security rules to interpret and analyze network traffic.

Explanation E. Correct. The Cisco PIX combines all of the firewall functionalities into a world-class security appliance.

PrepLogic Question: 10980-517

9. Review Question p. 114

Answers: A, B, C

Explanation A. Correct. The Network Time Protocol provides synchronized time for network devices. When enabling any type of logging for security purposes, it is critical to have all your devices synchronized.

Explanation B. Correct. A SYSLOG server provides a means to collect messages over the network from Cisco devices. The server will become a centralized location for logging and data collection for reporting.

Explanation C. Correct. Entering this command will send informational and higher messages to the IP address specified (SYSLOG server). To enable other logging levels you need to specify the level after the command above.

Explanation D. Incorrect. The logging console will output all messages to the console. Note: you need to be connected to the console port to view these messages.

Explanation E. Incorrect. The "logging buffered" command writes all messages to the memory buffer. Utilize the show log command to view these messages.

PrepLogic Question: 10980-518

10. Review Question p. 115

Answers: B

Explanation A. Incorrect. IP directed broadcasts are a common denial of service attack, and utilize broadcast addresses to flood a network with packets. You can drop these packets at your router with the ?no up directed-broadcast? command.

Explanation B. Correct. This ACL is a sample list for preventing spoof attacks. A spoof attack refers to an attacker inducing a host to take an incorrect action by providing incorrect information. The most common types utilize ICMP redirects and Multicast as the attacker sends traffic masquerading as an internal host, sourcing from the Internet.

Explanation C. Incorrect. Routing protocol attacks are initiated by sending fake updates to infrastructure routers. These attacks can be prevented through the use of ?distribute-lists? and routing authentication.

Explanation D. Incorrect. A SYN attack floods the target network with TCP SYN packets, or three-way handshake initiation messages. These attacks can be prevented through the use of a firewall.

PrepLogic Question: 10980-519

11. Review Question p. 115

Answers: C

Explanation A. Incorrect. A SYN attack floods the target network with TCP SYN packets, or three-way handshake initiation messages. These attacks can be prevented through the use of a firewall.

Explanation B. Incorrect. This is a "session hijacking" attack, where the intruder tricks the target into believing it is another host, and then redirects the packet stream to launch an attack. This is done by predicting the next sequence number in the communication stream.

Explanation C. Correct. This attack involves packet alteration at the TCP level to trick a host into believing the host is on a network other than its own.

Explanation D. Incorrect. Fragmentation attacks alter the IP datagram to disguise packets from filtering devices.

PrepLogic Question: 10980-520

12. Review Question p. 115

Answers: C

Explanation A. Incorrect. Plain text passwords are type "0" passwords. If this was plain text, the entry would read:

enable secret 0 1PhXB$ZF1hptFe6PADLVC/EGN6N/

Explanation B. Incorrect. Passwords that can be decrypted are tagged with a "7" in the cisco config. There are several public utilities designed to "crack" these passwords.

Explanation C. Correct. Cisco tags its passwords with a 0, 5, or 7 to identify the type of password. In this case, the password is a type 5, or MD5 encrypted password, which cannot be cracked.

Explanation D. Incorrect. This is a password type identifier.

PrepLogic Question: 10980-521

13. Review Question p. 116

Answers: A, B, D

Explanation A. Correct. A router with four interfaces can sometimes use all of them for different services, for example, telnet, SNMP, syslog messages, etc. Enabling a loopback, and then manually configuring services with the source IP of that interface, is a security best practice. Plus, the interface never goes down.

Explanation B. Correct. With a predictable and static IP, you can configure other devices within the network with enhanced security. For example, if you utilize routers to ssh to other routers, you now have a static source IP.

Explanation C. Incorrect. The loopback is a key first step in the overall security configuration of the router.

Explanation D. Correct. If a potential hacker runs mapping software, the loopback IP is "hidden," and therefore offers an obscurity factor.

PrepLogic Question: 10980-522

14. Review Question p. 116

Answers: C

Explanation A. Incorrect. The Cisco IOS provides 16 separate privilege levels to control command execution.

Explanation B. Incorrect. The privilege levels are 0 through 15, so there are 16 separate levels.

Explanation C. Correct. The Cisco IOS comes predefined with 2 levels, exec and enable mode, but overall there are 16 (0 through 15) levels that each encompasses specific commands. A privilege level of 0 is the lowest access and 15 is the highest.

Explanation D. Incorrect. There are 16 levels.

PrepLogic Question: 10980-523

15. Review Question p. 116

Answers: A, B, C

Explanation A. Correct. IP redirects send an ICMP redirect message in response to certain routed packets. There are several attacks that utilize this function to force redirect packets to specific hosts.

Explanation B. Correct. Simple Network Management Protocol (SNMP) allows remote management and monitoring of network devices. It is also a hacker's dream, and provides a variety of important information. It runs on UDP 161.

Explanation C. Correct. CDP discovers networked devices, and allows the administrator to utilize the "show cdp" command to gather information about all these devices, including IOS versions. There are several public tools intruders can utilize to gather this information from CDP-enabled devices. CDP can be disabled either globally or on a per-interface basis.

Explanation D. Incorrect. Cisco IOS has the capability of running some legacy applications such as echo and chargen. This should always be disabled, and is by default

in 11.3+ devices.

Explanation E. Incorrect. Cisco IOS has the capability of running some legacy applications such as echo and discard. This should always be disabled, and is by default in 11.3+ devices.

PrepLogic Question: 10980-524

16. Review Question p. 117

Answers: C

Explanation A. Incorrect. For any configuration command, you need to be in global config mode, by utilizing the "configure terminal" command. This is the correct command to disable CDP.

Explanation B. Incorrect. For any configuration command, you need to be in global config mode, by utilizing the "configure terminal" command. This is not the correct command syntax; you must use the "no cdp run" command.

Explanation C. Correct. The Cisco Discovery Protocol is a proprietary protocol that Cisco routers use to identify each other on a LAN segment. It is useful only in specialized situations, and is considered a security risk.

Explanation D. Incorrect. This is not the command to disable CDP.

PrepLogic Question: 10980-525

17. Review Question p. 118

Answers: B, C

Explanation A. Incorrect. When you examine a password string in IOS, there is either a 0, 5, or 7. 0 is clear text, 5 shows that the password is an MD5-encrypted password (unbreakable), and 7 is encrypted with simple encryption. In this case, it is a type 7 password.

Explanation B. Correct. When you examine a password string in IOS, there is either a 0, 5, or 7. 0 is clear text, 5 shows that the password is an MD5-encrypted password (unbreakable), and 7 is encrypted with simple encryption. This algorithm can be cracked utilizing some special tools.

Explanation C. Correct. The "no ip directed-broadcast" statement disables the interface's ability to process directed broadcasts. In this case, the interfaces will drop directed broadcasts coming inbound to the router.

Explanation D. Incorrect. The "no ip directed broadcast" statement disables the interface's ability to process directed broadcasts. In this case, the interfaces will drop directed broadcasts.

PrepLogic Question: 10980-526

18. Review Question p. 119

Answers: D

Explanation A. Incorrect. This command would be used to prevent directed broadcast attacks, where the attacker sends broadcast packets to saturate entire network segments.

Explanation B. Incorrect. This is a global config mode command that will prevent IP packets from specifying their own routing information.

Explanation C. Incorrect. This command is not a Cisco IOS command. You would utilize the interface-level command "ip verify unicast reverse-path".

Explanation D. Correct. The command has the router verify the packet. The ip verify unicast reverse-path looks to see where the packet came from. If the router knows that the source (spoofed) address belongs on a different interface, it will drop the packet because there is either a loop or spoofed source address.

PrepLogic Question: 10980-527

19. Review Question p. 119

Answers: A, B

Explanation A. Correct. This command will limit connectivity over this switch port to the specific MAC listed. The MAC address should be of the end device attached to the switch.

Explanation B. Correct. This command will examine the MAC on the port; if there is a violation (another MAC attaches), the port will be shut down and an SNMP trap will be sent.

Explanation C. Incorrect. This command will not shut down the port when a MAC violation is detected, but will restrict data transfer, increment the security violation counter, and send an SNMP trap.

Explanation D. Incorrect. The "switchport mode access" command will enable general access on a switch port, but there is no secure keyword.

PrepLogic Question: 10980-528

20. Review Question p. 119

Answers: A, B

Explanation A. Correct. This interface configuration command will always manually reset an interface, resetting the status on port security.

Explanation B. Correct. This global configuration command will reset all port security violations, and enable the ports.

Explanation C. Incorrect. This command is set at the global configuration prompt. If you are in the interface configuration mode, utilize the "no shutdown" command to reset the port.

Explanation D. Incorrect. This is not an IOS command. You will need to utilize either of the above commands to reenable the switchport.

PrepLogic Question: 10980-529

Explanations: Chapter 7

1. Review Question p. 120

Answers: C

Explanation A. Incorrect. The access-list command is only used to create the access list. However, the access list can be used by various Cisco IOS technologies, one of which is the traffic filtering technology, which requires another command to be issued on an interface level.

Explanation B. Incorrect. The access-list command is only used to create the access list. However, the access list can be used by various Cisco IOS technologies, one of which is the traffic filtering technology, which requires another command to be issued on an interface level.

Explanation C. Correct. This is the correct command. It would apply access-list 101 to any IP traffic entering the interface, for which this command is executed.

Explanation D. Incorrect. This command is used to apply an outbound access-list, e.g. to apply traffic filtering to packets that leave the interface. You are required to perform this for incoming packets.

Explanation E. Incorrect. This command does not exist in Cisco IOS.

PrepLogic Question: 10980-115

2. Review Question p. 120

Answers: C

Explanation A. Incorrect. This command is used to display interface specific information. This command is not meant to display information or statistics about access lists.

Explanation B. Incorrect. Although this command displays all the access lists, the number of hits is not indicated here. The configuration file is only used to configure the device and does not provide statistics.

Explanation C. Correct. Without parameters, this command will display all the access lists configured on the router. The number of hits per access list entry is going to be indicated in brackets in the end of the line. This command can display a specific access list only, if its number is specified as a parameter.

Explanation D. Incorrect. This command does not exist in Cisco IOS.

Explanation E. Incorrect. This command does not exist in Cisco IOS.

PrepLogic Question: 10980-150

3. Review Question p. 121

Answers: D

Explanation A. Incorrect. Privileged EXEC mode can be used to issue mainly show and debug commands. Few configuration settings can be performed in privileged EXEC mode, and applying access lists is not one of them.

Explanation B. Incorrect. Global configuration mode is used to configure system specific parameters. Although some commands that are issued in global configuration mode use access lists (ip http access-class for example), filtering traffic between hosts requires that the access list be applied on an interface.

Explanation C. Incorrect. Routing protocols use access lists in their configuration. A common example is the use of access lists for the distribute-list command. However, filtering traffic between hosts requires that the access list be applied to an interface.

Explanation D. Correct. This is the correct configuration mode to apply access lists for traffic filtering between hosts. You can apply either inbound, outbound, or both types of access lists on a particular interface.

Explanation E. Incorrect. Line configuration mode is used to configure some physical layer parameters and some data-link parameters. IP access-lists operate at the network layer, so this is not the correct mode for applying these types of access lists when you are trying to filter traffic between two hosts. This is unless you are trying to restrict TELNET access into the router.

PrepLogic Question: 10980-173

4. Review Question p. 121

Answers: C

Explanation A. Incorrect. You can see by the access list number, and by its contents, that it is an extended access list, not a standard one.

Explanation B. Incorrect. You can see by the access list number, and by its contents, that it is an extended access list, not a standard one.

Explanation C. Correct. Since the first line contains the all permissive permit 'any any' statement, any packet will match this first statement and will be permitted. The access list was obviously designed to deny only traffic to TCP port 1234, and allow any other

traffic.

Explanation D. Incorrect. Although no host nor network IP addresses, are specified here explicitly, the 'any' keyword specifies that the access list needs to be applied to any host and any subnet.

Explanation E. Incorrect. Although no host nor network IP addresses are specified here explicitly, the 'any' keyword specifies that the access list needs to be applied to any host and any subnet.

PrepLogic Question: 10980-208

5. Review Question p. 122

Answers: E

Explanation A. Incorrect. Cisco IOS allows you to have up to one access list applied in each direction of traffic, per interface.

Explanation B. Incorrect. Cisco IOS allows you to have up to one access list applied in each direction of traffic, per interface.

Explanation C. Incorrect. Cisco IOS allows you to have up to one access list applied in each direction of traffic, per interface.

Explanation D. Incorrect. Cisco IOS allows you to have up to one access list applied in each direction of traffic, per interface.

Explanation E. Correct. You are allowed to implement a single access list in each interface direction. You cannot have more than one access list per direction. You are not allowed to have an access list in a particular direction, in which case traffic is let in or out unfiltered.

PrepLogic Question: 10980-231

6. Review Question p. 122

Answers: D

Explanation A. Incorrect. Router interfaces permit all traffic by default. If an access list is applied to a router interface, and the access list is empty, all traffic is still permitted. Only when an access list denies traffic (including the implicit deny at the end) would traffic get blocked.

Explanation B. Incorrect. Access lists can have a combination of permit statements and deny statements. The first statement that matches the packet is applied, regardless of

whether it is a permit or a deny statement.

Explanation C. Incorrect. There is no such requirement. An access list can start with either a permit statement or a deny statement.

Explanation D. Correct. Every access list ends with an implicit deny all statement. Thus, if access list evaluation reaches the bottom of an access list, and no permit statement is found for the packet, the traffic is denied.

Explanation E. Incorrect. It is not required to have an explicit deny all statement in an access list, as deny all is implied once the bottom of the access list is reached.

PrepLogic Question: 10980-261

7. Review Question p. 123

Answers: A

Explanation A. Correct. This access list does something very strange - it explicitly disables UDP traffic, and it implicitly enables only ICMP traffic. The effective result is that only ICMP traffic will be enabled, and all other traffic will be denied. This makes the first line useless. Thus, we can assume that this access list is erroneous.

Explanation B. Incorrect. The deny keyword in the first line disables UDP traffic explicitly, so UDP won't be permitted.

Explanation C. Incorrect. The permit keyword in the second line permits any ICMP traffic, and the effective result of this access list will be that ICMP traffic will be the only enabled traffic.

Explanation D. Incorrect. This access list permits ICMP traffic only. UDP traffic is explicitly denied in line one. Any other IP traffic falls under the implicit deny all rule, and will be denied.

Explanation E. Incorrect. You may use a mixture of any IP protocols that you need in a single access list. Normally, this is the way to do it, because only one access list can be applied per interface, and per direction. So, access lists need to be a mixture of permit and deny statements for different protocols.

PrepLogic Question: 10980-266

8. Review Question p. 123

Answers: E

Explanation A. Incorrect. The above access list denies any ICMP traffic from both

subnets 192.168.1.0/24 and 192.168.3.0/24. This is not what the question seeks.

Explanation B. Incorrect. The above access list denies any ICMP traffic from both host 192.168.1.1 and subnet 192.168.3.0. This is not what the question seeks.

Explanation C. Incorrect. This access list won't work as expected because a subnet mask is used to specify the 192.168.3.0/24 network instead of wildcard bits. Access lists use wildcard bits to achieve flexibility.

Explanation D. Incorrect. This access list denies any ICMP traffic between hosts 192.168.1.1 and 192.168.3.0. However, 192.168.3.0 is a subnet, and not a host. As a result, this access list will not work as expected.

Explanation E. Correct. The above access list solves the problem, as it denies ICMP traffic from the host with an IP address of 192.168.1.1 to any host on subnet 192.168.3.0.

PrepLogic Question: 10980-300

9. Review Question p. 123

Answers: C

Explanation A. Incorrect. Before the router makes a routing decision, it is still unclear which path the packet is going to take. Hence, the outgoing interface is still not determined. That's why in this case routing takes place before access-list evaluation is performed.

Explanation B. Incorrect. Before the router makes a routing decision it is still unclear which path the packet is going to take, hence the outgoing interface is still not determined. That's why in this case routing takes place before access-list evaluation is performed.

Explanation C. Correct. Once routing has determined the intended destination interface for the packet, and before the packet gets buffered, the outbound access-list is applied. If the packet is not permitted, it gets dropped.

Explanation D. Incorrect. Immediately before the interface puts the frame on the network, packet buffering occurs. There is no need to buffer packets that might be dropped, so access-lists get evaluated after routing, but before buffering.

PrepLogic Question: 10980-319

10. Review Question p. 124

Answers: E

Explanation A. Incorrect. Although neither host, nor network IP addresses are specified here explicitly, the all keyword specifies that the access list needs to be applied to any host and any subnet.

Explanation B. Incorrect. Although neither host, nor network IP addresses are specified here explicitly, the all keyword specifies that the access-list needs to be applied to any host and any subnet.

Explanation C. Incorrect. This answer is misleading. As you are only given the access list as it is on the router, you can see by its number and by its contents that it is an extended access list, not a standard one.

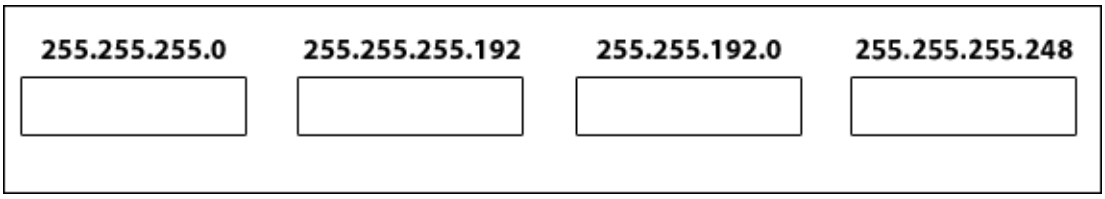
Explanation D. Incorrect. This answer is misleading. As you are only given the access list as it is on the router, you can see by its number and by its contents that it is an extended access list, not a standard one.

Explanation E. Correct. The comment lines (indicated by the keyword remark) in this access list describe the purpose of the access list - deny any SMTP traffic, and permit any other IP traffic. However, the last two lines, which perform the actual configuration, specify that SMTP traffic and any other IP traffic will be permitted.

PrepLogic Question: 10980-324

11. Review Question p. 124

Answer:



Explanation: 255.255.255.0: 00000000 This standard class C subnet has the last octet as all 0's. 255.255.255.192: 11000000 The first two digits give us 128 + 64 or 192. 255.255.192.0: 00000000 The last octet is still all 0's here. 255.255.255.248: 1111100 128 + 64 + 32 + 16 + 8 is 248.

PrepLogic Question: 10980-536

12. Review Question p. 125

Answer:

	Networks	Hosts
Class B/255.255.255.128	512	126
Class C/255.255.255.240	16	14

Explanation: Class B/255.255.255.128: A class B network utilizes 16 bits for the network address, and this mask would leave 7 host bits, or 27-2. This would leave 9 bits for networks, or 29. The correct answers are 512 and 126. Class C/255.255.255.240: A class C network utilizes 24 bits for the network address, and this mask would leave 4 host bits, or 24-2. This would leave 4 bits for networks, or 24. The correct answers are 16 and 14.

PrepLogic Question: 10980-538

13. Review Question p. 126

Answers: A, C

Explanation A. Correct - The ACL allows any host IP to access TCP port 80 (written as www) to host 192.168.3.20

Explanation B. Incorrect - There is one rule that allows telnet access from host H1 to Host H2 using TCP. The problem is that the rule states that the source port must also be TCP 23. Telnet requires that the destination port be TCP 23 but the source port will be a random port above 1024. Another permit rule allows UDP 23 access from any IP source to the destination of 192.168.3.20. The problem with this rule is that Telnet runs over TCP.

Explanation C. Correct - The ACL allows access from H1 using any TCP port from 0 to 65535 to host H2 for FTP

Explanation D. Incorrect - The ACL does not permit DNS. The Deny IP any any statement blocks H1 from accessing H2 using DNS.

PrepLogic Question: 10980-552

14. Review Question p. 127

Answers: A, C, D

Explanation A. Correct - The ACL allows H1 to access TCP port 80 (written as www) to host H2

Explanation B. Incorrect - The deny TCP blocks access on TCP ports 20-23. Access-lists are read by the router in a top down manner so the deny statement is read first and blocks the permit statement below it.

Explanation C. Correct - The ACL allows access from H1 to H2 on UDP port 23. The deny statement above does not affect this rule because it is UDP as opposed to TCP.

Explanation D. Correct - The ACL does permits H1 to access H2 via HTTPS (TCP 443)

PrepLogic Question: 10980-556

Explanations: Chapter 8

1. Review Question p. 128

Answers: D

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Incorrect. This command does not exist in Cisco IOS.

Explanation C. Incorrect. The frame-relay map command is used to map DLCIs to network layer addresses of remote frame-relay routers. This command does not allow you to locally assign a DLCI.

Explanation D. Correct. This is the correct command that is used to assign a DLCI to a specific interface. Normally, service providers will use LMI to provide you with a list of configured DLCIs. If either LMI is not supported, or you need to specify DLCIs on subinterfaces, the frame-relay interface-dlci command needs to be used.

Explanation E. Incorrect. This command is used to specify whether the frame-relay interface is used as an end node, as a switch, or as a Frame Relay switch interconnection. This command is not useful in assigning DLCIs to interfaces.

PrepLogic Question: 10980-116

2. Review Question p. 128

Answers: D

Explanation A. Incorrect. Analog dial-up does not provide for full mesh connectivity. In addition, dial-up is usually an on-demand technology, while normally full mesh needs to be always up.

Explanation B. Incorrect. Leased lines are not used for full mesh connectivity, rather they are used for point-to-point connections. Although it is technically possible to build a full mesh topology by using leased lines between every two sites, this solution is usually not cost effective.

Explanation C. Incorrect. ISDN BRI is a demand dial technology. This technology does not provide for easy and cost effective partial or full mesh infrastructures. ISDB PRI is used in point-to-point links (both voice and data), and is not suitable for full or partial mesh topologies.

Explanation D. Correct. Frame Relay is a topology that uses the terms PVC/SVC - both of them virtual circuits, and not physical as many other technologies. Thus, Frame

Relay provides a design with the ability to use a couple of virtual channels over a single physical link, which makes it the ideal WAN solution for mesh networks.

Explanation E. Incorrect. ADSL, similar to analog lines, uses existing Telco lines to provide high speed connectivity. However, ADSL is not a technology that provides for partial or full mesh connectivity.

PrepLogic Question: 10980-245

3. Review Question p. 129

Answers: B

Explanation A. Incorrect. This command does not exist in Cisco IOS.

Explanation B. Correct. This command displays exhaustive dialer information, such as the number being dialed, the time the interface has been connected, time remaining until disconnect, dial reason, etc.

Explanation C. Incorrect. This command displays general information about DDRs; however, it does not display the reason for the DDR interface being brought up.

Explanation D. Incorrect. This command displays the IP routing table. Although the IP routing table plays an important role in Demand Dial Routing (DDR), in general it is not a definitive resource for determining the dial reason of a DDR interface.

Explanation E. Incorrect. This command displays interface specific information for an ISDN BRI interface. This information does not reveal the reason for a dialer interface performing a call.

PrepLogic Question: 10980-326

4. Review Question p. 129

Answers: A, B, C

Explanation A. Correct. HDLC is supported on circuit-switched WAN connections.

Explanation B. Correct. PPP is supported over both circuit-switched and leased lines.

Explanation C. Correct. SLIP is supported over both circuit-switched and leased line connections.

Explanation D. Incorrect. Frame Relay is not an encapsulation type, and is a packet-switched technology.

Explanation E. Incorrect. X.25 is not an encapsulation type.

PrepLogic Question: 10980-458

5. Review Question p. 129

Answers: A, B, C

Explanation A. Correct. Cisco LMI type is supported. This LMI type is Cisco proprietary.

Explanation B. Correct. ANSI LMI is supported. This is the standard frame relay LMI type in the United States.

Explanation C. Correct. Q933A is supported. This is the ITU-T standard.

Explanation D. Incorrect. Q933B is not a valid LMI type.

Explanation E. Incorrect. 802.1q is a VLAN trunking protocol.

PrepLogic Question: 10980-459

6. Review Question p. 130

Answers: C

Explanation A. Incorrect. LMI types are not specified by Frame Relay maps.

Explanation B. Incorrect. Maps have nothing to do with encapsulation.

Explanation C. Correct. Static address-to-DLCI mappings are required when Inverse ARP is not supported. To provide this mapping, enter the command below at the interface level:
frame-relay map protocol protocol-address dlci

Explanation D. Incorrect. They do not map the network.

PrepLogic Question: 10980-464

7. Review Question p. 130

Answers: B

Explanation A. Incorrect. The "show frame-relay pvc" command will show the status of the PVC as well as basic statistics, but it will not display the LMI type.

Explanation B. Correct. The "frame-relay lmi" command shows LMI statistics, as well

as status enquiries and the LMI type.

Explanation C. Incorrect. This command will show static mappings, as well as any dynamically created by inverse ARP.

Explanation D. Incorrect. This is not a valid IOS command; there is no "statistics" keyword for the "show frame-relay" command. You can utilize the lmi, map, pvc, and traffic keywords to display information.

PrepLogic Question: 10980-481

8. Review Question p. 131

Answers: A

Explanation A. Correct. In order for a leased line to function correctly, the encapsulation types must match on both ends. Router A is currently configured with HDLC encapsulation and router B is configured for PPP.

Explanation B. Incorrect. If there was a cabling issue, the interface would not be in the "up" state. There are two states to each interface. The first is the physical state and the second is the line protocol state. If a circuit is up/down like we see in the exhibit, the two routers are correctly connected at the Physical Layer, meaning that the correct cabling and electric current are occurring at both sides.

Explanation C. Incorrect. Cisco numbers serial interfaces based on primary and subinterfaces. 0/0 presents hardware that usually has multiple serial interfaces on a card. A single-digit interface usually indicates a fixed interface. This does not matter for WAN connections, and interface numbers do not need to match.

Explanation D. Incorrect. This WAN link is set up using a /30 network with two IPs. 172.16.1.12/30 is the network.

PrepLogic Question: 10980-488

9. Review Question p. 133

Answers: C

Explanation A. Incorrect. The encapsulation types match on both routers. They are using HDLC. If this was the problem, the line protocol would be down.

Explanation B. Incorrect. Cisco numbers serial interfaces based on primary and subinterfaces. 0/0 presents hardware that usually has multiple serial interfaces on a card. A single-digit interface usually indicates a fixed interface. This does not matter for WAN connections, and interface numbers do not need to match.

Explanation C. Correct. This WAN link is set up using a /30 network with two IPs. 172.16.1.12/30 is the network, and 172.16.1.15 is the broadcast address. The interfaces should be IP'd with 172.16.1.13 and 14. Router A is utilizing the network address, and this would cause issues.

Explanation D. Incorrect. Cisco is constantly creating new hardware types to provide faster performance with improved signal quality, but this would not cause the stated issue.

PrepLogic Question: 10980-489

10. Review Question p. 134

Answers: F

Explanation A. Incorrect. RIPng is the name of the next version of RIP for IP version 6. RIPng stands for RIP "Next Generation," and is still ad istance vector routing protocol that uses a 15 hop metric.

Explanation B. Incorrect. RIPv2 is one of, if not the most, common routing types for IPv4 utilizing metric hop counts and distance vector metrics.

Explanation C. Incorrect. EIGRP is a Cisco Properitary protocol that utilizes link-state metrics to run exteremely efficient routes. Understanding of this protocol is vital to passing the CCNA, so it would behoove you to familiarize yourself with it intimately. Also note that EIGRP has a new version for IPv6 as well, quaintly named EIGRP for IPv6.

Explanation D. Incorrect. OSPFv3 is the new version of OSPF to replace OSPFv2 for IPv6. You can find out details of OSPF by referencing RFC 2740.

Explanation E. Incorrect. In order to make BGP-4 (Border Gateway Protocol Version 4) available to the network layer at IPv6, MP-BG4 includes a multiprotocol label switching system that negotiates with IPv6.

Explanation F. Correct. OSPFv1 never made it past the experimental stages when it was first created. Ironically, OSPFv1 used a system called "Lollipopping" that ultimately wasn't adopted.

PrepLogic Question: 10980-566

11. Review Question p. 134

Answers: B

Explanation A. Incorrect. This number is the maximum number of hosts available to a

class A address in IPv4.

Explanation B. Correct. IPv6 dedicates 16 bits of the 128 bit address to the subnet portion and 2^16 is equivalent to 65,536. These bits are found between the 49th and 64th portion of the address.

Explanation C. Incorrect. This is the possible number of subnetworks in a IPv4 class C address. Ironically, IPv4 can support MORE subnets than IPv6.

Explanation D. Incorrect. This is the maximum amount of hosts per subnet in IPv6. It's so many addresses that it can't practically be written down!

PrepLogic Question: 10980-567

12. Review Question p. 134

Answers: A

Explanation A. Correct. In order to comply with EUI-64 format, you have to split the original 48 bit mac address into two portions and then place the letters FFFE in between the mac address.

Explanation B. Incorrect. While this Is close to EUI-64, EUI-64 can only be achieved by insert the exact letters FFFE in between the address, not FFFF.

Explanation C. Incorrect. This is a complete IP address for IPv6. A mac address only contains 48 bits and an EUI-64 formatted interface ID only contains 64 bits, not 128.

Explanation D. Incorrect. FFFE is placed in between the last 64 bits of the address (24 bits in front, 24 bits behind), not at the beginning of the address.

PrepLogic Question: 10980-568

13. Review Question p. 135

Answers: A

Explanation A. Correct. This is a valid IPv6 address using the EUI-64 standard. Furthermore, the /64 falls into the appropriate 16 bits dedicated to the subnet.

Explanation B. Incorrect. This address is incorrect because the /24 subnet field falls into the site prefix rather than the subnet prefix. In order to get into the proper subnet, you would need to have a length of at least /48.

Explanation C. Incorrect. The Host Interface ID (4832:94FF:FE43:2394) is not placed in the beginning. Instead, the site prefix (3493:AAAA:0001) is placed before the Host

Interface ID (4832:94FF:FE43:2394).

Explanation D. Incorrect. This address is invalid because the site prefix is not a part of the interface ID. It is designated by your Internet Service Provider to be the leading portion of the IP address.

PrepLogic Question: 10980-569

14. Review Question p. 135

Answers: B

Explanation A. Incorrect. While it may seem unnatural, IPv6 is "stateless," and thus it doesn't remember IPv6 address requests, or "states."

Explanation B. Correct. In addition to its uses with stateless autoconfiguration, stateless DHCP also remembers information such as DNS server addresses.

Explanation C. Incorrect. A Site Prefix is determined by your internet service provider and is placed within the first 48 bits of your IP address. Stateless DHCP can't provide this on its own.

Explanation D. Incorrect. There is no such term as "Host Identifier Allocation."

PrepLogic Question: 10980-570

15. Review Question p. 135

Answers: A, C

Explanation A. Correct. This command displays all IPv6 routes for the particular interface and lists a great deal of important details concerning those routes, such as their routing protocol.

Explanation B. Incorrect. In order to assign an IPv6 address in Cisco IOS you must include the keyword ip**v6** , instead of just "ip address."

Explanation C. Correct. In order to interface a IPv6 port, you have to include the v6 addition to the standard ip interface command.

Explanation D. Incorrect. EUI-64 cannot be "shown." It can only be used as an added tag to an IPv6 address assignment.

PrepLogic Question: 10980-571

16. Review Question p. 136

Answers: A

Explanation A. Correct. The Internet Corporation for Assigned Network Numbers assigns one or more address to the RIR (Regional Internet Registry).

Explanation B. Incorrect. The RIR (Regional Internet Registry) divides out IP addresses handed to it by the ICANN into several different territories, including North and South America.

Explanation C. Incorrect. The IANA (Internet Assigned Numbers Authority) was the original owners of this responsibility, but it has been transferred to the ICANN.

Explanation D. Incorrect. The Institute of Electrical and Electronics Engineers is responsible for standardizations in the IT industry such as 802.11 and 802.3. They are not associated with IP address division.

PrepLogic Question: 10980-572

17. Review Question p. 136

Answers: A

Explanation A. Correct. The Internet Corporation for Assigned Network Numbers assigns one or more address to the RIR (Regional Internet Registry).

Explanation B. Incorrect. The RIR (Regional Internet Registry) divides out IP addresses handed to it by the ICANN into several different territories, including North and South America.

Explanation C. Incorrect. The IANA (Internet Assigned Numbers Authority) was the original owners of this responsibility, but it has been transferred to the ICANN.

Explanation D. Incorrect. The Institute of Electrical and Electronics Engineers is responsible for standardizations in the IT industry such as 802.11 and 802.3. They are not associated with IP address division.

PrepLogic Question: 10980-573

18. Review Question p. 136

Answers: A

Explanation A. Correct. The Point-to-Point Protocol includes a protocol field that identifies the packet inside the frame. This is not available in HDLC.

Explanation B. Incorrect. While HDLC is associated with PPP, it does not contain a

protocol field that can be used to differentiate the traffic regardless of which layers it passes through on a single link.

Explanation C. Incorrect. Cisco Discover Protocol is a protocol designed to detect the presence of neighboring networking equipment and alleviate work for the network administrator. It does not have a protocol field.

Explanation D. Incorrect. MD5 is a type of encryption; it is not a connection technology.

PrepLogic Question: 10980-577

19. Review Question p. 137

Answers: B

Explanation A. Incorrect. PPP does not, by itself, use magic numbers. Specifically, the LCP (Link Control Protocol) associated with PPP uses magic numbers as a metric.

Explanation B. Correct. LCP, or Link-Control-Protocol, uses magic numbers as a metric to prevent looping. If a router receives its own magic number instead of another, it knows that it is looping.

Explanation C. Incorrect. Cisco Discover Protocol is a protocol designed to detect the presence of neighboring networking equipment and alleviate work for the network administrator. It does not have a protocol field.

Explanation D. Incorrect. File Transfer Protocol normally operates on port 21 and is designed for transferring files from one location to another. It does not rely on magic numbers.

PrepLogic Question: 10980-578

20. Review Question p. 137

Answers: A

Explanation A. Correct. The Message Digest 5 (MD5) is a one way hash algorithm that is designed to secure authentication between points.

Explanation B. Incorrect. Password Authentication Protocol (PAP) uses clear text to send a password across a point to point link.

Explanation C. Incorrect. RSA is an algorithm for public key encryption, but it is not used on CHAP. Normally, it is used for e-commerce.

Explanation D. Incorrect. AES encryption is actually a block cipher that was adapted by the government as a encryption algorithm. It is not used for Point-to-Point communications.

PrepLogic Question: 10980-579

21. Review Question p. 137

Answers: A

Explanation A. Correct. The Message Digest 5 (MD5) is a one way hash algorithm that is designed to secure authentication between points.

Explanation B. Incorrect. Password Authentication Protocol (PAP) uses clear text to send a password across a point to point link.

Explanation C. Incorrect. RSA is an algorithm for public key encryption, but it is not used on CHAP. Normally, it is used for e-commerce.

Explanation D. Incorrect. AES encryption is actually a block cipher that was adapted by the government as a encryption algorithm. It is not used for Point-to-Point communications.

PrepLogic Question: 10980-580

22. Review Question p. 138

Answers: A

Explanation A. Correct. The Message Digest 5 (MD5) is a one way hash algorithm that is designed to secure authentication between points.

Explanation B. Incorrect. Password Authentication Protocol (PAP) uses clear text to send a password across a point to point link.

Explanation C. Incorrect. RSA is an algorithm for public key encryption, but it is not used on CHAP. Normally, it is used for e-commerce.

Explanation D. Incorrect. AES encryption is actually a block cipher that was adapted by the government as a encryption algorithm. It is not used for Point-to-Point communications.

PrepLogic Question: 10980-581

23. Review Question p. 138

Answers: A

Explanation A. Correct. A message of

Explanation B. Incorrect. From the information given, it is unlikely that there is a problem on the transport layer.

Explanation C. Incorrect. Network Layer Problems are usually indicated by mismatched IP addresses or subnets. In the exhibit, none of these types of problems are presented.

Explanation D. Incorrect. Application layer problems only occur when there is a problem occurring in an actual application.

PrepLogic Question: 10980-582

24. Review Question p. 138

Answers: D

Explanation A. Incorrect. The show version command is capable of outputting the version of IOS, the ROM bootstrap version, the version of the boot loader, and other information specific to your router software.

Explanation B. Incorrect. This command by itself accomplishes nothing. You cannot show just "serial 0/1" due to the many different aspects of it, such as its interfaces.

Explanation C. Incorrect. This command is very close, but not complete. First off, in order to show the serial controllers, we must add the key word <serial>. Second, you need to add a controller number (such as zero).

Explanation D. Correct. This command will produce output similar to the following:
Router1#show controllers serial 0 | i V.35
buffer size 1524 HD unit 0, **V.35 DTE cable**
Router1#

PrepLogic Question: 10980-583

25. Review Question p. 139

Answers: A

Explanation A. Correct. DLCI, or Data-link Connection Identifier, is a layer 2 protocol that identifies the particular PVC that it lies upon.

Explanation B. Incorrect. LMI (Local Management Interface) is the type of message passed between each router on a Frame Relay Network.

Explanation C. Incorrect. DCE stands for Data Communications Equipment and it is responsible for signal conversion, coding, line clocking, and may additionally be part of the DTE.

Explanation D. Incorrect. DTE or Data Terminal Equipment is normally a router and it converts user information into digital signals. DTE additionally communicates with DCEs.

PrepLogic Question: 10980-584

26. Review Question p. 139

Answers: A, B, C

Explanation A. Correct. Cisco LMI differs slightly than the other two variants of LMI (ITU and ANSI) in that it uses DLCI 1023.

Explanation B. Correct. Both ITU and the ANSI standard specify DLCI 0 as a default. It is one of three possible LMIs supported by Cisco.

Explanation C. Correct. Both ITU and the ANSI standard specify DLCI 0 as a default. It is one of three possible LMIs supported by Cisco.

Explanation D. Incorrect. 802.1d is a standard specified for layer 2 operations, such as STP and bridging.

Explanation E. Incorrect. Cisco Discover Protocol (CDP) is used to share information about other Cisco devices directly connected to each other. Most commonly, this is information including the version of IOS and the IP address of the device. CDP is used for On-Demand Routing, and is not an LMI protocol.

Explanation F. Incorrect. 802.1x is a standard that provides authentication for individual LAN ports. Normally, it is associated with wireless access points and Network Access Control.

PrepLogic Question: 10980-585

27. Review Question p. 139

Answers: B

Explanation A. Incorrect. DLCIs are designed to identify unique addresses in Frame Relay Networks and they are not provided by your ISP.

Explanation B. Correct. CIR stands for Committed Information Rate and it is a contract provided by your ISP based upon the amount of bandwidth that is paid for. Data rates

such as 56Kbps, T1, and DS3 are available.

Explanation C. Incorrect. LMI, or Line Management Interface, is responsible for passing messages between Frame Relay devices and is not provided by the ISP.

Explanation D. Incorrect. T1 is a typical WAN connection speeds. Specifically, it indicates 24 56Kbps links.

Explanation E. Incorrect. While CSU/DSUs are normally provided or leased through an ISP, they do not signify any sort of commitment on the behalf of the ISP.

PrepLogic Question: 10980-586

28. Review Question p. 140

Answers: A, B

Explanation A. Correct. FECN (Forward explicit congestion notification) is a header bit that is originally sent by the transmitting unit requesting that the destination unit slow down its requests for data.

Explanation B. Correct. In reverse to FECN, BECN (Backward explicit congestion notification) is a header bit sent by the destination asking the source to slow down its transmission.

Explanation C. Incorrect. LMI, or Line Management Interface, is responsible for passing messages between Frame Relay devices and is not associated with dropping data or controlling network congestion.

Explanation D. Incorrect. Discard eligible data is data that is at or above the range of transmitted rate that is committed by the Internet Service Provider. In example, if an ISP commits to 128Kbps and actually transmits at 160Kbps, 32Kbps is considered discard eligible.

Explanation E. Incorrect. NAT stands for Network Address Translation ans is used to convert private IP addresses into publicly accessible IP addreses via port translation. It is not a Frame Relay Technology.

PrepLogic Question: 10980-587

29. Review Question p. 140

Answers: A

Explanation A. Correct. The appropriate syntax for this command is frame-relay map ip [ip address] [dlci number]**broadcast** cisco]. The broadcast keyword is required for

mapping and the "cisco" keyword ensures the correct LMI type.

Explanation B. Incorrect. Without the "broadcast" aspect of the command, this command is invalid. The appropriate syntax for this command is "frame-relay map ip [ip address] [dlci number]**broadcast** cisco]." The broadcast keyword is required for mapping and the "cisco" keyword ensures the correct LMI type. Additionally, this command does not specify the keyword "ip," which designates the IP protocol for the IP address. Without it, IOS doesn't understand the random numbers of the IP address.

Explanation C. Incorrect. This command is missing several important elements, such as the broadcast, ip address, etc.

Explanation D. Incorrect. The appropriate syntax for this command is "frame-relay map ip [ip address] [dlci number]**broadcast** cisco]." The broadcast keyword is required for mapping and the "ietf" assigns an inappropriate LMI type instead of "cisco."

Explanation E. Incorrect. This command is nearly correct, but the broadcast type is "cisco," not ietf.

PrepLogic Question: 10980-588

30. Review Question p. 140

Answers: A, B

Explanation A. Correct. This command tells the router to set the particular interface to frame relay IETF encapsulation.

Explanation B. Correct. This command tells the router to set the particular interface to frame relay Cisco encapsulation.

Explanation C. Incorrect. While the words "Encap" and "Frame" can be used as shortening terms for the command assignment, dot1q is not an appropriate frame relay encapsulation type.

Explanation D. Incorrect. Encapsulation and LMI are two very different things. A command either needs to use the "frame-relay" command or the "frame-relay LMI-type" command.

Explanation E. Incorrect. Encapsulation and LMI are two very different things. A command either needs to use the "frame-relay" command or the "frame-relay LMI-type" command.

PrepLogic Question: 10980-589