Part 2

QUESTION 101
Which one of the access control list statements below will deny all telnet connections to subnet 10.10.1.0/24?

A. access-list 15 deny telnet any 10.10.1.0 0.0.0.255 eq 23
B. access-list 115 deny udp any 10.10.1.0 eq telnet
C. access-list 15 deny tcp 10.10.1.0 255.255.255.0 eq telnet
D. access-list 115 deny tcp any 10.10.1.0 0.0.0.255 eq 23
E. access-list 15 deny udp any 10.10.1.0 255.255.255.0 eq 23

Answer: D

Explanation:
Telnet uses port TCP port 23. Since we are using source and destination IP address information, an extended access list is required. Extended access lists are access lists in the 100-199 range.
Incorrect Answers:
A, C, E. These access lists are numbered 15. Standard access lists are numbered 1-99, and in this case an extended access lists is required.
B. This access list specifies UDP port 23, and TCP port 23 is the port used by telnet.

QUESTION 102
Which of the following answer choices are correct characteristics of named access list? (Select all that apply)

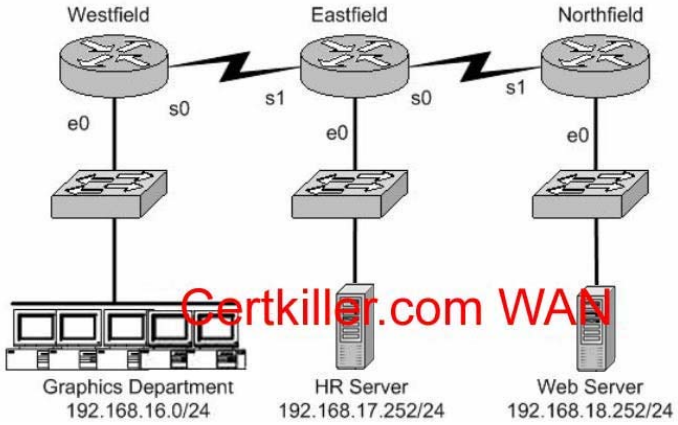
A. You can delete individual statements in a named access list
B. Named access lists require a numbered range from 1000 to 1099.
C. Named access lists must be specified as standard or extended.
D. You can use the ip access-list command to create named access lists.
E. You cannot delete individual statements in a named access list.
F. You can use the ip name-group command to apply named access lists.

Answer: A, C, D

Explanation:
Named access lists have two advantages over numbered access lists: the first one being that a name is easier to remember and the second being the fact that you can delete individual statements in a named access list. That makes A correct.
When you create a named access list you use the ip access-list command, and you have to specify whether it's standard or extended (since there are no numbers). So C and D are both correct. An example from the textbook is the command, "ip access-list extended Barney"
Incorrect Answers:
B. Named access lists don't require a number range from 1000 to 1099 so B is incorrect.

E. Answer choice E is not true.
F. This is incorrect because the command ip name-group is absolutely unnecessary.
Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Pages 443-445

QUESTION 103
The Certkiller WAN is displayed below:



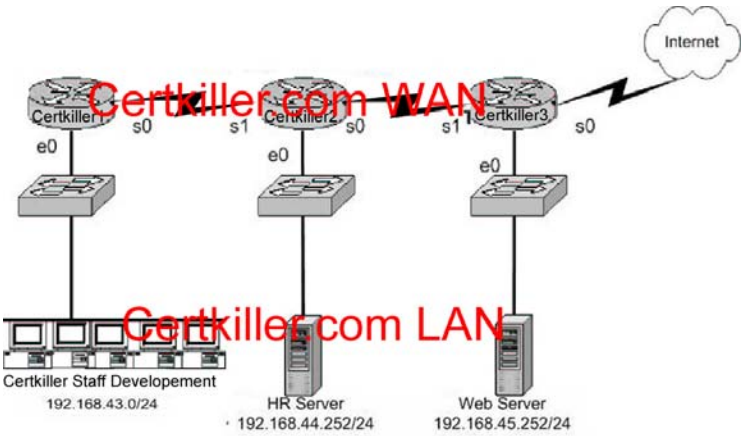
An access list needs to be implemented that will block users from the Graphics Department from Telnetting to the HR server; and this list is to be implemented on the Ethernet 0 interface of the Westfield router for the inbound direction. All other office communications should be allowed. Which of the following answer choices would accomplish this?

A. deny tcp 192.168.16.0 0.0.0.255 192.168.17.252 0.0.0.0 eq 23
permit ip any any
B. permit ip any any
deny tcp 192.168.16.0 0.0.0.255 192.172.252 0.0.0.0 eq 23
C. permit ip any any
deny tcp 192.168.17.252 0.0.0.0 192.168.0 0.0.0.255 eq 23
D. deny tcp 192.168.18.262 0.0.0.0 192.168.16.0 0.0.0.255 eq 23
permit ip any any

Answer: A

Explanation:
The syntax for an access list is the source address first then the destination address. In this case the source address is 192.168.16.0/24 and the destination address 192.168.17.252. The "permit ip any any" statement is required because of the implicit deny all at the end of every access list. Generally speaking, all access lists require at least one permit statement, otherwise all traffic will be denied through the interface.

QUESTION 104
The Certkiller WAN is shown below:



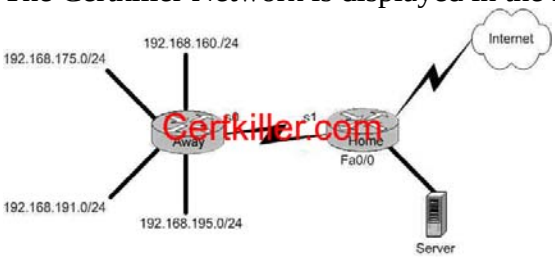
Your goal is to allow FTP access to the HR server from the internet, while blocking out all other traffic. Which of the access list configurations below will fulfill your goal? (Select two answer choices)

A. Access-list 101 Permit tcp any 192.168.44.252 0.0.0.0 eq 21
B. Access-list 101 Permit tcp any 192.168.44.252 0.0.0.0 eq 20
C. Access-list 101 Permit tcp 192.168.44.252 0.0.0.0 any eq 20
D. Access-list 101 Permit tcp 192.168.44.252 0.0.0.0 any eq 21
E. Access-list 101 Deny tcp any 192.168.44.255 0.0.0.0 gt 21
F. Access-list 101 Permit tcp 192.168.44.255 0.0.0.0 any gt 21

Answer: A, B

Explanation:
FTP uses two ports: TCP port 20 and TCP port 21. A and B allows all hosts to access the HR server through ftp and the implicit deny any rule will block everything else.
Incorrect Answers:
C, D. These two choices have the source and destination networks switched around. These two lists combined together will permit all FTP traffic sourced from the HR server and destined to the Internet. In this case, however, we wish to have an access list permitting FTP sourced from the Internet and destined to the HR server.
E, F. The gt denotes "greater than", meaning that all TCP packets greater than port 21 will match the access list. This is not the desired result for this question.

QUESTION 105
The Certkiller Network is displayed in the flowing diagram:



You need to place an access list on the Fa0 interface of the Home router; that will deny access to all hosts that lie within the range 192.168.160.0-192.168.191.0. Hosts

in the 192.168.195.0 network should be granted full access. Which one of the following answer choices fulfills your needs?

A. access-list 1 deny 192.168.163.0 0.0.0.255
B. access-list 1 deny 192.168.128.0 0.0.127.255
C. access-list 1 deny 192.168.0.0 0.0.255.255
D. access-list 1 deny 192.168.0.0 0.0.31.255

Answer: D

Explanation:
This question is really more of an inverse subnet masking questions than a security question. Your goal is to block access to the host range 192.168.160.0- 192.168.191.0 while allowing everything else (including hosts from 192.168.195.0) full access. Answer choice D is correct because the address and mask are numbered correctly.

QUESTION 106
Which of the following access list statements would deny traffic from a specific host?

A. Router(config)# access-list 1 deny 172.31.212.74 any
B. Router(config)# access-list 1 deny 10.6.111.48 host
C. Router(config)# access-list 1 deny 172.16.4.13 0.0.0.0
D. Router(config)# access-list 1 deny 192.168.14.132 255.255.255.0
E. Router(config)# access-list 1 deny 192.168.166.127 255.255.255.255

Answer: C

Explanation:
Only choice C is the correct syntax for a specific host. The access list is denying all traffic from the host with IP address 172.16.4.13. It is important to note that in an access list, the subnet mask is the inverse. Normally, a host subnet mask is 255.255.255.255, but in an access list it is 0.0.0.0.
Incorrect Answers:

A. The syntax is incorrect here, as there is no subnet mask at all specified.
B. This would be an acceptable choice, if the "host" keyword were placed in front of the IP address, not after.
D. The subnet mask here includes the entire class C network here, not an individual host.
E. In an access list, the subnet mask is an inverse mask. The mask specified here would be equivalent to all 0's in a subnet mask, meaning that the don't care bits apply to the entire address.

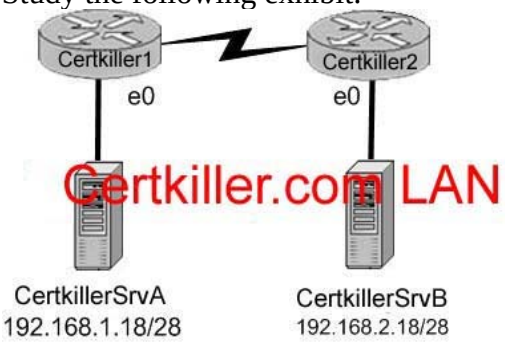
QUESTION 107
Which IP address and wildcard mask would you use in your ACL to block all the hosts in the subnet 192.168.16.43/28?

A. 192.168.16.32 0.0.0.16
B. 192.168.16.43 0.0.0.212
C. 192.168.16.0 0.0.0.15
D. 192.168.16.32 0.0.0.15
E. 192.168.16.0 0.0.0.31
F. 192.168.16.16 0.0.0.31

Answer: D

Explanation:
Since there are 28 bits in the subnet mask, we can find the inverse mask by reversing the 1's and 0's.
/28 = 11111111.11111111.11111111.11110000
/28 Inverse = 00000000.00000000.00000000.00001111 = 192.168.16.32/15
The address 192.168.16.32 and the wildcard mask 0.0.0.15 is the correct answer as shown. This will match all addresses in the 192.168.16.32-192.168.16.47 range.

QUESTION 108
Study the following exhibit:



In order to control access on the Certkiller network, the following access list is created:
access-list 101 permit tcp 192.168.1.16 0.0.0.15 192.168.2 16 0.0.0.15 eq 23
What would happen if you applied the following ACL to any one of the Certkiller routers in the above exhibit? On what interface and what direction should you apply it? Once applied, what will this access list accomplish? (Select all valid answer choices)

A. Telnet traffic from 192.168.1.16 0.0.0.15 to 168.2.16 0.0.0.15 is allowed.
B. SMTP traffic from 192.168.1.16 0.0.0.15 to 168.2.16 0.0.0.15 is allowed.
C. The ACL is configured to allow traffic from one specific host to another.
D. The ACL should be applied inbound to the e0 interface of Router Certkiller 1.
E. The ACL should be applied outbound to the e0 interface of Router Certkiller 1.

Answer: A, D

Explanation:
This is a two part question. The first part is the type of traffic that will match this specific access list entry. Since telnet uses TCP port 23, choice B is correct.
Next, to determine which interface and which direction to apply the access list, we see that the source of the traffic is the 192.168.1.16/28 network, while the destination is the 192.168.2.16/28 network. Therefore, only choice D makes sense.
Incorrect Answers:
B. SMTP uses TCP port 25.
C. There is a /15 network mask for both the source and destination in this access list, which translates to a /28 network.
E. This would not be useful if applied to the outbound, as no traffic would match then. Note that if this answer had stated that the access list be placed on the outbound serial (WAN) interface, then this would have been an acceptable choice.

QUESTION 109
A standard IP access list is applied to an Ethernet interface of a router. What does this standard access list filter on?

A. The source and destination addresses
B. The destination port number
C. The destination address
D. The source address
E. All of the above

Answer: D

Explanation:
The standard IP access-list will only filter on the source address contained in the packet. Extended access lists can filter on the source and destination address and port information.

QUESTION 110
The Certkiller network is subnetted using 29 bits for the subnet mask. Which wild card mask should be used to configure an extended access list to permit or deny access to an entire subnetwork?

A. 255.255.255.224
B. 255.255.255.248
C. 0.0.0.224
D. 0.0.0.8
E. 0.0.0.7
F. 0.0.0.3

Answer: E

Explanation:

Wild card masks start with 0.0.0.x. The subnet used in this example is 29 bits, or subnet mask 255.255.255.248. Therefore, we are left with 7 hosts in the final octet (255-248) so the answer is 0.0.0.7.

QUESTION 111
The Certkiller Corporation consists of the head office in New York with its regional offices in: Chicago, Detroit, Philadelphia, Toronto, and Atlanta. These offices need to be connected in a WAN, and Certkiller wishes to do this via a hub and spoke arrangement that will utilize packet-switched technology.
Which one of the WAN technologies below would be the best choice for Certkiller ?

A. ISDN
B. Wireless
C. Frame Relay
D. T1 leased line
E. ATM
F. VPN

Answer: C

Explanation:
To provide efficient IP multicast support in Frame Relay networks, the underlying Frame Relay network architecture should be designed in a "hub and spoke" topology (hierarchical topology). The hub and spoke topology is also named a "star" topology, because the central hub acts as the center of a star and the connections to the remote sites act as light radiating from the star. In the hub and spoke topology, each remote router may also act as a hub and each connection to another remote site may act as a spoke (in a hierarchical fashion). In a multiple hub topology, the load associated with sending broadcast and multicast data can be distributed across multiple central hub sites rather than concentrated at a single central site. Thus, even though data may require extra hops to get to a particular location, data delivery is more efficient in a hub and spoke network than in other network topologies. This design also provides a scalable, hierarchical network that greatly reduces the resource requirements of the central router, allowing the Frame Relay network to utilize the advantages of IP multicast applications.
Incorrect Answers:
A, B, D. These networks are typically not Hub and spoke, and do not operate via packet switching.
E. ATM is a somewhat viable choice, as they work in a similar fashion to frame relay. However, ATM would be considering a cell switching technology, not a packet switching technology.
F. VPN's work through the use of encryption, tunnels, or MPLS.

QUESTION 112
You are a systems administrator of an HR company in Dallas. You want to connect your company's head office with a branch office in Detroit. To do this, you want to use two data link layer encapsulations: one exclusively for data and the other

exclusively for signaling. Which one of the following WAN services would best suit your needs?

A. ISDN
B. ATM
C. FDDI
D. ATX
E. Frame Relay

Answer: A

Explanation:
ISDN Q.931 messages are used for signaling.
ISDN B channels are used to transport data.
Reference:
CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 327

QUESTION 113
A brand new network application is required for the Acme Company, and they are considering the use of a connectionless service. What are the characteristics of a connectionless service? (Select two answer choices)

A. It uses a Reliable transport mechanism.
B. It uses a Non-reliable transport mechanism
C. It is less bandwidth-intensive than connection oriented services
D. it uses handshaking

Answer: B, C

Explanation:
The Transport layer is a good example of how both a connectionless and connection oriented service works.
UDP is a connectionless service that is considered unreliable, but it uses less bandwidth then a connection oriented service.
TCP is a connection oriented service and is considered reliable because it uses handshaking to create the service and acknowledgments.
Incorrect Answers:
A, D. These are the characteristics of a connection oriented service, such as TCP.

QUESTION 114
You are a network administrator of a small company that's experiencing explosive growth. Within the next quarter the company is going to open up seven more regional offices with the potential of more in the future. These regional offices send and receive mission critical traffic, and will need to be connected to the head office around the clock. However, your head office doesn't have any additional free ports

available on the router. Which of the following technologies would be the best choice for this new WAN?

A. Frame Relay
B. Broadband cable
C. ISDN-BRI
D. ADSL
E. Dedicated PPP/HDLC links
F. ISDN

Answer: A

Explanation:
Frame Relay is a dedicated service that would be acceptable for a mission critical WAN application, and multiple locations can connect to a single router port. The use of frame relay PVCs can connect all the locations together, while using only one physical port.
Incorrect Answers:
B, D. While DSL and Cable Modem are acceptable for home use, they have not yet achieved the availability and reliability associated with dedicated WAN technologies such as ATM, Frame Relay, and Point to Point links.
C, F. ISDN is usage based, and would it would be cost prohibitive to keep the ISDN links up at all times.
E. Dedicated leased lines would require a separate router port for each link.

QUESTION 115
The Certkiller WAN is displayed in the diagram below:

Which dynamic routing protocol should be recommended for the Certkiller network shown in the graphic above? (Choose three)

A. OSPF
B. RIP version 1
C. RIP version 2
D. IGRP
E. EIGRP

Answer: A, C, E

Explanation:
In this network, the 192.168.23.0/24 network is subnetted into two other networks. Because this class C network is being subnetted, a routing protocol that supports variable

length subnet mask information is required. OSPF, EIGRP, and RIP version 2 all support VLSM information to be shared across the network.
Incorrect Answers:
B, D. RIP version 1 and IGRP do not support VLSM, which will be required in order for this network to have the two LANs both be reachable.

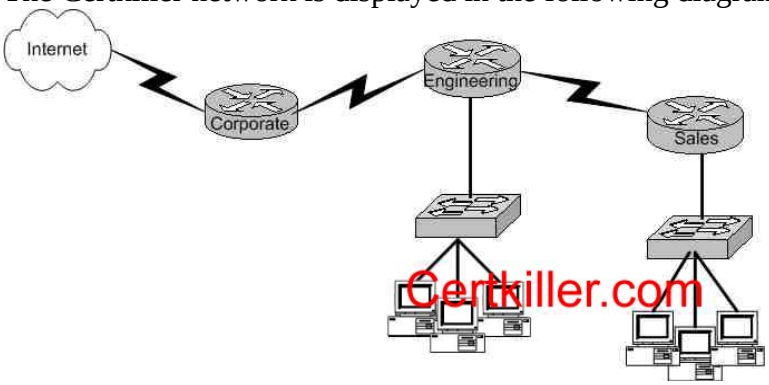
QUESTION 116
The Certkiller network is implementing dialup services for their remote employees. Certkiller uses several different Layer 3 protocols on the network. Authentication of the users connecting to the network is required for security. Additionally, some employees will be dialing long distance and will need callback support.
Which protocol is the best choice for these remote access services?

A. 802.1
B. Frame relay
C. HDLC
D. PPP
E. SLIP
F. PAP

Answer: D

Explanation:
PPP is the Point to Point Protocol, and is used in the majority of dial-up connections. PPP includes support for numerous features, including caller ID check, PPP callback, and security support. For security, either CHAP or PAP can be used, although CHAP is normally used as it is more secure. PPP is a layer 2 protocol that can support any layer 3 protocols.

QUESTION 117
The Certkiller network is displayed in the following diagram:



A network administrator would like to implement NAT in the network shown in the graphic to allow inside hosts to use a private addressing scheme.
Where should NAT be configured?

A. Corporate router

B. Engineering router
C. Sales router
D. All routes
E. All routes and switches

Answer: A

Explanation:
Network Address Translation (NAT) can be used to hide the private IP addressing scheme of the entire network from the Internet. To do this, NAT needs to only be configured on the router that resides between the Internet and the rest of the private internal network. In this case, it needs to only be implemented on the Corporate router.

QUESTION 118
Certkiller has 25 computers and decides to connect the network to the Internet. Certkiller would like for all of the computers to have access to the Internet at the same time, but Certkiller only has four usable publicly routable IP addresses. What should be configured on the router so that all computers can connect to the Internet simultaneously?

A. Static NAT
B. Global NAT
C. Dynamic NAT
D. Static NAT with ACLs
E. Dynamic NAT with overload

Answer: E

Explanation:
NAT overload, also called many to one NAT or Port Address Translation (PAT) allows for many IP hosts to share a single IP address when connecting to the outside. In this case, the use of dynamic NAT with overloading will allow for the 25 hosts to use an IP address from the NAT pool, which will contain the 4 public IP addresses.

QUESTION 119
A Cisco router has been configured with the following command:
IP nat pool nat-test 192.168.6.10 192.168.6.20 netmask 255.255.255.0
This is an example of what type of NAT?

A. Static NAT
B. Dynamic NAT
C. Dynamic NAT with overload
D. Port Address Translation
E. None of the above

Answer: B

Explanation:
The configuration statement in this example is used to define a pool of IP addresses to be used for dynamic NAT translations.
Incorrect Answers:

A. Static NAT is used for 1 to 1 translation entries, using the "static" configuration keyword. In this example a range of addresses are being defined for the use in a pool.
C, D. With NAT overload, also known as Port Address Translation (PAT), the keyword "overload" is added at the end of the configuration statement.

QUESTION 120
You are a technician at Certkiller . Your newly appointed Certkiller trainee is setting up a new frame relay connection to a remote branch and wants to know what the valid options for frame relay LMI types are.
What would your reply be? (Choose all that apply.)

A. EIA/TIA
B. Q.932
C. Q.933 A
D. IEEE
E. IETF
F. Cisco
G. ANSI

Answer: C, F, G

Explanation:
The following describe the various frame relay LMI options:

Name	Document	IOS LMI-Type
• Cisco	Proprietary	cisco
• ANSI	T1.617 Annex D	ansi
• ITU	Q.933. Annex A	q.933a

Reference:
CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 382

QUESTION 121
Which one of the following parameters is the very first thing that needs to be configured as part of the IGRP routing process?

A. The wild card mask
B. The IP address
C. The IP address mask
D. The metric weights
E. The Autonomous System number

Answer: E

Explanation:
You configure IGRP just like RIP, except that the router igrp command has an additional parameter - the autonomous system (AS) number. The term autonomous system refers to a network that is within the control of a single company or organization. The term AS number refers to a number assigned to a single company or organization when it registers its connection to the Internet. However, for IGRP, you do not need a registered AS number. All that is needed for IGRP to work is for all the routers to use the same AS number.
Example configuration:
Router EIGRP 1
Network 10.0.0.0
In this example, 1 is the AS number chose for EIGRP process 1.

QUESTION 122
Which of the following answer choices is an additional parameter which must be supplied before the IGRP routing process can initialize?

A. Connected subnet numbers
B. Register administrative subnet masks
C. IP address mask
D. Autonomous system number
E. Metric weights

Answer: D

Explanation:
You configure IGRP just like RIP, except that the router igrp command has an additional parameter - the autonomous system (AS) number. The term autonomous system refers to a network that is within the control of a single company or organization. The term AS number refers to a number assigned to a single company or organization when it registers its connection to the Internet. However, for IGRP, you do not need a registered AS number. All that is needed for IGRP to work is for all the routers to use the same AS number.
Reference:
CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 165

QUESTION 123
What parameters must you specify when you enable EIGRP routing?

A. The broadcast address, and AS number
B. The network number and AS number
C. EIGRP routing, network number and passive interface

D. EIGRP routing, network number, and AS

Answer: D

Explanation:
To enable EIGRP on your router, you must specify EIGRP routing, the network number, and the AS system number.
Example:
Router EIGRP 33
Network 10.0.0.0
In the case above the AS process number is 33.

QUESTION 124
Which of the following technologies can be used in distance vector routing protocols to prevent routing loops? (Select all valid answer choices)

A. Spanning Tree Protocol
B. Shortest path first tree
C. Link-state advertisements (LSA)
D. Hold-down timers
E. Split horizon
F. VRRP

Answer: D, E

Explanation:
Distance vector routing protocols use the rule of split horizons and hold down timers to prevent routing loops after a topology change.
• Split horizon - the routing protocol advertises routes out an interface only if they were not learned from updates entering that interface.
• Hold-down timer - After finding out that a router to a subnet has failed, a router waits a certain period of time before believing any other routing information about that subnet.
Incorrect Answers:

A. STP is used in bridged LANs to prevent bridging loops. It is a means for preventing loops at layer two, not layer 3.
B, C. These are two of the mechanisms of Link State Protocols, not distance vector protocols.
F. VRRP is the Virtual Router Redundancy Protocol, which is a standards based method similar to Cisco's proprietary HSRP. Neither of these two methods deal with distance vector routing protocols.
Reference:
CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 154

QUESTION 125
What is the reason for configuring a passive interface on a router? (Select only one answer)

A. Allows interfaces to share common IP addresses.
B. Allows an interface to remain up without the aid of keepalives.
C. Allows a router to send routing and not receive updates via that interface.
D. Allows a routing protocol to forward updates that is missing its IP address.
E. Allows a router to receive routing updates on an interface but not send updates via that interface.

Answer: E

Explanation:
The passive-interface command is used to control the advertisement of routing information. The command enables the suppression of routing updates over some interfaces while allowing updates to be exchanged normally over other interfaces. For any interface specified as passive, no routing information will be sent. Routing information received on that interface will be accepted and processed by the router. This is often useful for DDR links such as ISDN.

QUESTION 126
The Certkiller WAN is displayed in the diagram below:

You have just added the router Certkiller 1 to your network and wish it to have full connectivity with routers Certkiller 2 and Certkiller 3. Which of the following configurations would suit Certkiller 1 most appropriately?

A. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0
Certkiller 1(config-router)# network 172.16.0.0
Certkiller 1(config-router)# network 192.168.1.0
B. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0
Certkiller 1(config-router)# network 192.168.1.0
C. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0
Certkiller 1(config-router)# network 172.16.0.0
D. Certkiller 1(config)# router rip
Certkiller 1(config-router)# network 10.0.0.0

Answer: C

Explanation: When configuring RIP you configure only the directly connected networks that are to be advertised via the RIP routing process are to be configured.
Incorrect Answers:

A. This choice implies that when configuring rip on a router every possible network in the entire system should be configured. This is not the case.
B. Certkiller 1 requires the 172.16.0.0 network to be configured, not the 192.168.1.0 network.
D. If the 172.16.0.0 network is omitted, then the other routers in the network will not be able to reach the LAN users of Certkiller 1 via RIP.
Reference:
CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) page 167

QUESTION 127
A new point to point circuit is installed, connecting Certkiller 1 to Certkiller 2 as shown below:

Users at Certkiller 1 wish to utilize the existing Internet connection at Certkiller 2. To do this, a gateway of last resort needs to be set. What is the command to do this?

A. Certkiller 1(config)# ip route 172.16.4.2 0.0.0.0 0.0.0.0
B. Certkiller 1(config)# ip route 0.0.0.0 0.0.0.0 S1
C. Certkiller 1(config)# ip route 172.16.4.1 0.0.0.0 0.0.0.0
D. Certkiller 1(config)# ip route S0 0.0.0.0 0.0.0.0
E. Certkiller 1(config)# ip route 0.0.0.0 0.0.0.0 172.16.4.2

Answer: E

Explanation:
Setting the default gateway is done by issuing either the "ip route 0.0.0.0 0.0.0.0 serial 0" or the "ip route 0.0.0.0 0.0.0.0 172.16.4.2" command. The following excerpt provides some additional information:
Incorrect Answers:
A, C. The IP address of the next hop needs to go after the route, not before.
B. This would have been acceptable if the interface specified was S0, not S1.
C. The interface used to forward packets for the route should be placed after the route, not before.

QUESTION 128
You are configuring the serial interface of your Cisco router; which of the following

are valid encapsulation types you can use?
(Select all that apply.)

A. Token Ring
B. Ethernet
C. HDLC
D. PPP
E. Frame Relay
F. CHAP

Answer: C, D, E

Explanation:
HDLC, Frame Relay, and PPP are the most common encapsulation types set for serial interfaces in a Cisco router. HDLC is often used in point to point circuits with Cisco routers on each end. HDLC is Cisco proprietary and offers an alternative to PPP.
Incorrect Answers:
A, B. Token Ring and Ethernet aren't encapsulation types used on serial interfaces; they are types of LAN networks.
F. CHAP is the Challenge Authentication Protocol. It is used for authentication on PPP links.

QUESTION 129
Which of the following OSPF commands, when used together, will put the network 192.168.10.0/24 into OSPF area 0? (Select all valid responses)

A. Router(config-router)# network 192.168.10.0 0.0.0.255 0
B. Router(config-router)# network 192.168.10.0 0.0.0.255 area 0
C. Router(config-router)# network 192.168.10.0 255.255.255.0 area 0
D. Router(config)# router ospf 0
E. Router(config)# router ospf 1

Answer: B, E

Explanation:
B. The network command specifies the IP address (192.168.10.0) followed by the wildcard mask (not the subnet mask), and the area that is to be associated with the OSPF address range (in this case, area 0). The wildcard mask indicates in binary how much of the IP address much be matched with 0s indicating that the bits must match and 1 indicating that they may vary. Thus 0.0.0.255 or 00000000.00000000.00000000.11111111 indicates that any bit in the last octet can vary while all bits in the first 3 octets must match the network address (in other words, 192.168.10.xx)
E. The router ospf command enables OSPF routing and enters router configuration mode. This command takes a <process-id> argument which identifies the OSPF process.
Incorrect Answers:

A. This command is correct, except for the fact that the keyword "area" is missing and needs to be inserted.
C. For OSPF, the inverse mask must be used, not the regular subnet mask.
D. OSPF can not use process ID 0, and the goal of this question is to put a specific network in area 0, not the entire routing process.

QUESTION 130
Which of the following routing protocols are less likely prone routing loops and network reachability problems when used in discontiguous networks? (Select all valid responses)

A. IGRP
B. CDP
C. OSPF
D. RIP v1
E. RIP v2
F. EIGRP

Answer: C, E, F

Explanation: Only OSPF, RIP version 2, and EIGRP carry VLSM information. In a discontiguous network, subnet masks of different lengths can be used, but this information will need to be propagated via the routing protocol if all networks are to be reached.
Incorrect Answers:
A, D. With RIP version one and IGRP, discontiguous networks can be problematic, as VLSM is not supported.
B. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches, and it is not a routing protocol.

QUESTION 131
Which one of the following statements best explains the split horizon rule?

A. Only routers can split boundaries (horizons) between networks in separate AS numbers.
B. Each AS must keep routing tables converged to prevent dead routes from being advertised across boundaries.
C. Once a route is received on an interface, advertise that route as unreachable back out the same interface.
D. Information about a route should never be sent back in the direction from which the original update came.

Answer: D

Explanation:
The split horizon rule states:
• Never advertise a route out of the interface through which you learned it.
For instance, in Figure 4a below, if Router One is connected to Routers Two and Three through a single multipoint interface (such as Frame Relay), and Router One learned about Network A from Router Two, it will not advertise the route to Network A back out the same interface to Router Three. Router one assumes that Router Three would learn about Network A directly from Router Two.

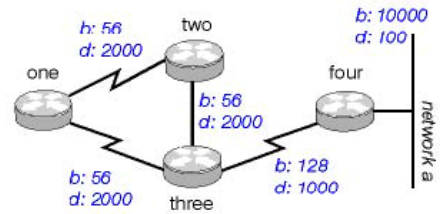


Figure 4a

Incorrect Answers
A: There is no such requirement
B: Distance vector protocols updates routing table at regular intervals instead of Topology changes
C: This is the definition of the poison reverse rule, not the split horizon rule.
Reference: Wendell Odom. CISCO CCNA Certification Guide (2000 Press) Page 369.

QUESTION 132
In EIGRP, what kind of route information is stored in the RAM of the router and maintained by way of hello packets and update packets? (Select two answer choices)

A. Neighbor Table
B. SRF Table
C. RTP Table
D. Topology Table
E. Query Table
F. Dual Table

Answer: A, D

Explanation:
In EIGRP the only two tables of significance are the neighbor table and the topology table.
Incorrect Answers:
B, C, E, F. These are not tables used by EIGRP.
Reference: Sybex CCNA Study Guide edition 4, Page 271

QUESTION 133
What is the maximum number of hops OSPF allows before it deems a network unreachable?

A. 15

B. 16
C. 99
D. 255
E. Unlimited

Answer: E

Explanation:
OSPF is a link state protocol. Link state protocols do not use hops to mark networks as unreachable. Instead OSPF implements a steady state operation to its adjacent neighbors by sending and receiving small Hello packets periodically. When an OSPF router does not receive a Hello packet for a specified time period, it assumes that the neighbor is down. The router then runs the SPF algorithm to calculate new routes. Hops counts are not used.

QUESTION 134
On the topic of the OSPF hello protocol; which of the statements below are true? (Select two answer choices)

A. The OSPF Hello protocol provides dynamic neighbor discovery.
B. The OSPF Hello protocol detects unreachable neighbors in 90 second intervals.
C. The OSPF Hello protocol maintains neighbor relationships.
D. The OSPF Hello protocol negotiates the correct parameters between neighboring interfaces.
E. The OSPF Hello protocol uses timers to elect the router with the fastest links at the designated router.
F. The OSPF Hello protocol broadcast hello packets throughout the internetwork to discover all routers that are running OSPF.

Answer: A, C

Explanation:
OSPF contains a protocol (the Hello protocol) that is used to establish and maintain relationships between neighboring nodes. These relationships are called adjacencies. Adjacencies are the basis for the exchange of routing data in OSPF.
It is through the use of this protocol, and packet type, that an OSPF node discovers the other OSPF nodes in its area. Its name is intentionally significant; the Hello protocol establishes communications between potential neighboring routers. The Hello protocol uses a special subpacket structure that is appended to the standard 24-octet OSPF header. Together, these structures form a hello packet.
All routers in an OSPF network must adhere to certain conventions that must be uniform throughout the network. These conventions include the following:
• The network mask
• The interval at which hello packets will be broadcast (the hello interval)
• The amount of time that must elapse before a non responding router will be declared dead (that is, the router dead interval) by the other routers in the network

• All routers in an OSPF network must agree to use the same value for each of these parameters; otherwise, the network might not operate properly. These parameters are exchanged using hello packets. Together, they comprise the basis for neighborly communications. They ensure that neighbor relationships (known as adjacencies) are not formed between routers in different subnets and that all members of the network agree on how frequently to stay in contact with each other.
The hello packet also includes a listing of other routers (using their unique router IDs) that the source router has recently been in contact with. This field, the Neighbor field, facilitates the neighbor discovery process. The hello packet also contains several other fields such as Designated Router and Backup Designated Router. These fields are useful in maintaining adjacencies and support the operation of the OSPF network in both periods of stability and convergence.

QUESTION 135
A routing table contains static, RIP, and IGRP routes destined to the same network with each route set to its default administrative distance. Which route will be the preferred route?

A. The RIP route
B. The static route
C. The IGRP route
D. All three will load balance.

Answer: B

Explanation:
To decide which route to use, IOS uses a concept called Administrative Distance. The administrative distance is a number that denotes how believable an entire routing protocol is on a single router. The lower the number, the better, or more believable the routing protocol.

Route Type	**Administrative Distance**
• Static	1
• IGRP	100
• RIP	120

Reference:
CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 177

QUESTION 136
You are an administrator and you've just configured OSPF on a router with both physical and logical interfaces. Which of the following factors determine the router ID?

A. The lowest IP address of any interface.
B. The highest IP address of any interface.

C. The highest IP address of any logical interface.
D. The middle IP address of any logical interface.
E. The lowest IP address of any physical interface.
F. The highest IP address of any physical interface.
G. The lowest IP address of any logical interface.

Answer: B

Explanation:
The OSPF topology database includes information about routers and the subnets, or links, to which they are attached. To identify the routers in the neighbor table's topology database, OSPF uses a router ID (RID) for each router. A router's OSPF RID is that router's highest IP address on any interface when OSPF starts running.
Note: The OSPF router ID is a 32-bit IP address selected at the beginning of the OSPF process. The highest IP address configured on the router is the router ID. If a loopback address is configured, then it is the router ID. In case of multiple loopback addresses, the highest loopback address is the router ID. Once the router ID is elected it doesn't change unless the IP address is removed or OSPF restarts.
Reference: CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 208.

QUESTION 137
Under which circumstance, ie network type, would an OSPF router establish a neighbor adjacency, even though the DR/BDR election process was not performed?

A. Point-to-point
B. Broadcast multicast
C. Nonbroadcast multicast
D. Backbone area 0
E. Virtual Link

Answer: A

Explanation: If there's a point to point connection, there's no need for a designated router or a backup designated router election. By definition, only two routers exist on a point to point connection.
Incorrect Answers:
B, C. In these network types, the potential for more than two routers on the segment exist, so the Designated Router and Backup Designated Routers are elected.
D. This is not a network type. Area 0 is the backbone of any OSPF network.
E. Virtual Links are used in OSPF to link an area to area 0. Every area must be directly connected to area 0 at some point, and virtual links are used for areas that do not meet this requirement.

QUESTION 138
On the assumption that every OSPF router in a particular area is configured with

the same priority value; which secondary value would be used as a router ID when there is no loopback interface set?

A. The IP address of the first Fast Ethernet interface.
B. The IP address of the console management interface.
C. The highest IP address among its active interfaces.
D. The lowest IP address among its active interfaces.
E. There will be no router ID until a loopback interface is configured.

Answer: C

Explanation: Ordinarily the loopback interface would be selected as the router ID. In the event that no loopback interface is configured, the router ID will be the first active interface that comes up on the router. If that particular interface has more then one IP address, then the highest address will be selected as the Router ID.
Incorrect Answers:
B. Putting an IP address on the management console is a concept that is configured on a Catalyst switch, not a router.

QUESTION 139
The statements below compare and contrast link state and distance vector routing protocols. Which of these are true? (Choose two).

A. Distance vector protocols send the entire routing table to directly connected neighbors.
B. Distance vector protocols are responsible for sending updates to all networks listed in the routing table.
C. Link state protocols are responsible for sending the entire routing table to the whole network.
D. Link state protocols send updates regarding their own links status to all other routers on the network.

Answer: A D

Explanation:
Distance Vector Protocols:
Distance Vector Protocols advertise routing information by sending messages, called routing updates, out the interfaces on a router. These updates contain a series of entries, with each entry representing a subnet and a metric.
Link-State Protocols:
Send partial updates when link status changes and floods full routing table updates every 30 minutes. The flooding, however, does not happen all at once, so the overhead is minimal.
Incorrect Answers:
B. Distance Vector protocols only send information to adjacent neighbors.
C. Only partial routing updates and sent to neighbors on a regular basis. The entire table

is not sent to all neighbors. This would obviously create far too much overhead traffic.
Reference:
CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 413 + 419

QUESTION 140
What are the characteristic of link state routing protocols? (Choose all that apply.)

A. The exchange of advertisement is triggered by a change in the network.
B. All routers exchange routing tables with each other iIn a multipoint network.
C. Packets are routed based upon the shortest path to the destination.
D. Paths are chosen depending on the cost efficiency factor.
E. Every router in an OSPF area is capable of representing the entire network topology.
F. Only the designated router in an OSPF area can represent the entire network topology.

Answer: A C E

Explanation:
Open Shortest Path First
• Each router discovers its neighbors on each interface. The list of neighbors is kept in a neighbor table.
• Each router uses a reliable protocol to exchange topology information with its neighbors.
• Each router places the learned topology information into its topology database.
• Each router runs the SPF algorithm against its own topology database.
• Each router runs the SPF algorithm against its own topology database to calculate the best routes to each subnet in the database.
• Each router places the best roué to each subnet into the IP routing table.
The following list points out some of the key features of OSPF:
• Converges very quickly - from the point of recognizing a failure, it often can converge in less than 10 seconds.
• Supports VLSM.
• Uses short Hello messages on a short regular interval, with the absence of hello messages indicating that a neighbor is no longer reachable.
• Sends partial updates when link status changes, and floods full updates every 30 minutes. The flooding, however, does not happened all at once, so the overhead s minimal.
• Uses cost for the metric.
Reference:
CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 417

QUESTION 141
On the topic of OSPF routing; which of the following are the traits of an OSPF

area? (Select all that apply)

A. Each OSPF area requires a loopback interface to be configured.
B. Areas may be assigned any number from 0 to 65535.
C. Area 0 is called the backbone area.
D. Hierarchical OSPF networks do not require multiple areas.
E. Multiple OSPF areas must connect to area 0.
F. Single area OSPF networks must be configured in area 1.

Answer: C, E

Explanation: OPSF uses areas in a hierarchical fashion, and the backbone area is always area 0. All other areas have at least one connection to area 0.
Incorrect Answers:

A. Loopback interfaces are often used in OSPF networks, so that the router ID can be configured. However, this is not a requirement.
B. The area-id can be an integer between 0 and 4294967295.
F. Single area OSPF networks do not have to be configured with the backbone area 0. Although area 1 can indeed be used, it is not required that area 1 is used. Single area OSPF networks can be any integer from 0-4294967295.

QUESTION 142
If the bandwidth of an OSPF interface is configured with the "bandwidth 64" command, what would be the calculated cost of the link?

A. 1
B. 64
C. 1562
D. 64000
E. 1500

Answer: C

Explanation: The question states that OSPF interface has been configured with the bandwidth 64 command. Cisco IOS always interprets the values for the bandwidth command as being in kbps, so the bandwidth is configured as 64 kbps. The metric for any OSPF defaults to 100,000,000/bandwidth. So, in this example:
100,000,000 / 64000 = 1562.5

QUESTION 143
Which two are NOT characteristics of the OSPF routing protocol? (Select all that apply)

A. It confines network instability to a single area of network.
B. It increases the routing overhead of the network

C. It supports VLSM
D. It routes between Autonomous Systems.
E. It allows extensive control of routing updates

Answer: B, D

Explanation: Through the use of areas, routing information and instability's are reduced to specific areas. This will reduce the routing overhead on a network, not increase it. OSPF is not used to provide routing information between different systems. BGP is predominately used for this purpose.
Incorrect Answers:
A, C, E. These are all true statements that describe the features and functionality of OSPF.

QUESTION 144
Which of the following are true statements regarding the characteristics of OSPF areas? Select all that apply.

A. All OSPF networks require the use of multiple areas
B. Multiple OSPF areas must connect to area 0
C. Single area OSPF networks must be configured in area 1
D. Areas can be assigned any number from 0 to 63535
E. Area 0 is called the backbone area
F. Each OSPF area need to be configured with a loopback interface

Answer: B, E

Explanation: OSPF divides its routing domain into areas. Area 0, the backbone, is required. This divides interior routing into two levels. If traffic must travel between two areas, the packets are first routed to the backbone. This may cause non-optimal routes, since interarea routing is not done until the packet reaches the backbone. Once there, it is routed to the destination area, which is then responsible for final delivery. This layering permits addresses to be consolidated by area, reducing the size of the link state databases. All areas must be connected to area 0, either directly or through the use of virtual links.
Incorrect Answers:

A. OSPF network can only consist of a single area.
C. Single area networks can use any area number. If more than one area is configured in the network, then at least one of the areas must be area 0.
D. The area-id can be an integer between 0 and 4294967295.
F. While loopback interfaces are commonly used in OSPF networks, it is not a requirement.

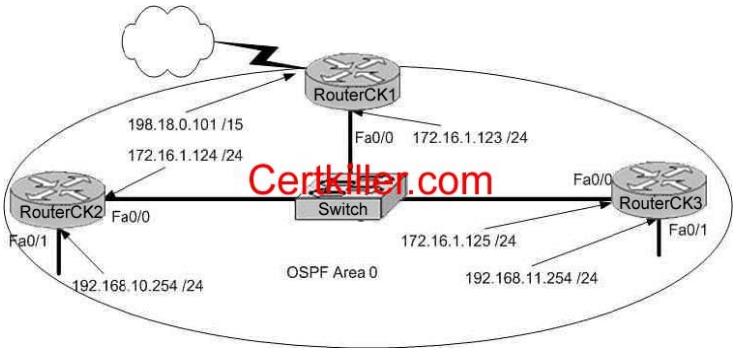
QUESTION 145
On what kinds of networks does OSPF elect a backup designated router?

A. Point-to-point
B. Point to multipoint
C. Broadcast
D. Non-broadcast multi-access

Answer: C, D

Explanation: The DR and BDR election process is performed on broadcast and nonbroadcast multi-access networks.
Incorrect Answers:
A, B. There is no DR or BDR on point to point and point to multipoint links. On a point to point link, only two routers exist so there is no need for a DR or BDR.

QUESTION 146
Three Certkiller routers are configured for OSPF area 0 as shown in the diagram below:



You wish to ensure that router CK2 will be preferred as the designated router (DR) for the 172.16.1.0 /24 LAN segment.
What configuration tasks could be used to establish this preference? (Choose all that apply)

A. Configure the priority value of the Fa0/0 interface of Router CK2 to a higher value than any other interface on the Ethernet network.
B. Change the router id for Router CK2 by assigning the IP address 172.16.1.130/24 to the Fa0/0 interface of Router CK2 .
C. Configure a loopback interface on Router CK2 with an IP address higher than any IP address on the other routers.
D. Change the priority value of the Fa0/0 interface of Router CK2 to zero.
E. Change the priority values of the Fa0/0 interfaces of Router CK1 and Router CK3 to zero.
F. No further configuration is necessary.
G. All of the above will make CK2 the DR

Answer: A, C, E

Explanation:
In order to ensure that a router will become the OSPF DR for any given segment, there

are a number of options. One way is to manually configure the interface priority as described in option A above using the "ip ospf priority" interface configuration command. The second method is described in option C. OSPF routers will always use the loopback interface IP address as the router ID, when configured, and the router with the highest IP address will be chosen as the DR when the priorities are the same. The final method is to change the priority of the other routers in the segment to zero. When the OSPF priority is set to 0, the router is ineligible to become the DR or the BDR. Important Note: The OSPF DR/BDR election process is not pre-emptive, so any changes to the network regarding the DR/BDR election process will only occur when the routers are restarted.
Incorrect Answers:
B. This method will not work as the router ID is taken by using the highest IP address of all interfaces in the router, or from the loopback interface if it is configured. Although choosing this option will give router CK2 the highest IP address on the LAN segment, the router ID will be taken from the highest IP address in the router, which as shown will be 192.168.0.101.
D. This will make CK2 ineligible to become either the DR or the BDR.

QUESTION 147
The Certkiller router has been configured for EIGRP. Information relating to the configuration is displayed in the output shown below:

```
Routing Protocol is "eigrp 478"
  --- output omitted ---
Redistributing: eigrp 478
  Automatic network summarization is not in effect
  Maximum path: 4
  Routing for Networks:
    172.26.168.128/26
    172.26.169.0/26
  Routing Information Sources:
    Gateway         Distance      Last Update
    172.26.168.129       90       01:01:59
  Distance: internal 90 external 170
```


The EIGRP configuration in the Certkiller router used a single network statement. From the output shown in the graphic, which network statement was used to advertise these networks in EIGRP?

A. network 172.26.168.128 0.0.0.127
B. network 172.26.168.128 area 478
C. network 172.26.0.0
D. network 172.26.168.0 area 478

Answer: C

Explanation:
The correct configuration statements used in the above were:
Router eigrp 478
Network 172.26.0.0
Incorrect Answers:

A. A wildcard mask is not required at the end of the network statement in order to

configure EIGRP. It is only required for an OSPF configuration.
B, D. In EIGRP, the concept of an area does not exist. This is only used by OSPF.

QUESTION 148
Which commands are required to properly configure a router to run OSPF and to add network 192.168.16.0/24 to OSPF area 0? Select two

A. Certkiller Router(config)# router ospf 0
B. Certkiller Router(config)# router ospf 1
C. Certkiller Router(config)# router ospf area 0
D. Certkiller Router(config)# network 192.168.16.0 0.0.0.255 0
E. Certkiller Router(config)# network 192.168.16.0 0.0.0.255 area 0
F. Certkiller Router(config)# network 192.168.16.0 255.255.255.0 area 0

Answer: B, E
ospf do not use area o
ospf range Cost is a metric value in the range 1-65535 ...

QUESTION 149
Network topology exhibit

Routers Certkiller B and Certkiller C are configured for RIPv2 and have complete connectivity. Router Certkiller A is added to the network. What is the most appropriate Certkiller A configuration for full connectivity?

A. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
Certkiller A(config)# network 172.16.0.0
Certkiller A(config)# network 192.168.1.0
B. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
C. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
Certkiller A(config)# network 172.16.0.0
D. Certkiller A(config)# router rip
Certkiller A(config)# network 10.0.0.0
Certkiller A(config)# network 192.168.1.0

Answer: C

Explanation: When configuring RIP you configure only the directly connected networks that are to be advertised via the RIP routing process are to be configured.
Incorrect Answers:

A. This choice implies that when configuring rip on a router every possible network in the entire system should be configured. This is not the case.
B. Certkiller 1 requires the 172.16.0.0 network to be configured, not the 192.168.1.0 network.
D. If the 172.16.0.0 network is omitted, then the other routers in the network will not be able to reach the LAN users of Certkiller A via RIP.

QUESTION 150
Exhbit
ip route 172.16.3.0 255.255.255.0 192.168.2***** (missing)
Which of the following statements are true regarding the command in the exhibit?
Select two

A. The command is used to establish a static route.
B. The default administrative distance is used.
C. The command is used to configure the default route.
D. The subnet mask for the source address is 255.255.255.0
E. The command is used to establish a stub network

Answer: A, B

Explanation:
The IP route command is used to establish a static route. The default administrative distance is used because the other distance is not set at the end of the command.

QUESTION 151
You are a systems administrator and you are about to assign static IP addresses to various servers on your network. For the network 192.168.20.24/29 the router is assigned to the first usable host address, while the last usable host address goes to your Sales server.
Which one of the following commands would you enter into the IP properties box of the sales server?

A. IP address: 192.168.20.14 Subnet Mask: 255.255.255.248 Default Gateway: 192.168.20.9
B. IP address: 192.168.20.254 Subnet Mask: 255.255.255.0 Default Gateway: 192.168.20.1
C. IP address: 192.168.20.30 Subnet Mask 255.255.255.248 Default Gateway: 192.168.20.25
D. IP address: 192.168.20.30 Subnet Mask 255.255.255.240 Default Gateway: 192.168.20.17
E. IP address: 192.168.20.30 Subnet Mask 255.255.255.240 Default Gateway: 192.168.20.25

Answer: C

Explanation
A subnet mask uses 29 bits. This means that it uses 5 bits in the 4th octet. This equates to 255.255.255.248. This network has 3 bits for hosts. Using the 2n-2 formula (23-2) in this case), we are left with 6 (2*2*2 - 2 = 6) host addresses. 192.168.20.24 is the network address. Therefore the next address (192.168.20.25) would be the first host address. This address must be assigned to the router, which serves as the gateway for the network. The last available host address would be 192.168.20.30 (192.168.20.24+6). This address is assigned to the server. The broadcast address is 192.168.20.31.

QUESTION 152
You've been assigned a single Class C address. From this, you need 8 subnets, and your subnet mask is 255.255.255.224. Which one of the following configuration commands would you have to use before you begin?

A. Router(config)# ip classless
B. Router(config)# ip subnet-zero
C. Router(config)# ip version 6
D. Router(config)# no ip classful
E. Router(config)# ip unnumbered
F. Router(config)# ip all-nets

Answer: B

Explanation: To get 8 subnets from a class C address, and a mask of 255.255.255.224 use the reserved subnet space. To do this, you need the command 'ip subnet-zero.' This will allow the router to use the very first subnet, which is normally reserved and unused as the network address.
Prior to Cisco IOS(r) Software Release 12.0, Cisco routers, by default, did not allow an IP address belonging to subnet zero to be configured on an interface. However, if a network engineer working with a Cisco IOS software release older than 12.0 finds it safe to use subnet zero, the ip subnet-zero command in the global configuration mode can be used to overcome this restriction. As of Cisco IOS Software Release 12.0, Cisco routers now have ip subnet-zero enabled by default, but if the network engineer feels that it is unsafe to use subnet zero, the no ip subnet-zero command can be used to restrict the use of subnet zero addresses.
In versions prior to Cisco IOS Software Release 8.3, the service subnet-zero command was used.
It should be noted that even though it was discouraged, the entire address space including subnet zero and the all-ones subnet have always been usable. The use of the all-ones subnet was explicitly allowed and the use of subnet zero is explicitly allowed since Cisco IOS Software Release 12.0. Even prior to Cisco IOS Software Release 12.0, subnet zero could be used by entering the ip subnet-zero global configuration command.
On the issue of using subnet zero and the all-ones subnet, RFC 1878 states, "This practice (of excluding all-zeros and all-ones subnets) is obsolete. Modern software will be able to utilize all definable networks." Today, the use of subnet zero and the all-ones subnet is generally accepted and most vendors support their use. However, on certain networks,

particularly the ones using legacy software, the use of subnet zero and the all-ones subnet can lead to problems.

QUESTION 153
Study the following exhibit:

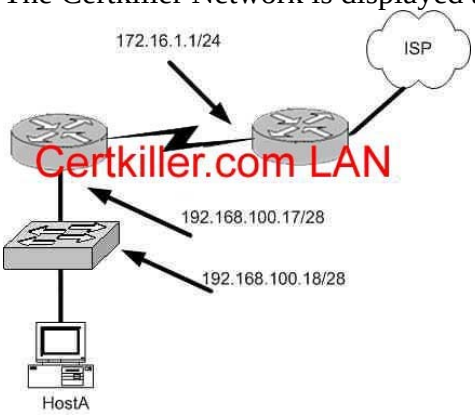
Taking the information from the above exhibit; which command line below would correctly configure serial port0 on the Certkiller 2 router with the LAST usable host addresses on the 192.216.32.32 subnet?

A. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248
B. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.240
C. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248
D. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248 no shut
E. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248 no shut
F. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.248

Answer: F

Explanation: F is the correct answer, as the last usable IP address on this subnet is 192.216.32.38. The subnet mask for a /29 is 255.255.255.248
Mask/29 11111111.11111111.11111111.11111000 255.255.255.248
Subnet 11000000.11011000.00100000.00100000 192.216.32.32
Broadcast 11000000.11011000.00100000.00100111 192.216.32.39
Address range = 192.216.32.33 - 192.216.32.38

QUESTION 154
The Certkiller Network is displayed as follows:



What is a valid possible IP address configuration for Host A?

A. IP 192.168.100.31 255.255.255.240 default-gateway 192.168.100.18
B. IP 192.168.100.30 255.255.255.240 default-gateway 172.16.1.1
C. IP 192.168.100.20 255.255.255.240 default-gateway 192.168.100.17
D. IP 192.168.100.21 255.255.255.248 default-gateway 192.168.100.17

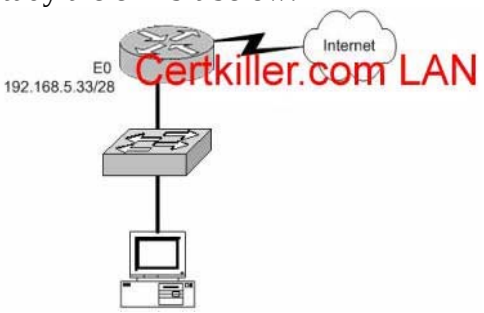
E. IP 192.168.100.19 255.255.255.248 default-gateway 172.16.1.1

Answer: C

Explanation:
The network mask for a /28 is 255.255.255.240. The default gateway is always the IP address of the router on the local subnet, and the valid IP range for this network is 192.168.100.17 - 192.168.100.30. Choice C is the only one that meets all of these.
Incorrect Answers:

A. The IP address 192.168.100.31 is the broadcast address. It cannot be used for the host.
B. The default gateway should be the fist exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.
D. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248.
E. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248. Also, the default gateway should be the fist exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.

QUESTION 155
Study the exhibit below:



Which of the following would be a valid IP address of the PC?

A. 192.168.5.55
B. 192.168.5.47
C. 192.168.5.40
D. 192.168.5.32
E. 192.168.5.14

Answer: C
Explanation
The network uses a 28bit subnet (255.255.255.240). This means that 4 bits are used for the networks and 4 bits for the hosts. This allows for 14 networks and 14 hosts (2n-2). The last bit used to make 240 is the 4th bit (16) therefore the first network will be 192.168.5.16. The network will have 16 addresses (but remember that the first address is the network address and the last address is the broadcast address). In other words, the networks will be in increments of 16 beginning at 192.168.5.16/28. The router interface

E0 has the IP address 192.168.5.33. Therefore it is on the 2nd network (192.169.5.32/28). The host must also be on this network. Valid IP addresses for hosts on this network are: 192.168.5.33-192.168.5.46.
Incorrect Answers:

A. 192.168.5.55 is on network 192.168.5.48. It is not on the same network as the router interface.
B. This is the broadcast address.
D. This is the network address.
E. This is not a valid address for a 28 bit subnet mask. The first network address should be 192.168.5.16.

QUESTION 156
In any NAT (network address translation) configuration, what is the Inside Global IP address?

A. The summarized address for all internal subnetted addresses.
B. A private IP address assigned to a host on the inside network.
C. A registered address that represents an inside host to an outside network.
D. A unique IP address used on an internal network
E. Non of the above

Answer: C

Explanation:
With NAT, Cisco defines 4 different types of addresses as follows:
• Inside local address - The IP address assigned to a host on the inside network. This is the address configured as a parameter of the computer's OS or received via dynamic address allocation protocols such as DHCP. The address is likely not a legitimate IP address assigned by the Network Information Center (NIC) or service provider.
• Inside global address - A legitimate IP address assigned by the NIC or service provider that represents one or more inside local IP addresses to the outside world.
• Outside local address - The IP address of an outside host as it appears to the inside network. Not necessarily a legitimate address, it is allocated from an address space routable on the inside.
• Outside global address - The IP address assigned to a host on the outside network by the host's owner. The address is allocated from a globally routable address or network space.
The above definitions still leave a lot to be interpreted. For this example, this document redefines these terms by first defining "local address" and "global address." Keep in mind that the terms "inside" and "outside" are NAT definitions. Interfaces on a NAT router are defined as "inside" or "outside" with the NAT configuration commands, ip nat inside and ip nat outside. Networks to which these interfaces connect can then be thought of as "inside" networks or "outside" networks, respectively.
• Local address - A local address is any address that appears on the "inside" portion of the network.
• Global address - A global address is any address that appears on the "outside" portion of the network.

QUESTION 157
The following configuration command was entered into a router:
ip route 172.16.3.0 255.255.255.0 192.168.2.4
Which of the following statements are true regarding this configuration change?
(Select two)

A. The default administrative distance is used.
B. The command is used to establish a static route.
C. The command is used to configure the router interfaces.
D. The command is used to establish a stub network.
E. The subnet mask for the source address is 255.255.255.0

Answer: A, B

Explanation:
This command specifies a static route, and tells the router that it should forward all traffic destined for the 172.16.3.0/24 subnet to the next hop router located at 192.168.2.4. The default Administrative Distance for a static route is one, and since there is no AD value specified at the end of this configuration change, the default is used.
Incorrect Answers:
C. This command is done in global configuration mode, not in interface mode.
D. Stub networks are used in OSPF topologies. The example in this question is simply applying a single static route.
E. There is not source network or subnet specified in a static route. All traffic destined to the target of 172.16.3.0/24 is to be forwarded, regardless of the source.

QUESTION 158
Which of the commands below can you use to configure a default route? (Select two answer choices)

A. CK1 (config)# ip route 0.0.0.0 0.0.0.0 E0
B. CK1 (config)# ip route 0.0.0.0 255.255.255.255 S0
C. CK1 (config-interface)# ip route 255.255.255.255 0.0.0.0 192.168.1.21
D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 192.168.1.21
E. CK1 (config)# ip route 0.0.0.0 192.168.1.21 255.255.255.255
F. CK1 # ip default-network 0.0.0.0 192.168.1.21 255.255.255.255

Answer: A, D

Explanation:
There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, like the example in
A. The other way is to specify the IP address
of the next hop router, such as the example in D. The ip route 0.0.0.0 0.0.0.0 command uses the fact that network 0.0.0.0 is used by Cisco IOS software to represent the default network.

Reference: CCNA ICND Exam Certification Guide By Wendell Odem Pg.524
Incorrect Answers:
B. All zero's must used for the subnet mask of a default route, not all 1's.
C. The default route is made in global configuration mode.
D, E. A subnet mask is not needed after the next hop router is specified.

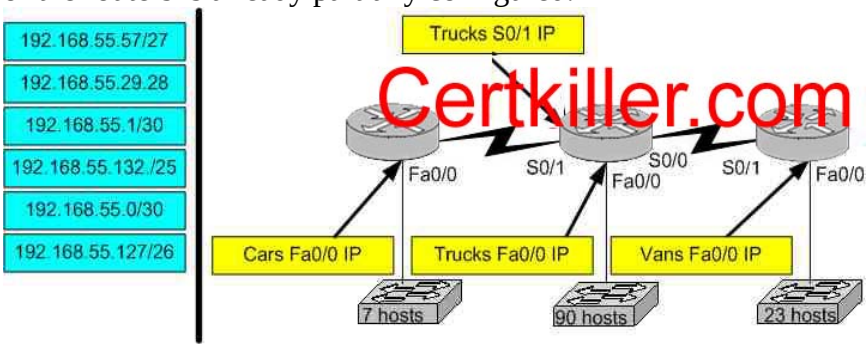
QUESTION 159
Which of the following commands would you use, to configure a default route to any destination NOT found in the routing table?

A. Router(config)# ip default-route 0.0.0.0 255.255.255.255 s0
B. Router(config)# ip route 0.0.0.0 255.255.255.255 s0
C. Router(config)# ip default-route 0.0.0.0 0.0.0.0 s0
D. Router(config)# ip route 0.0.0.0 0.0.0.0 s0
E. Router(config)# ip route any any e0

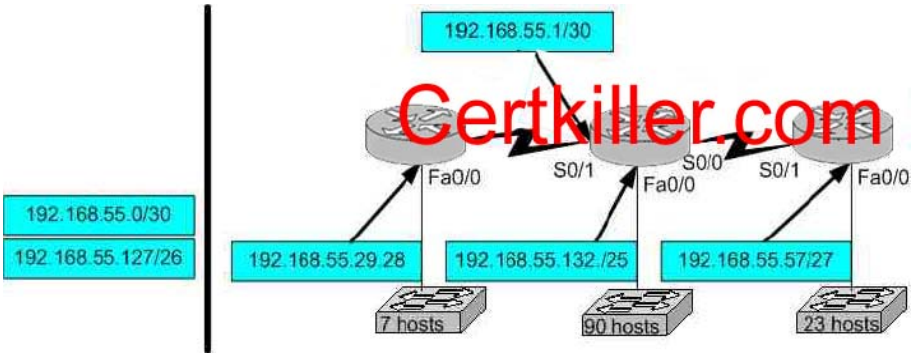
Answer: D

Explanation:
Choice D is the correct syntax for configuring a gateway of last resort. Note that an alternative way is to specify the IP address of the next hop router, for example, "ip route 0.0.0.0 0.0.0.0 10.1.1.1."

QUESTION 160
You are on the Certkiller network design team and have the task of networking three Certkiller locations together. Your team will be using the address range 192.168.55.0. RIP v2 will be used as the routing protocol, and "ip subnet-zero" will be configured. Your goal is to fulfill the address needs of the network while conserving unused addresses for potential future growth.
With these goals in mind, drag the host addresses on the left side to the correct router interface on the right side. Not all the addresses are going to be used, and one of the routers is already partially configured.



Answer:



QUESTION 161
The Certkiller network is shown in the following exhibit:

What command would you use to configure the correct IP address and subnet mask on Certkiller 2's serial interface?

A. Certkiller 2(config-if)# ip address 172.16.17.1 255.255.255.0
B. Certkiller 2(config-if)# ip address 172.16.18.2 255 255. 252.0
C. Certkiller 2(config-if)# ip address 172.16.17.2 255.255.255.252
D. Certkiller 2(config-if)# ip address 172.16.16.0 255.255.255.0

Answer: B

Explanation: The address 172.16.17.0/22 is in the 172.16.16.0/22 network. This means that the IP addresses in all four answers are valid. However, the /22 subnet mask equals 255.255.252.0 in decimal. Therefore, answer B is correct.
Incorrect Answers:
A, C, D. The subnet mask used in the diagram shows a /22, which equates to 255.255.252.0. The subnet masks in choices A, C, and D are incorrect.

QUESTION 162
You have been asked to configure a default route. Which of the IOS commands mentioned below will accomplish this task? (Select two answer choices)

A. LTD(config)# ip route 0.0.0.0 0.0.0.0 192.168.15.36
B. LTD(config)# ip route 0.0.0.0 192.168.15.36 255.255.255.255
C. LTD# ip default-network 0.0.0.0 192.168.15.36 255.255.255.255
D. LTD(config)# ip route 0.0.0.0 0.0.0.0 E0
E. LTD(config)# ip route 0.0.0.0 255.255.255.255 S0
F. LTD(config-router)# ip route 255.255.255.255 0.0.0.0 192.168.15.36

Answer: A, D

Explanation: The default route is the IP address of the next hop when no other routes are known. To configure the default route you type in 'ip route' and then two address sets of 0 followed by the address (as is the case in A) or the interface (as is the case in D).

QUESTION 163
The Certkiller network is displayed below:

In this network, you must configure router CK1 to provide connectivity to router CK2 . The entire network must utilize the 192.1.1.0/24 network. If RIP is being used as the routing protocol, which 3 sets of commands will need to be completed on CK1 ? (Choose 3).

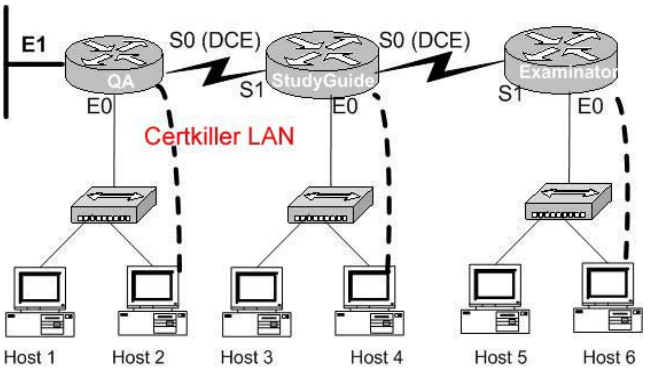
A. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.129 255.255.255.192
CK1 (config-if)# no shutdown
B. CK1 (config)# interface ethernet 0
CK1 (config-if)# ip address 192.1.1.97 255.255.255.192
CK1 (config-if)# no shutdown
C. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.4 255.255.255.252
CK1 (config-if)# clock rate 56000
D. CK1 (config)# interface serial 0
CK1 (config-if)# ip address 192.1.1.6 255.255.255.252
CK1 (config-if)# no shutdown
E. CK1 (config)# router rip
CK1 (config-router)# network 192.1.1.4
CK1 (config-router)# network 192.1.1.128
F. CK1 (config)# router rip
CK1 (config-router)# version 2
CK1 (config-router)# network 192.1.1.0

Answer: A, D, F

Explanation:
Subnetting a Class C Address
We start by using the first subnet mask available with a Class C address, which borrows 2 bits for subnetting.
For this example, I'll be using 255.255.255.192. To review the binary translation of 192:
192 = 11000000
Here, the 1s represent the subnet bits, and the 0s represent the host bits available in each subnet. 192 provides 2 bits for subnetting and 6 bits for defining the hosts in each subnet.
What are the subnets? Since the subnet bits can't be both off or on at the same time, the

only two valid subnets are these:
01000000 = 64 (all host bits off) revealing host addresses from .65------.127
10000000 = 128 (all host bits off) revealing host addresses from .129------.190
The valid hosts would be defined as the numbers between the subnets, minus the all-hostbits-off and all-host-bits-on numbers.
In Choice A, a valid host is configured on E0 interface of the router 192.1.1.129/26 so it is correct. Choice D is correct because each WAN link uses the /30 or 255.255.255.252 mask revealing 2 valid host addresses. Serial 0 is configured with the address 192.1.1.6/30, which comes from the subnet 192.1.1.4/30. Valid hosts in this subnet are 192.1.1.5/30 and 192.1.1.6/30
Choice F is correct because we RIP version 2 will be required in this case as VLSM information needs to be carried throughout the network, and VLSM is not supported on RIP version 1.

QUESTION 164
The Certkiller Corporation (an online training facility) has three production facilities which have their own routers: QA, Study Guide, and Examinator. QA and Study Guide already have network connectivity between them. Configure Examinator's router's IP to the e0 and s1 interfaces so e0 resolves the first usable subnet and S1 receives the second usable subnet. (From the network 192.168.81.0/27) Both interfaces should get the first available IP of the subnet.
Configure the Examinator router's IP addresses on the E0 and S1 interfaces so that the E0 resolves the first usable subnet while S1 receives the second usable subnet from the network 192.168.81.0/27. Both interfaces should receive the first available IP of the subnet. The zero subnet should not be used. The routers have been configured with the following specifications:
The routers are named QA, StudyGuide, and Examinator
RIP is the routing protocol
Clocking is provided on the serial 0 interfaces.
The secret password on the Examinator router is " Certkiller "
The IP addresses are listed in the chart below.
The zero subnet shouldn't be used
Name: QA
E0 : 192.168.83.1
S0 : 192.168.85.1
Name: StudyGuide
E0 : 192.168.88.1
S0 : 192.168.81.89
S1 : 192.168.85.2
Name: Examinator
E0 : to be determined
S1 : to be determined
Secret Password: Certkiller



Task: To configure the router click on the host icon that is connected to the router by a serial cable.

Answer:
Examinator#config t
Enter configuration commands, one per line. End with END.
Examinator(config)#int e 0
Examinator(config-if)#ip add 192.168.81.33 255.255.255.224
Examinator(config-if)#no shut
Examinator(config-if)#exit
Examinator(config)#int s 1
Examinator(config-if)#ip add 192.168.81.65 255.255.255.224
Examinator(config-if)#no shut
Examinator(config-if)#CTRL+Z
Examinator#copy ru st
..
..
[OK]
Examinator#

QUESTION 165
You work as a technician at Certkiller . You are configuring a Cisco router. You want to configure the IP address on an interface.
Which command should you use?

A. router(config-if)#ip address 142.8.2.1 subnet mask 255.255.252.0
B. router(config-if)#142.8.2.1 0.0.3.255
C. router(config-if)#ip address 142.8.2.1 255.255.252.0
D. router(config-if)#142.8.2.1 subnet mask 255.255.252.0
E. router(config-if)#ip address 142.8.2.1 0.0.3.255
F. router(config-if)#ip address 142.8.2.1 subnet mask /22

Answer: C

Explanation:
ip address address subnet-mask - Interface configuration mode command that sets the IP address for interfaces. Only choice C uses the correct syntax.

QUESTION 166
The Certkiller connection between the BMW and ATL routers are displayed below:

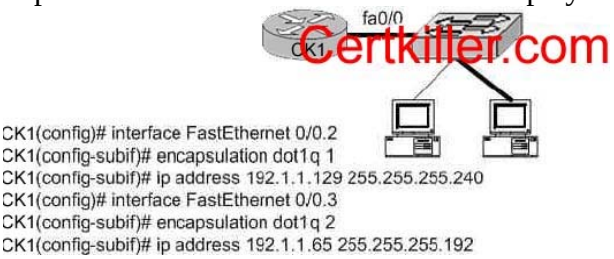
Based on the information above, which of the following commands can be used to configure the address on the ATL serial 0/0 interface?

A. ATL(config-if)# ip address 172.16.17.1 255.255.255.0
B. ATL(config-if)# ip address 172.16.18.255. 255.255.252.0
C. ATL(config-if)# ip address 172.16.17.2 255.255.255.252
D. ATL(config-if)# ip address 172.16.16.0 255.255.255.0
E. None of the above

Answer: B

Explanation:
CIDR Notation /22 implies that the subnet mask be 255.255.252.0. The IP address 172.16.18.255 falls within the same network range as the 172.16.17.0/22 network.

QUESTION 167
A portion of the Certkiller network is displayed below



Host A in the graphic is connected to a switch port assigned to VLAN 1.
Which two settings on host A are required to allow connectivity with Host B on VLAN 2? (Choose two)

A. IP address: 192.1.1.66 255.255.255.240
B. IP address: 192.1.1.130 255.255.255.192
C. IP address: 192.1.1.142 255.255.255.240
D. Default gateway: 192.1.1.129
E. Default gateway: 192.1.1.65
F. Default gateway: 192.1.1.1

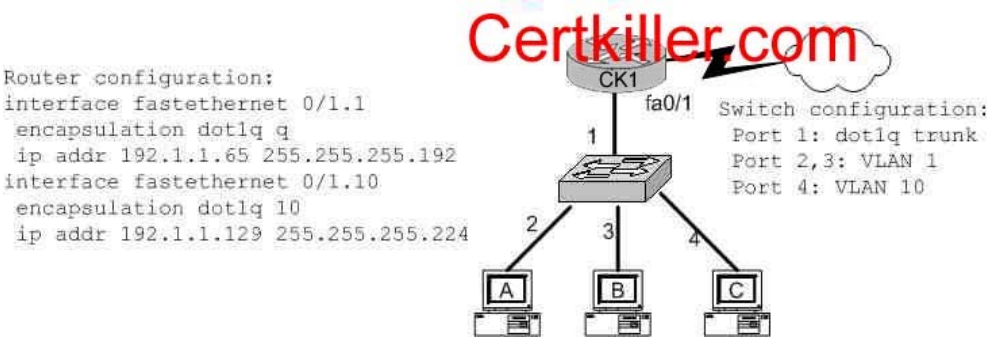
Answer: C, D

Explanation:
Sub-interface Fast Ethernet 0/0.2 was created for VLAN 1 through the use of the

"encapsulation dot1q 1" command. Therefore, since host A resides in VLAN 1 it must be configured with an IP address in the 192.1.1.128/28 subnet and it must be configured with the IP address of the default gateway, which is the IP address assigned to the corresponding sub-interface of the router.
Incorrect Answers:

A. This IP address is not in the same subnet as the Fast Ethernet 0/0.2 sub-interface.
B. The subnet mask is incorrect in this choice.
E, F. The default gateway needs to be set as the IP address for the sub-interface created in the router for VLAN 1.

QUESTION 168
An 802.1Q trunk is configured between a Certkiller switch and router CK1 as shown below:



Which of the following are valid configuration values for the host shown in the graphic? (Choose three)

A. host A IP address: 192.1.1.65
B. host A subnet mask: 255.255.255.224
C. host B IP address: 192.1.1.125
D. host B default gateway: 192.1.1.65
E. host C IP address: 192.1.1.166
F. host C subnet mask: 255.255.255.224

Answer: C, D, F

Explanation:
Host B resides on port 3, which is configured for VLAN 1. As shown in the configuration, the default gateway for VLAN is the IP address associated with the Fast Ethernet 0/1.1 sub-interface. Valid IP hosts for the VLAN 1 subnet is 192.1.1.65-192.1.1.126.
Incorrect Answers:

A. The 192.1.1.65 IP address is already assigned to the router.
B. Host A is in VLAN 1, so the subnet mask should be 255.255.255.192
E. Host C belongs to VLAN 10, and this IP address is not in the 192.1.1.128/27 subnet.

QUESTION 169
Which of the following addresses can be assigned to a host when using a subnet mask of 255.255.254.0? (Select three)

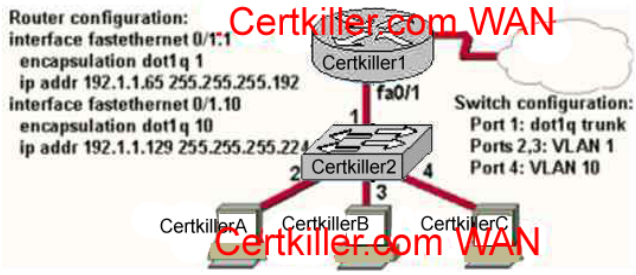
A. 113.10.4.0
B. 186.54.3.0
C. 175.33.3.255
D. 26.35.3.255
E. 152.135.7.0
F. 17.35.36.0

Answer: B, C, E

Explanation:
These are all valid host IP addresses within the /23 subnet.
Incorrect Answers:

A. This is the network address for the 113.10.4.0/23 subnet.
D. This is the broadcast address for the 26.35.2.0/23 subnet.
F. This is the network address for the 17.35.36.0/23 subnet.

QUESTION 170
Network topology Exhibit



You work as a network engineer at Certkiller .com. The topology of the Certkiller .com network is displayed in the exhibit. Which of the following are valid configuration values for the hosts? Select three

A. Host Certkiller 1 IP address: 192.1.1.85
B. Host Certkiller 1 subnet mask: 255.255.255.224
C. Host Certkiller 2 IP address: 192.1.1.125
D. Host Certkiller 2 default gateway: 192.1.1.85
E. Host Certkiller 3 IP address: 192.1.1.166
F. Host Certkiller 3 subnet mask: 255.255.255.224

Answer: A, C, F

Explanation:
The answers A and C are right, because the ip address 192.1.1.85 and 192.1.1.125 are in the same subnet

192.1.1.64 as the ip address of the subinterface
0/1.1.
The answer e is wrong, because the network address of
the ip address 192.1.1.166 is 192.1.1.160.

QUESTION 171
Which command will assign the last usable IP address from the 192.168.32.128/28 subnetwork to a router interface?

A. Certkiller A(config-if)# ip address 192.168.32.142 255.255.255.240
B. Certkiller A(config-if)# ip address 192.168.32.143 255.255.255.240
C. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
D. Certkiller A(config-if)# ip address 192.168.32.145 255.255.255.240
E. Certkiller A(config-if)# ip address 192.168.32.144 255.255.255.240
F. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240

Answer: A

Explanation:
The last usable IP address would be 128 + (16-2) = 142. Because only last 4 bits of the last octet are used for host addressing.

QUESTION 172
Network topology exhibit

A Certkiller .com network administrator is adding host Certkiller 3 to the network shown in the exhibit.
Which IP address can be assigned this host on this network?

A. 192.1.1.14
B. 192.1.1.18
C. 192.1.1.20
D. 192.1.1.30
E. 192.1.1.31
F. 192.1.1.36

Answer: B, D

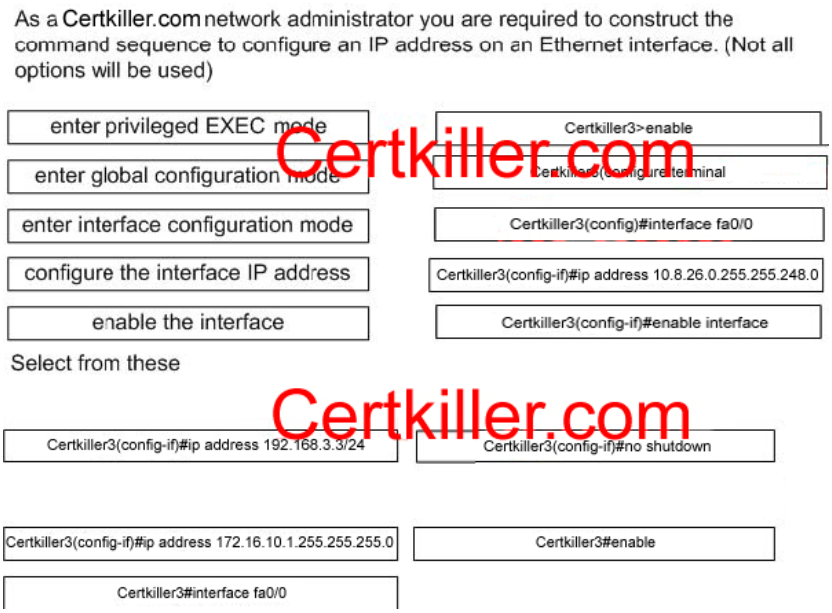
Explanation:
Subnet Mask of 255.255.255.240 means 4-bits of subnetting. When we do 4-bits of

subnetting, we have a total of 16 subnets having 16 hosts each. Subnets will be
192.1.1.0 ----- 191.1.1.15 (0-15)
192.1.1.16 ---- 191.1.1.31 (16-31)
192.1.1.32 ---- 191.1.1.47 (32-47)
192.1.1.240---- 192.1.1.255 (240-255)
Only choices B and D are in the valid range 192.1.1.16 ---- 191.1.1.31 (16-31)

QUESTION 173

As a Certkiller.com network administrator you are required to construct the command sequence to configure an IP address on an Ethernet interface. (Not all options will be used)

Answer:



QUESTION 174
Which command will set the default gateway to 192.168.12.1 on a Cisco switch?

A. Switch(config)# ip default-network 192.168.12.1
B. Switch(config)# ip route-default 192.168.12.1
C. Switch(config)# ip default-gateway 192.168.12.1
D. Swicth(config)# ip route 192.168.12.1 0.0.0.0

Answer: C

Explanation:
Ip default-gateway address is a global command that sets the default gateway so that the management interface can be reached from a remote network.
Reference: Cisco CCNA ICND p.14

QUESTION 175
Which protocol automates all of the following TCP/IP functions: IP configuration, IP addresses, subnet masks, default gateways, and DNS server information for the hosts on a network?

A. SMTP
B. SNMP
C. DHCP
D. DARP
E. CDP

Answer: C

Explanation: DHCP uses the concept of the client making a request and the server supplying the IP address to the client, plus other information such as the default gateway, subnet mask, DNS IP address, and other information.
Incorrect Answers:

A. SMTP is the Simple Mail Transfer Protocol, which is used by email servers
B. SNMP is the Simple Network Management Protocol, which is used for remotely managing network devices.
D. DARP does not exist.
E.. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches.

QUESTION 176
You are working as an administrator at Certkiller , and you need to set the bandwidth of your routers serial port to 56K. Which of the following commands would you use?

A. Bandwidth 56000
B. Bandwidth 56000000
C. Bandwidth 56
D. Bandwidth 56kbps

Answer: C

Explanation: Cisco IOS translates the bandwidth command to kbps, so after issuing the "bandwidth 56" interface command the router will display the bandwidth as 56 kbps.

QUESTION 177
Which of the following commands can you issue if you want to configure a default route to any destination network not found on router CK1 's routing table?

A. CK1 (config)# ip default-route 0.0.0.0 255.255.255.255 s0
B. CK1 (config)# ip route 0.0.0.0 255.255.255.255 s0
C. CK1 (config)# ip default-route 0.0.0.0 s0
D. CK1 (config)# ip route 0.0.0.0 0.0.0.0 s0
E. CK1 (config)# ip route any any e0

Answer: D

Explanation: There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, the other way is to specify the IP address of the next hop router. The ip route 0.0.0.0 0.0.0.0 command uses the fact that network 0.0.0.0 is used by Cisco IOS software to represent the default network.
Incorrect Answers:
A, B. All zero's must used for the subnet mask of a default route, not all 1's.

C. The default-route command does not exist.
E. the "any" keyword is used in access lists, not for configuring static routes.

QUESTION 178
The Certkiller network is displayed below:

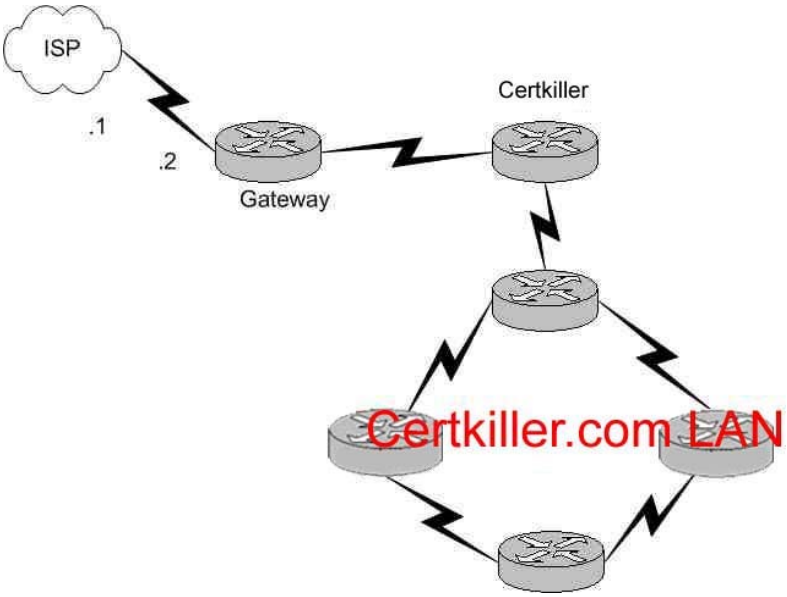
You are a network administrator and you've just finished configuring the static route 10.5.6.0 /24 on router Certkiller . Which command should you use if you want Certkiller to consider this route the most reliable?

A. Certkiller (config)# ip route 10.5.6.0 0.0.0.255 fa0/0
B. Certkiller (config)# ip route 10.5.6.0 0.0.0.255 10.5.4.6
C. Certkiller (config)# ip route 10.5.6.0 255.255.255.0 fa0/0
D. Certkiller (config)# ip route 10.5.6.0 255.255.255.0 10.5.4.6
E. Certkiller (config)# ip route 10.5.4.6 0.0.0.255 10.5.6.0
F. Certkiller (config)# ip route 10.5.4.6 255.255.255.0 10.5.6.0

Answer: C, D

Explanation: There are two ways to specify a default static route. One is to specify the interface to use for forwarding packets, like the example in C. The other way is to specify the IP address of the next hop router, such as the example in D.
Additional Info:
The following is the command you use to add a static route to a routing table:
Ip route [destination_network] [mask] [next-hop_address or exitinterface] [administrative_distance][permanent]
This list describes each command in the string:
ip route The command used to create the static route.
destination network The network you're placing in the routing table.
mask The subnet mask being used on the network.
next-hop address The address of the next-hop router that will receive the packet and forward it to the remote network. This is a router interface that's on a directory connected network.
administrative_distance By default, static routes have an administrative distance of 1. You can change the default value by adding an administrative weight at the end of the command.

QUESTION 179
A new Internet T1 is being added to the Certkiller network as shown:



The ISP assigned you the class CIP address 207.134.6.0/30 for this Internet connection. A default route to the Internet should be set up. Which of the following are acceptable ways to configure this on the Gateway router? (Select all that apply)

A. Gateway(config)# ip route 0.0.0.0 0.0.0.0 207.134.6.1.
B. Gateway(config)# router rip
Gateway(config-router)# network 207.134.6.0 default
C. Gateway(config)# ip route 207.134.6.0 255.255.255.0 Serial0/0
D. Gateway(config)# router OSPF
Gateway(config-router)# network 207.134.6.0
E. Gateway(config)# ip default-network 207.134.6.0

Answer: A, E

Explanation: This question only involves the configuration of the gateway router to the ISP, nothing else. You have two choices to accomplish this: the command "ip route" or the command "ip default-network". Both of these methods will configure a default route to the ISP as desired.
Incorrect Answers:
B, D. RIP and OSPF are interior routing protocols. The T1 Internet connection that is being set up here is between two different Autonomous Systems. The only routing protocol that could be potentially used is BGP, but that is not an option.
C. This command will only set up a static route to the 207.134.6.0/24 network. We wish to set up a static default route.

QUESTION 180
Which of the following commands would you execute if you wanted to enable others to establish a Telnet session on a Cisco router?

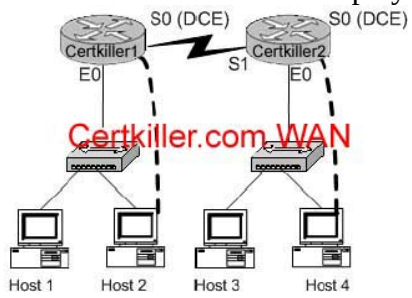
A. Certkiller 1(config)# line console 0

Certkiller 1(config-if)# enable password Certkiller
B. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)# enable password Certkiller
C. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)# enable secret Certkiller
Certkiller 1(config-line)# login
D. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# enable secret Certkiller
Certkiller 1(config-line)# login
E. Certkiller 1(config)# line console 0
Certkiller 1(config-line)# password Certkiller
Certkiller 1(config-line)# login
F. Certkiller 1(config)# line vty 0
Certkiller 1(config-line)# password Certkiller
Certkiller 1(config-line)# login

Answer: F

Explanation: Telnet sessions use virtual terminal sessions, which are configured under the "line vty" portion of the configuration. There are 5 total vty sessions that can be configured, numbered 0-4. In order to be prompted for a password, one must be configured. Choice F gives the 3 commands needed to allow a single telnet session.
Incorrect Answers:
A, B, C, D. The telnet password needs to be configured in addition to the enable password. Without the initial password configured, users that try to telnet to the router will receive a "password required, but none set" message.
D, E. Telnet uses VTY ports, not the console port.

QUESTION 181
The Certkiller network is displayed below:

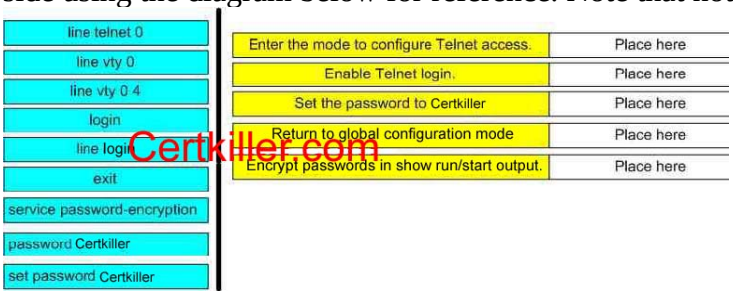


You need to perform the following functions on router Certkiller 2:
• Login using the current enable password: Certkiller
• Configure the console password to be: test
• Configure all telnet line passwords to be: king
To configure the router click on a host icon that is connected to a router by a serial cable.

Answer:
Click on Host 4:

Router Con0 is now available
Press RETURN to get started ! We press enter
Router Certkiller 2:
Certkiller 2> enable !We enter enable mode
Password: Certkiller !We enter " Certkiller "
Certkiller 2 # config terminal !We enter the terminal
Enter configuration commands, one per line. End with CTRL/Z
Certkiller 2 (config) # line console 0 !Configure the terminal connection
Certkiller 2 (config-line)# login
Certkiller 2 (config-line)# password test !Specify the terminal connection password
Certkiller 2 (config-line)# exit
Certkiller 2 (config) # line vty 0 4 !Configure the telnet connections. Numbered 0,1,2,3,4.
Certkiller 2 (config-line)# login
Certkiller 2 (config-line)# password king !specify the password
Certkiller 2 (config-line) # exit !Exit from configuration mode.
Certkiller 2 (config) # exit
Certkiller 2 # copy running-config startup-config !Saves the running config to NVRAM.
Reference:
CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 177

QUESTION 182
Your goal is to restrict all access to your router except for Telnet. To make this happen, move the commands on the left side to corresponding functions on the right side using the diagram below for reference. Note that not every option will be used.



Answer:

QUESTION 183
You wish to increase the security of all of the routers within your network. What

can be done to secure the virtual terminal interfaces on a router? (Choose two)

A. Administratively shut down the interface.
B. Physically secure the interface.
C. Create an access list and apply it to the virtual terminal interfaces with the access-group command.
D. Configure a virtual terminal password and login process.
E. Enter an access list and apply it to the virtual terminal interfaces using the accessclass command.

Answer: D, E

Explanation:
There are a total of 5 logical Virtual terminal interfaces in a Cisco router (lines 0-4) and they are used for remote access into the device via telnet. Configuring these interfaces correctly with a login and password information can be used for security, as each user will be prompted for a password in order to obtain access. A second method is to use the "access-class" command. Combined with an access list, this command can be used to specify the hosts or networks that will be allow access to the device.
Incorrect Answers:

A. Virtual terminal interfaces are logical interfaces that can not be manually shut down.
B. Virtual terminal lines are logical interfaces that reside within a router, so there is nothing that can be physically secured.
C. This command is used with access-lists for LAN and WAN interfaces, but is not used for the VTY lines.

QUESTION 184
You wish to limit telnet access into your Cisco router to only a single host. In order to accomplish this, access list 1 has been written to allow host 172.16.1.224 access to the router vty lines. What command would assign this access- list to the Virtual Terminal Lines?

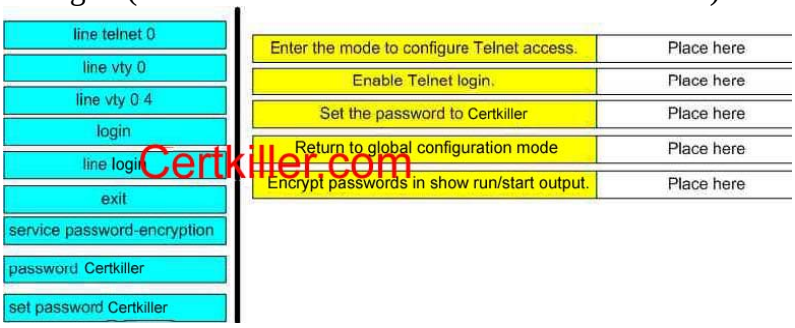
A. router(config-line)# ip access-group 1 in
B. router(config-line)# access-class 1 in
C. router(config-line)# ip access-list 1 in
D. router(config-line)# access-line 1 in

Answer: B

Explanation:
To restrict incoming and outgoing connections between a particular vty (into a Cisco device) and the addresses in an access list, use the access-class command in line configuration mode.
Example:
The following example defines an access list that permits only the host 172.16.1.224 to

connect to the virtual terminal ports on the router, as described in this question:
access-list 1 permit 172.16.1.224 0.0.0.0
line 1 5
access-class 1 in

QUESTION 185
You need to allow only ONE Telnet connection to a router.
Match the commands on the left that will accomplish this task with their function on the right. (Note that not all answer choices will be used).



Answer:

QUESTION 186
Which router console commands are used to manage telnet sessions to other routers? Select three.

A. Certkiller D# disconnect 3
B. Certkiller D# exit session 2
C. Certkiller D# kill connection 1
D. Certkiller D# show sessions
E. Certkiller D# show connection all
F. Certkiller D# resume 4

Answer: A, D, F

Explanation:

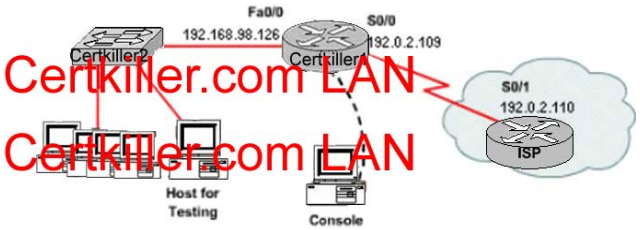
Function	Command Options
Telnet to another device	**Use telnet exec command.**

	Just type the host or IP address from exec mode.
Suspend a Telnet session	**Press the key sequence Ctrl-Shift-6, then x**
Discover currently suspended Telnet session	**Use the where exec command Use the show sessions exec command**
Resume a suspended Telnet session	**Use the resume command, with no parameter, to reconnect to the most recently suspended Telent.**
	Use the resume x command, where x is the number of the suspended Telent session based on the output of show sessions. **Just press Enter in exec mode to resume to the most recently suspended Telent session.**
Terminate a suspended telnet	**Resume connection, and log out using the quit command. Use the disconnect command on the router you Telnnetted from.**

Reference: Ciscopress CCNA INTRO p.392

QUESTION 187

Network topology exhibit.



You work as a network administrator at Certkiller .com. You are configuring a

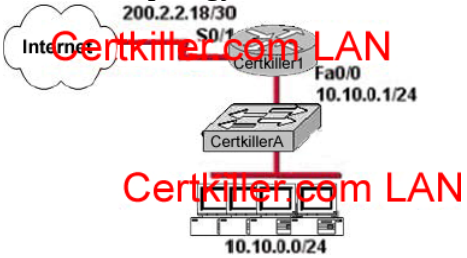
router to provide Internet access. The ISP has provided Certkiller .com with six public IP addresses of 198.18.158.97, 198.18.158.97, 198.18.158.98, 198.18.158.99, 198.18.158.100, 198.18.158.101, and 198.18.158.102. Certkiller .com has 62 hosts that need access to the Internet simultaneously. The hosts in the Certkiller .com LAN have been assigned private space addresses in the range of 192.168.98.65 - 192.168.98.126.
The following have already been configured on the router:
The basic router configuration
The appropriate interfaces have been configured for NAT inside an NAT outside.
The appropriate static routes have also been configured (since the company will be a stub network, no routing protocol will be required)
All passwords have been temporarily set to " Certkiller "
The task is to complete the NAT configuration using all IP addresses assigned by the ISP to provide Internet access to the hosts in the Certkiller 1 LAN. Functionality can be tested by clicking on the host provided for testing.
Configuration information:
Router name: Certkiller 1
inside global addresses: 198.18.158.97 198.18.158.102/29
inside local addresses: 192.168.98.65 - 192.168.98.126/26
Number of inside hosts: 62
password: Certkiller
Simulation.

Answer:
Certkiller 1(config)#ip nat inside source list 1 pool nat-pool overload
Certkiller 1(config)#access-list 1 permit 192.168.98.64 0.0.0.63
Certkiller 1(config)#ip nat pool nat-pool 198.18.158.97 198.18.158.102 netmask 255.255.255.248
Certkiller 1(config)#int e0
Certkiller 1(config-if)#ip nat inside
Certkiller 1(config-if)#exit
Certkiller 1(config)#int s0
Certkiller 1(config-if)#ip nat outside
Certkiller 1(config-if)#end
Certkiller 1#copy run start

Explanation:
Previously the ip nat pool nat-pool was configured with /26 which is 255.255.255.192 which is incorrect because we are configuring inside global and it's /29 which is 255.255.255.248.
Note:
Variation #1:
Router name: Certkiller 1
inside global addresses: 198.18.32.217 192.18.32.222/29
inside local addresses: 192.168.57.33 - 192.168.57.62/27
Number of inside hosts: 30

Certkiller 1>enable
Certkiller 1# configure terminal
Certkiller 1(config)# ip nat pool Certkiller 198.18.32.217
198.18.32.222 netmask 255.255.255.248
Certkiller 1(config)# ip nat inside source list 1 pool
Certkiller overload
Certkiller 1(config)# ip access-list 1 permit
192.168.57.33 0.0.0.31
Variation #2:
Router name: Certkiller 1
inside global addresses: 198.18.169.121 198.18.169.126/29
inside local addresses: 192.168.2.33 - 192.168.2.62/27
Number of inside hosts: 30
Certkiller 1>enable
Certkiller 1# configure terminal
Certkiller 1(config)# ip nat pool Certkiller 198.18.169.121
198.18.169.126 netmask 255.255.255.248
Certkiller 1(config)# ip nat inside source list 1 pool
Certkiller overload
Certkiller 1(config)# ip access-list 1 permit
192.168.2.33 0.0.0.31

QUESTION 188
Network topology exhibit



Certkiller .com wants to use NAT in network displayed in the exhibit.
Which commands will apply the NAT configuration to the proper interfaces? Select two.

A. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat inside
B. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat outside
C. Certkiller 1(config)# interface fastethernet0/0
Certkiller 1(config-if)# ip nat inside
D. Certkiller 1(config)# interface fastethernet0/0
Certkiller 1(config-if)# ip nat outside
E. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat outside source pool 200.2.2.18 255.255.255.252
F. Certkiller 1(config)# interface serial0/1
Certkiller 1(config-if)# ip nat inside source 10.10.0.0 255.255.255.0

Answer: B, C

Explanation:
After creating the static NAT entries, the router needs to know which interfaces are "inside" and which are "outside." The ip nat inside and ip nat outside interface subcommands identify each interface appropriately.
Reference: Cisco CCNA ICND p.271

QUESTION 189

Refer to the topology and partial configuration output shown in the graphic. The ip subnet-zero configuration command is also in effect. After the router performs network address translation, which address is a valid "inside global address"?

A. 10.10.0.1
B. 10.10.0.17
C. 200.2.2.17
D. 200.2.2.18
E. 199.99.9.33
F. 199.99.9.57

Answer: F

QUESTION 190
Which of the following steps are necessary in order to add a new VLAN to a switched network? (Select all that apply.)

A. Create the VLAN.
B. Name the VLAN.
C. Configure an IP address for the VLAN.
D. Add the desired ports to the new VLAN.
E. Add the VLAN to the VTP domain.

Answer: A B D

Explanation: The following are the basic requirements for creating VLANs:
• Creating the VLAN numbers and names
• Configuring each port's assigned VLAN

Incorrect Answers:
C. This is an optional feature, but not a necessary step for creating a VLAN.
E. Adding any VLAN to a Virtual Trunking Protocol (VTP) domain may be desired in a complex multi-switch and multi-VLAN network. However, it is not a necessary step for creating stand-alone VLANs on a single switch.

QUESTION 191
You are bringing up a new Cisco Catalyst switch, and wish to connect it via a trunk to another switch from a different vendor, which uses the IEEE standard for the trunking method. When setting the encapsulation type on the trunk, what should you configure on the Cisco switch?

A. Switch(config)# switchport trunk encapsulation isl
B. Switch(config)# switchport trunk encapsulation ietf
C. Switch(config-if)# switchport trunk encapsulation isl
D. Switch(config-if)# switchport trunk encapsulation ietf
E. Switch(config-if)# switchport trunk encapsulation dot1q

Answer: E

Explanation: The only real choices for setting up switching trunks are ISL and 802.1Q. ISL is Cisco proprietary, while 802.1Q uses the IEEE defined standard for trunking between switches. To configure the 802.1Q standard, the keyword "dot1q" is used in Cisco switches.
Incorrect Answers:
A, B, D. These are not valid options in a Cisco switch.
C. ISL is a Cisco proprietary method for setting up trunks, and will only work between Cisco switches.

QUESTION 192
A new switch is being installed and you have been assigned the task of connecting it to an existing switch. In doing this, you want to set up the VLAN Trunking Protocol so that VLAN information can be passed between the switches. Which of the following must you do to accomplish this? (Choose all that apply).

A. You must set each end of the trunk line to IEEE 802.1e encapsulation.
B. You must set the same VTP management domain name on both switches.
C. You must set all ports on the two switches as access ports.
D. You must configure one of the switches as a VTP server.
E. You must use a rollover cable to connect the two switches.

Answer: B, D

Explanation:
The following describes what is needed in order to correctly set up VTP:

VTP operates in one of three modes:

- Server mode
- Client mode
- Transparent mode

For VTP to exchange information, some switches act as servers, and some act as clients. VTP servers can create, modify, and delete VLANs and other configuration parameters for the entire VTP domain; this information, in turn, is propagated to the VTP clients and servers in that same domain. VTP servers save VLAN configurations in the Catalyst NVRAM, whereas in clients, the VLAN configuration is not stored at all. A VTP client cannot create, change, or delete VLANs, nor can it save VLAN configurations in nonvolatile memory.

Incorrect Answers:

A. The encapsulation can be either ISL or 802.1Q, and need to match at each end of the trunk.
C. Ports must only be assigned to VLANS. Once that is done and the trunk is up and running, the VLAN information will be passed between the switches.
E. A regular CAT5 cable is used to connect the switches, assuming 10/100 ehternet is used.

QUESTION 193
A new switch is installed into an existing LAN and a new VTP trunk is set up with an existing switch. Which VLANs will be allowed on this new trunk?

A. All defined VLANs are allowed on the trunk by default.
B. Each VLAN, or VLAN range, that is specified with the switchport mode command.
C. Each VLAN, or VLAN range, that is specified with the vtp domain command.
D. Each VLAN, or VLAN range, that is specified with the vlan database command.

Answer: C

Explanation:
By default, all VLANs that are configured to be in the same VTP domain will be allowed by the VTP trunk.
Incorrect Answers:

A. Only the VLANs contained in the same VTP domain will traverse the trunk.
B, D. These commands do not have any influence on the VLANs that will be allowed over a trunk.

QUESTION 194
Which of the following a true statements regarding the use of VLANs to segment a network? (Select three.)

A. They increase the size of collision domains
B. They allow logical grouping of users by function.
C. They can enhance network security.
D. They increase the size of the broadcast domain while decreasing the number of collision domains.
E. They increase the number of broadcast domains while decreasing the size of the

broadcast domains.
F. They simplify switch administration.

Answer: B, C, E

Explanation:
VLANs are used to segment a LAN into multiple, smaller LANs. This can be used to enhance security as local traffic from one VLAN will not be passed to users in other VLANS.
Incorrect Answers:

A. VLANs are used to decrease the size of a collision domain, not increase it.
D. The opposite is true.
F. The default operation of a switch is to allow all traffic and to enable all ports in VLAN 1. The use of VLANs will increase the complexity of the switch environment, making for more difficult administration.

QUESTION 195
What is a characteristic of ISL and 802.1q frame tagging in a switched LAN environment?

A. They are used to find the best path through a network.
B. They allow the exchange of filtering tables.
C. They specify different implementations of the Spanning-Tree Protocol.
D. They allow the exchange of routing tables
E. They provide inter-switch VLAN communication.

Answer: E

Explanation: A trunk link is the other type of Layer 2 port supported on Cisco switches. When a trunk port is configured, it begins marking frames as they exit the port to indicate which VLAN each frame is associated with. The trunk port can also read the markings, called tags, as they enter the trunk port. This enables the switch to send a frame only to the ports for the given VLAN associated with the incoming frame.
The main purpose of trunking is to carry traffic between switches and maintain the VLAN information. Unlike an access link, the trunk link does not belong to a single VLAN but instead can carry traffic from several VLANs over a point-to-point link between two devices that understand the protocol.
Two forms of trunking are used for Cisco switches on Ethernet networks:
An IEEE industry standard called IEEE 802.1Q. This is a frame-tagging mechanism that adds a VLAN identifier to the frame by inserting a tag at Layer 2.
Another form of trunking on Cisco switches is called Inter-Switch Link (ISL), which is a Cisco proprietary trunking mechanism. ISL uses a frame encapsulation method that adds a header to identify the VLAN.

Incorrect Answers:
A, D. These are the functions of routers, not switches.
B. Filtering tables can be used on certain Catalyst switches via the use of VLAN access control lists, but this information is never shared between switches.
C. A separate STP instance is created for each VLAN, but the STP implementation remains the same.

QUESTION 196
A new VLAN needs to be created for an existing network. Which of the following are the minimum tasks that must be accomplished in order to create the new VLAN? (Select three answer choices)

A. The VLAN must be created
B. The VLAN must be named
C. An IP address and subnet mask must be configured for the new VLAN
D. The desired ports must be added to the new VLAN
E. The VLAN must be added to the existing VTP Domain

Answer: A, B, D

Explanation:
The best answers are A, B, D. In order to create a simple VLAN, you must create the VLAN, name it, and then assign ports to it. These are the minimum requirements for a functioning VLAN.
Incorrect Answers:
C. Although an IP address is often configured, it is not required in order to create a functioning VLAN.
E. By default, the VLAN will already be added to the VTP domain. Even if the new VLAN was not part of the VTP domain, it would still work as a new VLAN on the switch.

QUESTION 197
What are some of the characteristics of a typical VLAN arrangement? (Select all that apply)

A. VLANs logically divide a switch into multiple, independent switches at Layer 2.
B. Trunk links can carry traffic for multiple VLANs.
C. VLAN implementation significantly increases traffic due to added trunking information.
D. A VLAN can span multiple switches.
E. VLANs typically increase the number of switches needed
F. VLANs typically decrease the number of switches needed

Answer: A, B, D

Explanation:

VLANs give you the power of making virtual LAN networks to subdivide collision domains into smaller units of functionality, without being limited by physical location. A is correct because that is the exact function of a VLAN. B is correct because trunk links are used to carry traffic for multiple VLANs. D is correct because a VLAN can and often does span across multiple switches. VTP makes this possible.
Incorrect Answers:
C. Although trunking information does indeed add some level of overhead, the overall traffic overhead is greatly reduced though the use of VLANs.
E, F. The number of total switches needed in a network is the result of the number of devices on the entire LAN that need to be connected. Whether VLANs are used or not will have little, if any, impact on the total number of switches needed in a LAN.

QUESTION 198
Which one of the following protocols allows the information about the configuration of a new VLAN to be distributed across entire switched network?

A. STP
B. VTP
C. EIGRP
D. SNMP
E. CDP
F. None of the above

Answer: B

Explanation:
Sybex CCNA Study Guide 4th Edition states on page 359:
"The basic goals of VLAN Trunking Protocol (VTP) are to manage all configured VLANs across a switched internetwork and to maintain consistency throughout that network. VTP allows an administrator to add, delete, and rename VLANs-information that is then propagated to all other switches in the VTP domain."
Incorrect Answers:

A. STP is the Spanning Tree Protocol, used to prevent bridging loops in a LAN.
C. EIGRP is a routing protocol used to exchange routing information, not VLAN information.
D. SNMP is the Simple Network Management Protocol, used to provide information to remote network management stations.
E. CDP is the Cisco Discovery Protocol, which is used to exchange information between Cisco devices. It can only be used between Cisco routers and switches.

QUESTION 199
Which encapsulation types are configurable on a Cisco switch for a trunk? (Select two answer choices)

A. VTP

B. ISL
C. CDP
D. 802.1Q
E. 802.1p
F. LLC
G. IETF

Answer: B, D

Explanation: Trunks are used to carry traffic belonging to multiple VLANs between devices over the same link. A device can determine which VLAN the traffic belongs to by its VLAN identifier. The VLAN identifier is a tag that is encapsulated with the data. ISL and 802.1q are two types of encapsulations used to carry data from multiple VLANs over trunk links.
ISL is a Cisco proprietary protocol for interconnecting multiple switches and maintaining VLAN information as traffic goes between switches. ISL provides VLAN trunking capabilities while maintaining full wire speed performance on Ethernet links in fullduplex or half-duplex mode. ISL operates in a point-to-point environment and will support up to 1000 VLANs. In ISL, the original frame is encapsulated and an additional header is added before the frame is carried over a trunk link. At the receiving end, the header is removed and the frame is forwarded to the assigned VLAN. .ISL uses Per VLAN Spanning Tree (PVST) which runs one instance of Spanning Tree Protocol (STP) per VLAN. PVST allows for optimal root switch placement for each VLAN and supports load balancing of VLANs over multiple trunk links.
802.1Q is the IEEE standard for tagging frames on a trunk and supports up to 4096 VLANs. In 802.1Q, the trunking device inserts a four-byte tag into the original frame and re-computes the Frame Check Sequence (FCS) before sending the frame over the trunk link. At the receiving end, the tag is removed and the frame is forwarded to the assigned VLAN. 802.1Q does not tag frames on the native VLAN. It tags all other frames transmitted and received on the trunk. While configuring a 802.1 trunk, you must make sure that the same native VLAN is configured on both sides of the trunk. IEEE 802.1Q defines a single instance of spanning tree running on the native VLAN for all the VLANs in the network which is called Mono Spanning Tree (MST). This lacks the flexibility and load balancing capability of PVST available with ISL. However, PVST+ offers the capability to retain multiple Spanning Tree topologies with 802.1Q trunking.

QUESTION 200
You need to create a new VLAN on your Catalyst switch. This VLAN is to be named Certkiller . Which of the following need to be completed for the creation of this new VLAN? (Select all that apply)

A. The Certkiller VLAN must be created.
B. The desired ports must be added to the new Certkiller VLAN.
C. The Certkiller VLAN must be added to all of the domains.
D. The Certkiller VLAN must be named.
E. An IP address must be configured for the Certkiller VLAN.

F. None of the above. VLAN creations are automatic.

Answer: A, B, D

Explanation:
Creating a VLAN is done in 3 steps:
1. Create the VLAN
2. Name the VLAN
3. Assign ports to the VLAN
From there, other features and functionality can be configured, but these are the only steps that are required for the addition of a VLAN.
Incorrect Answers:
C. The VLAN needs only to be added to a single switch, where it can act as a standalone VLAN, or it can be transferred to other switches in the network through the use of the VTP protocol.
E. VLANs operate at layer 2, and although many are configured with a layer 3 IP address, it is not absolutely necessary to do this.