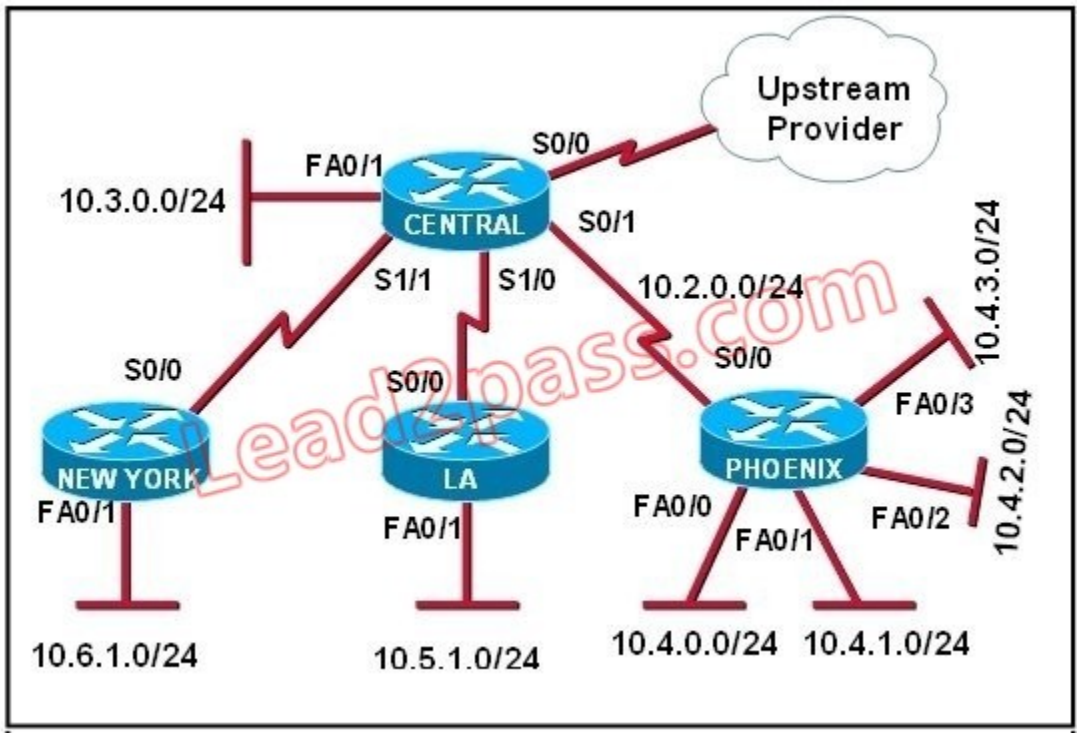
➢ Vendor: Cisco

➢ Exam Code: 200-125

➢ Exam Name: Cisco Certified Network Associate (v3.0)

➢ Question 101 – Question 150

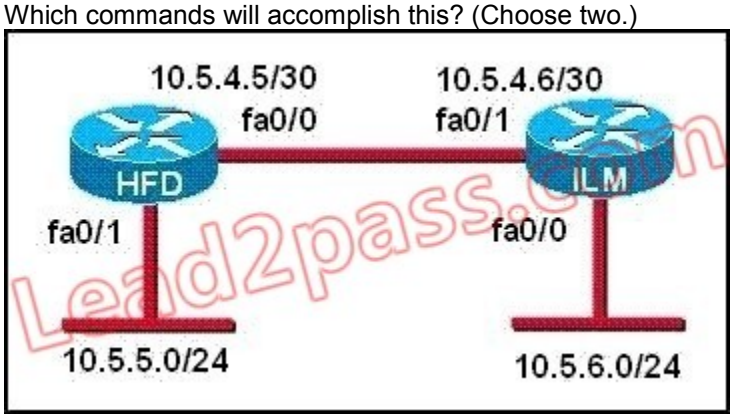
QUESTION 101
Refer to the exhibit. The Lakeside Company has the internetwork in the exhibit. The administrator would like to reduce the size of the routing table on the Central router. Which partial routing table entry in the Central router represents a route summary that represents the LANs in Phoenix but no additional subnets?



A. 10.0.0.0/22 is subnetted, 1 subnets
D 10.0.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
B. 10.0.0.0/28 is subnetted, 1 subnets
D 10.2.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
C. 10.0.0.0/30 is subnetted, 1 subnets
D 10.2.2.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
D. 10.0.0.0/22 is subnetted, 1 subnets
D 10.4.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
E. 10.0.0.0/28 is subnetted, 1 subnets
D 10.4.4.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
F. 10.0.0.0/30 is subnetted, 1 subnets
D 10.4.4.4 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

Answer: D
Explanation:
The 10.4.0.0/22 route includes 10.4.0.0/24, 10.4.1.0/24, 10.4.2.0/24 and 10.4.3.0/24 only.

QUESTION 102
Refer to the graphic. A static route to the 10.5.6.0/24 network is to be configured on the HFD router. Which commands will accomplish this? (Choose two.)



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

Answer: CD
Explanation:
The simple syntax of static route:
ip route destination-network-address subnet-mask {next-hop-IP-address | exit-interface} + destination-network-address: destination network address of the remote network + subnet mask: subnet mask of the destination network + next-hop-IP-address: the IP address of the receiving interface on the next-hop router + exit-interface: the local interface of this router where the packets will go out In the statement "ip route 10.5.6.0 255.255.255.0 fa0/0:
+ 10.5.6.0 255.255.255.0: the destination network
+fa0/0: the exit-interface

QUESTION 103
Before installing a new, upgraded version of the IOS, what should be checked on the router, and which command should be used to gather this information? (Choose two.)

A. the amount of available ROM
B. the amount of available flash and RAM memory
C. the version of the bootstrap software present on the router
D. show version
E. show processes
F. show running-config

Answer: BD
Explanation:
When upgrading new version of the IOS we need to copy the IOS to the Flash so first we have to check if the Flash has enough memory or not. Also running the new IOS may require more RAM than the older one so we should check the available RAM too. We can check both with the "show version" command.

QUESTION 104
Which command reveals the last method used to powercycle a router?

A. show reload
B. show boot
C. show running-config
D. show version

Answer: D
Explanation:
The "show version" command can be used to show the last method to powercycle (reset) a router

```
Router>show version
Cisco Internetwork Operating System Software
IOS (tm) 3600 Software (C3640-IK9S-M), Version 12.2(40a), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2007 by cisco Systems, Inc.
Compiled Sat 10-Mar-07 21:57 by pwade
Image text-base: 0x60008930, data-base: 0x612A2000

ROM: ROMMON Emulation Microcode
ROM: 3600 Software (C3640-IK9S-M), Version 12.2(40a), RELEASE SOFTWARE (fc1)

Router uptime is 3 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0x0
System image file is "tftp://255.255.255.255/unknown"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco 3640 (R4700) processor (revision 0xFF) with 126976K/4096K bytes of memory.
Processor board ID 00000000
R4700 CPU at 100Mhz, Implementation 33, Rev 1.2
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
1 FastEthernet/IEEE 802.3 interface(s)
4 Serial network interface(s)
DRAM configuration is 64 bits wide with parity enabled.
125K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read/Write)

Configuration register is 0x2142

Router>
```

QUESTION 105
Which command would you use on a Cisco router to verify the Layer 3 path to a host?

A. tracert address
B. traceroute address
C. telnet address
D. ssh address

Answer: B
Explanation:
In computing, traceroute is a computer network diagnostic tool for displaying the route (path) and measuring transit delays of packets across an Internet Protocol (IP) network. The history of the

route is recorded as the round-trip times of the packets received from each successive host (remote node) in the route (path); the sum of the mean times in each hop indicates the total time spent to establish the connection. Traceroute proceeds unless all (three) sent packets are lost more than twice, then the connection is lost and the route cannot be evaluated. Ping, on the other hand, only computes the final round-trip times from the destination point.

QUESTION 106
What information does a router running a link-state protocol use to build and maintain its topological database? (Choose two.)

A. hello packets
B. SAP messages sent by other routers
C. LSAs from other routers
D. beacons received on point-to-point links
E. routing tables received from other link-state routers
F. TTL packets from designated routers

Answer: AC
Explanation:
Neighbor discovery is the first step in getting a link state environment up and running. In keeping with the friendly neighbor terminology, a Hello protocol is used for this step. The protocol will define a Hello packet format and a procedure for exchanging the packets and processing the information the packets contain.
After the adjacencies are established, the routers may begin sending out LSAs. As the term flooding implies, the advertisements are sent to every neighbor. In turn, each received LSA is copied and forwarded to every neighbor except the one that sent the LSA.

QUESTION 107
Which statements describe the routing protocol OSPF? (Choose three.)

A. It supports VLSM.
B. It is used to route between autonomous systems.
C. It confines network instability to one area of the network.
D. It increases routing overhead on the network.
E. It allows extensive control of routing updates.
F. It is simpler to configure than RIP v2.

Answer: ACE
Explanation:
The OSPF protocol is based on link-state technology, which is a departure from the Bellman-Ford vector based algorithms used in traditional Internet routing protocols such as RIP. OSPF has introduced new concepts such as authentication of routing updates, Variable Length Subnet Masks (VLSM), route summarization, and so forth.
OSPF uses flooding to exchange link-state updates between routers. Any change in routing information is flooded to all routers in the network. Areas are introduced to put a boundary on the explosion of link-state updates. Flooding and calculation of the Dijkstra algorithm on a router is limited to changes within an area.

QUESTION 108
Refer to the exhibit. A network administrator configures a new router and enters the copy startup-config running-config command on the router. The network administrator powers down the router and sets it up at a remote location. When the router starts, it enters the system configuration dialog as shown. What is the cause of the problem?

```
— System Configuration Dialog —
Would you like to enter the initial configuration dialog? [yes/no]: % Please answer yes' or 'no'.
Would you like to enter the initial configuration dialog? [yes/ho]: n

Would you like to terminate autoinstall? [yes]:

Press RETURN to get started!
```

A. The network administrator failed to save the configuration.
B. The configuration register is set to 0x2100.
C. The boot system flash command is missing from the configuration.
D. The configuration register is set to 0x2102.
E. The router is configured with the boot system startup command.

Answer: A
Explanation:
The "System Configuration Dialog" appears only when no startup configuration file is found. The network administrator has made a mistake because the command "copy startup-config running-config" will copy the startup config (which is empty) over the running config (which is configured by the administrator). So everything configured was deleted. Note: We can tell the router to ignore the start-up configuration on the next reload by setting the register to 0?142. This will make the "System Configuration Dialog" appear at the next reload.

QUESTION 109
Refer to the exhibit. Which WAN protocol is being used?

```
RouterA#show interface pos8/0/0
POS8/0/0 is up, line protocol is up
  Hardware is Packet over Sonet
  Keepalive set (10 sec)
  Scramble disabled
  LMI enq sent  2474988, LMI stat recvd 2474969, LMI upd recvd 0, DTE LMI up
  Broadcast queue 0/256, broadcasts sent/dropped 25760668/0, interface broadcasts 25348176
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters 40w6d
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 39000 bits/sec, 60 packets/sec
     63153396 packets input, 4389121455 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicast)
     0 runts, 0 giants, 0 throttles
              0 parity
     44773 input errors, 39138 CRC, 0 frame, 0 overrun, 0 ignored, 27 abort
     945596253 packets output, 62753244360 bytes, 0 underruns
     0 output errors, 0 applique, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
```

A. ATM
B. HDLC
C. Frame Relay
D. PPP

Answer: C
Explanation:
This question is to examine the show int command.
According to the information provided in the exhibit, we can know that the data link protocol used in this network is the Frame Relay protocol.
"LMI enq sent..."

QUESTION 110
What is the default administrative distance of OSPF?

A. 90
B. 100
C. 110
D. 120

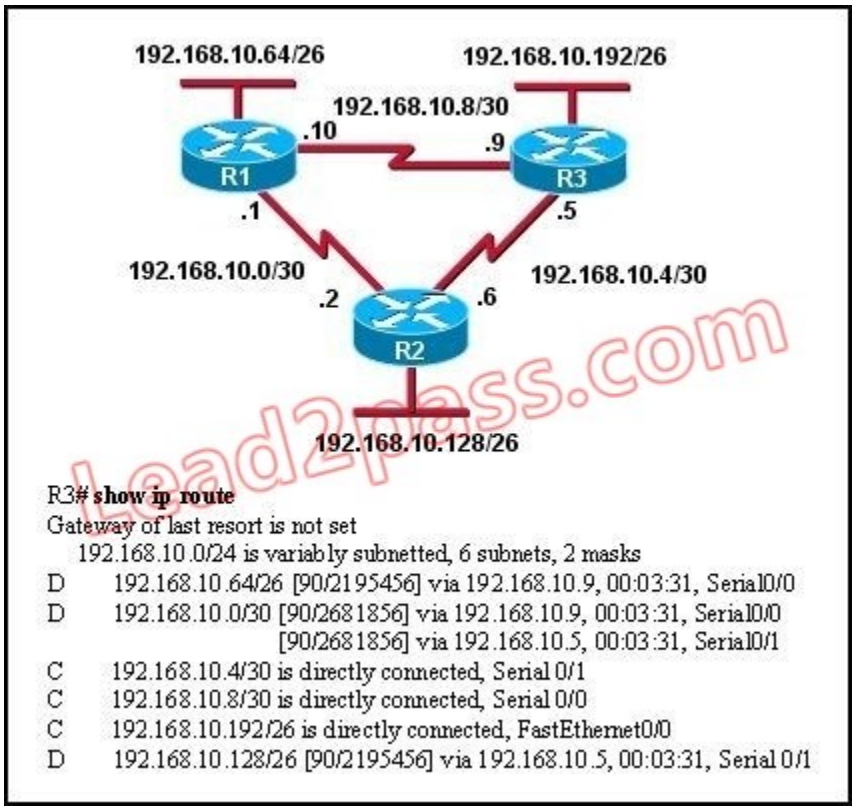
Answer: C
Explanation:
Administrative distance is the feature that routers use in order to select the best path when there are two or more different routes to the same destination from two different routing protocols. Administrative distance defines the reliability of a routing protocol. Each routing protocol is prioritized in order of most to least reliable (believable) with the help of an administrative distance value.
Default Distance Value Table
This table lists the administrative distance default values of the protocols that Cisco supports:
Route Source
Default Distance Values
Connected interface
Static route
Enhanced Interior Gateway Routing Protocol (EIGRP) summary route External Border Gateway Protocol (BGP)
Internal EIGRP
IGRP
OSPF
Intermediate System-to-Intermediate System (IS-IS)
Routing Information Protocol (RIP)
Exterior Gateway Protocol (EGP)
On Demand Routing (ODR)
External EIGRP
Internal BGP
Unknown*

QUESTION 111
Which characteristics are representative of a link-state routing protocol? (Choose three.)

A. provides common view of entire topology
B. exchanges routing tables with neighbors
C. calculates shortest path
D. utilizes event-triggered updates
E. utilizes frequent periodic updates

Answer: ACD
Explanation:
Each of routers running link-state routing protocol learns paths to all the destinations in its "area" so we can say although it is a bit unclear.
Link-state routing protocols generate routing updates only (not the whole routing table) when a change occurs in the network topology so
Link-state routing protocol like OSPF uses Dijkstra algorithm to calculate the shortest path -> . Unlike Distance vector routing protocol (which utilizes frequent periodic updates), link-state routing protocol utilizes event-triggered updates (only sends update when a change occurs) ->

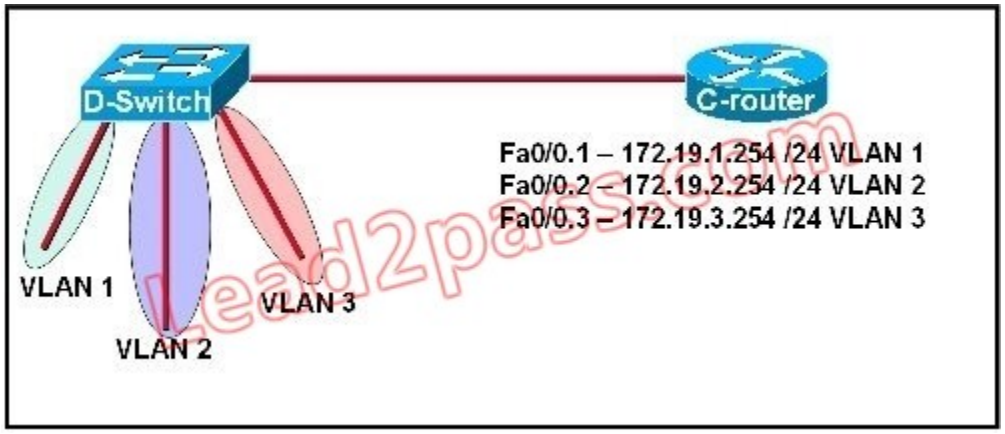
QUESTION 112
Refer to the exhibit. Based on the exhibited routing table, how will packets from a host within the 192.168.10.192/26 LAN be forwarded to 192.168.10.1?



A. The router will forward packets from R3 to R2 to R1.
B. The router will forward packets from R3 to R1 to R2.
C. The router will forward packets from R3 to R2 to R1 AND from R3 to R1.
D. The router will forward packets from R3 to R1.

Answer: C
Explanation:
From the routing table we learn that network 192.168.10.0/30 is learned via 2 equal-cost paths (192.168.10.9 &192.168.10.5) -> traffic to this network will be load-balancing.

QUESTION 113
Refer to the exhibit. C-router is to be used as a "router-on-a-stick" to route between the VLANs. All the interfaces have been properly configured and IP routing is operational. The hosts in the VLANs have been configured with the appropriate default gateway. What is true about this configuration?



A. These commands need to be added to the configuration:
```
C-router(config)# router eigrp 123
C-router(config-router)# network 172.19.0.0
```
B. These commands need to be added to the configuration:
```
C-router(config)# router ospf 1
C-router(config-router)# network 172.19.0.0 0.0.3.255 area 0
```
C. These commands need to be added to the configuration:
```
C-router(config)# router rip
C-router(config-router)# network 172.19.0.0
```
D. No further routing configuration is required.

Answer: D
Explanation:
Since all the same router (C-router) is the default gateway for all three VLANs, all traffic destined to a different VLA will be sent to the C-router. The C-router will have knowledge of all three networks since they will appear as directly connected in the routing table. Since the C-router already knows how to get to all three networks, no routing protocols need to be configured.

QUESTION 114
Which command would you configure globally on a Cisco router that would allow you to view directly connected Cisco devices?

A. enable cdp
B. cdp enable
C. cdp run
D. run cdp

Answer: C
Explanation:
CDP is enabled on Cisco routers by default. If you prefer not to use the CDP capability, disable it with the no cdp run command. In order to reenable CDP, use the cdp run command in global configuration mode. The "cdp enable" command is an interface command, not global.

QUESTION 115
Refer to the exhibit. Why is flash memory erased prior to upgrading the IOS image from the TFTP server?

```
Router# copy tftp flash
Address or name of remote host []? 192.168.2.167
Source filename []? c1600-k8sy-mz.123-16a.bin
Destination filename [c1600-k8sy-mz.123-16a.bin]?
Accessing tftp://192.168.2.167/ c1600-k8sy-mz.l23-16a.bin...
Erasing flash before copying? [confirm]
Erasing the flash filesystem will remove all files! continue? [confirm]
Erasing device
Eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee ...erased
Erase of flash: complete
Loading c1600-k8sy-mz.l23-16a.bin from 192.168.2.167 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 6888962/13777920 bytes]

verifying checksum... OK (0x7BF3)
6888962 bytes copied in 209.920 secs (32961 bytes/sec)
Router#
```

A. The router cannot verify that the Cisco IOS image currently in flash is valid.
B. Flash memory on Cisco routers can contain only a single IOS image.
C. Erasing current flash content is requested during the copy dialog.
D. In order for the router to use the new image as the default, it must be the only IOS image in flash.

Answer: C
Explanation:
During the copy process, the router asked "Erasing flash before copying? [confirm]" and the administrator confirmed (by pressing Enter) so the flash was deleted. Note: In this case, the flash has enough space to copy a new IOS without deleting the current one. The current IOS is deleted just because the administrator wants to do so. If the flash does not have enough space you will see an error message like this:
%Error copying tftp://192.168.2.167/ c1600-k8sy-mz.l23-16a.bin (Not enough space on device)

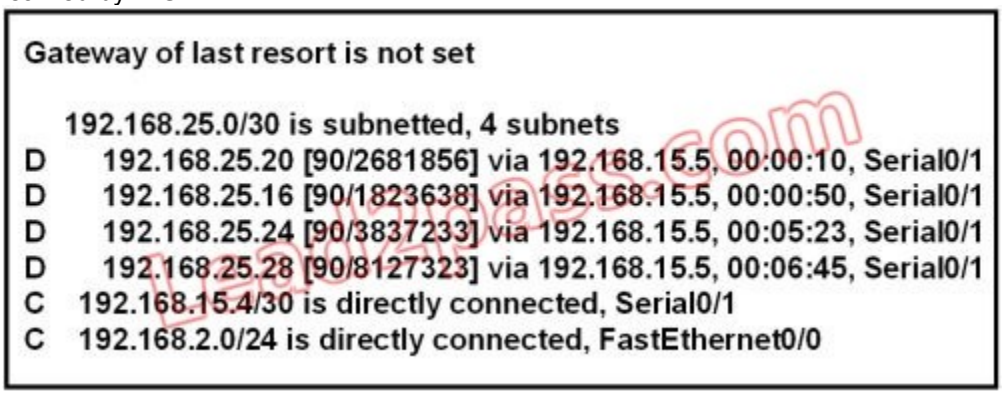
QUESTION 116
Refer to the exhibit. According to the routing table, where will the router send a packet destined for 10.1.5.65?

Network	Interface	Next-hop
10.1.1.0/24	e0	directly connected
10.1.2.0/24	e1	directly connected
10.1.3.0/25	s0	directly connected
10.1.4.0/24	s1	directly connected
10.1.5.0/24	e0	10.1.1.2
10.1.5.64/28	e1	10.1.2.2
10.1.5.64/29	s0	10.1.3.3
10.1.5.64/27	s1	10.1.4.4

A. 10.1.1.2
B. 10.1.2.2
C. 10.1.3.3
D. 10.1.4.4

Answer: C
Explanation:
The destination IP address 10.1.5.65 belongs to 10.1.5.64/28, 10.1.5.64/29 & 10.1.5.64/27 subnets but the "longest prefix match" algorithm will choose the most specific subnet mask -> the prefix "/29 will be chosen to route the packet. Therefore the next-hop should be 10.1.3.3 -> .

QUESTION 117
Refer to the exhibit. Which address and mask combination represents a summary of the routes learned by EIGRP?

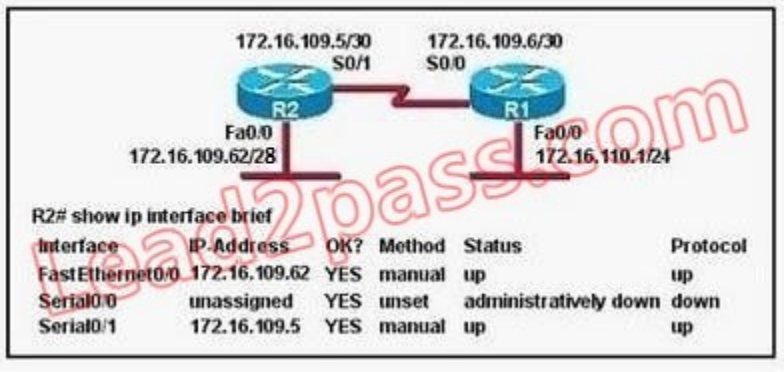


A. 192.168.25.0 255.255.255.240
B. 192.168.25.0 255.255.255.252
C. 192.168.25.16 255.255.255.240
D. 192.168.25.16 255.255.255.252
E. 192.168.25.28 255.255.255.240
F. 192.168.25.28 255.255.255.252

Answer: C
Explanation:
The binary version of 20 is 10100.
The binary version of 16 is 10000.
The binary version of 24 is 11000.
The binary version of 28 is 11100.
The subnet mask is /28. The mask is 255.255.255.240.
Note:
From the output above, EIGRP learned 4 routes and we need to find out the summary of them:
+ 192.168.25.16
+ 192.168.25.20
+ 192.168.25.24
+ 192.168.25.28
-> The increment should bE. 28 ?16 = 12 but 12 is not an exponentiation of 2 so we must choose 16 (24). Therefore the subnet mask is /28 (=1111 1111.1111 1111.1111 1111.11110000) = 255.255.255.240
So the best answer should be 192.168.25.16 255.255.255.240

QUESTION 118

Refer to the exhibit. Assuming that the entire network topology is shown, what is the operational status of the interfaces of R2 as indicated by the command output shown?



A. One interface has a problem.
B. Two interfaces have problems.
C. The interfaces are functioning correctly.
D. The operational status of the interfaces cannot be determined from the output shown.

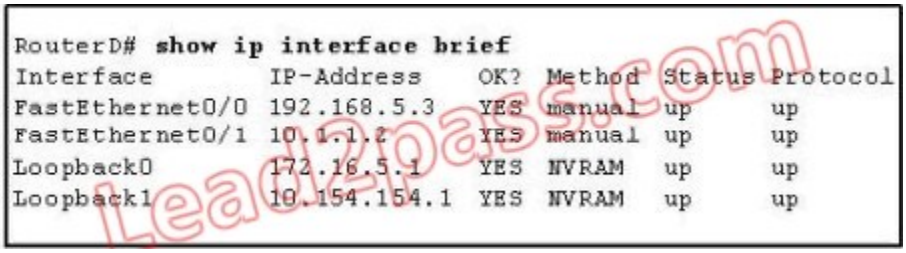
Answer: C
Explanation:
The output shown shows normal operational status of the router's interfaces. Serial0/0 is down because it has been disabled using the "shutdown" command.

QUESTION 119
Which two locations can be configured as a source for the IOS image in the boot system command? (Choose two.)

A. RAM
B. NVRAM
C. flash memory
D. HTTP server
E. TFTP server
F. Telnet server

Answer: CE
Explanation:
The following locations can be configured as a source for the IOS image:
1. + Flash (the default location)
2. + TFTP server
3. + ROM (used if no other source is found)

QUESTION 120
Refer to the exhibit. Given the output for this command, if the router ID has not been manually set, what router ID will OSPF use for this router?



A. 10.1.1.2
B. 10.154.154.1
C. 172.16.5.1
D. 192.168.5.3

Answer: C
Explanation:
The highest IP address of all loopback interfaces will be chosen -> Loopback 0 will be chosen as the router ID.

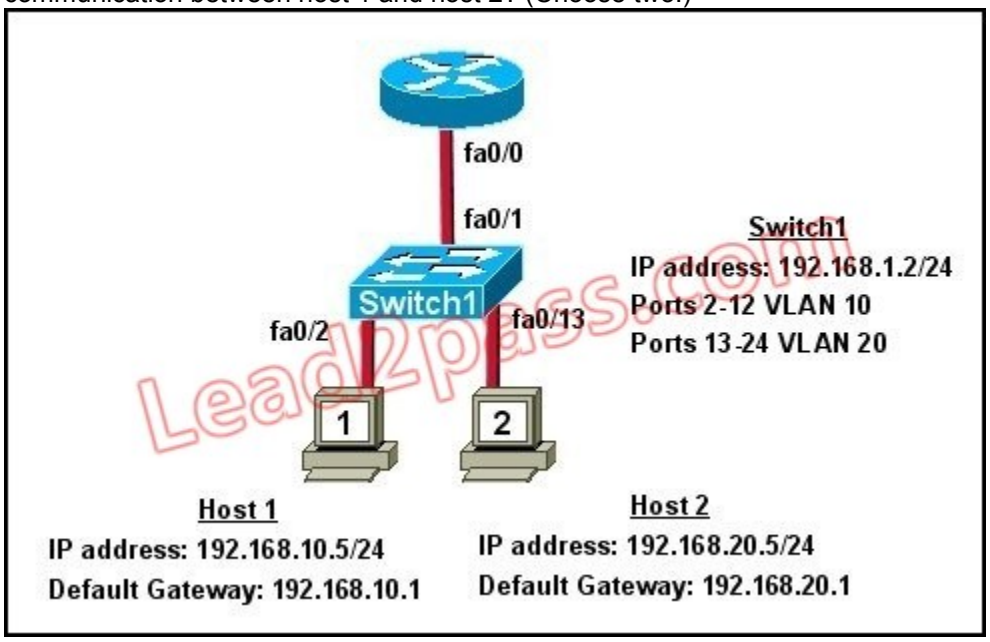
QUESTION 121
Which two statements describe the process identifier that is used in the command to configure OSPF on a router? (Choose two.)

```
Router(config)# router ospf 1
```

A. All OSPF routers in an area must have the same process ID
B. Only one process number can be used on the same router.
C. Different process identifiers can be used to run multiple OSPF processes
D. The process number can be any number from 1 to 65,535.
E. Hello packets are sent to each neighbor to determine the processor identifier.

Answer: CD
Explanation:
Multiple OSPF processes can be configured on a router using multiple process ID's.
The valid process ID's are shown below:
Edge-B(config)#router ospf ?
<1-65535> Process ID

QUESTION 122
Refer to the exhibit. What commands must be configured on the 2950 switch and the router to allow communication between host 1 and host 2? (Choose two.)



A.
```
Router(config)# interface fastethernet 0/0
Router(config-if)# ip address 192.168.1.1 255.255.255.0
Router(config-if)# no shut down
```
B.
```
Router(config)# interface fastethernet 0/0
Router(config-if)# no shut down
Router(config)# interface fastethernet 0/0.1
Router(config-subif)# encapsulation dot1q 10
Router(config-subif)# ip address 192.168.10.1 255.255.255.0
Router(config)# interface fastethernet 0/0.2
Router(config-subif)# encapsulation dot1q 20
Router(config-subif)# ip address 192.168.20.1 255.255.255.0
```
C.
```
Router(config)# router eigrp 100
Router(config-router)# network 192.168.10.0
Router(config-router)# network 192.168.20.0
```
D.
```
Switch1(config)# vlan database
Switch1(config-vlan)# vtp domain XYZ
Switch1(config-vlan)# vtp server
```
E.
```
Switch1(config)# interface fastethernet 0/1
Switch1(config-if)# switchport mode trunk
```
F.
```
Switch1(config)# interface vlan 1
Switch1(config-if)# ip default-gateway 192.168.1.1
```

Answer: BE

Explanation:

The router will need to use subinterfaces, where each subinterface is assigned a VLAN and IP address for each VLAN. On the switch, the connection to the router need to be configured as a trunk using the switchport mode trunk command and it will need a default gateway for VLAN 1.

QUESTION 123

Refer to the exhibit. For what two reasons has the router loaded its IOS image from the location that is shown? (Choose two.)

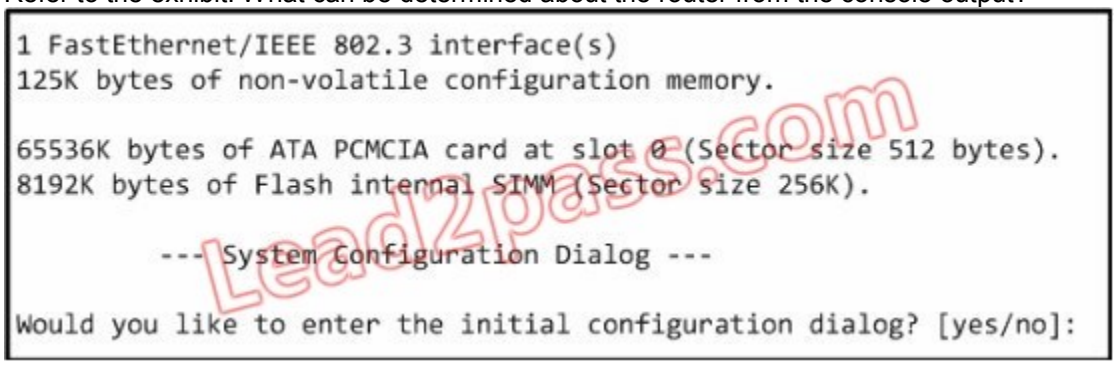
```
Router1> show version
Cisco Internetwork Operating System Software
IOS ™ 7200 Software (C7200-J-M), Experimental Version 11.3tl997091S:1647S2)
[hampton-nitro-baseline 249]
Copyright (c) 1986-1997 by cisco Systems, Inc.
Compiled Wed 08-Oct-97 06:39 by hampton
Image text-base: 0×60008900, data-base: 0x60B98000

ROM: System Bootstrap, Version 11.1(11855) [beta 2], INTERIM SOFTWARE
BOOTPLASH: 7200 Software (C7200-BOOT-M), Version 11.1(472), RELEASE SOFTWARE (fcl)

Router1 uptime is 23 hours, 33 minutes
System restarted by abort at PC 0x6022322C at 10:50:SS PDT Tue Oct 21 1997
System image file is "tftp://112.16.1.129/hampton/nitro/c7200-j-mz"

cisco 7206 (NPE150) processor with 57344K/8192K bytes of memory.

Configuration register is 0×2102
```


A. Router1 has specific boot system commands that instruct it to load IOS from a TFTP server.
B. Router1 is acting as a TFTP server for other routers.

C. Router1 cannot locate a valid IOS image in flash memory.
D. Router1 defaulted to ROMMON mode and loaded the IOS image from a TFTP server.
E. Cisco routers will first attempt to load an image from TFTP for management purposes.

Answer: AC
Explanation:
The loading sequence of CISCO IOS is as follows:
Booting up the router and locating the Cisco IOS
1. POST (power on self test)
2. Bootstrap code executed
3. Check Configuration Register value (NVRAM) which can be modified using the config-register command
0 = ROM Monitor mode
1 = ROM IOS
2 - 15 = startup-config in NVRAM
4. Startup-config filE. Check for boot system commands (NVRAM) If boot system commands in startup-config
a. Run boot system commands in order they appear in startup-config to locate the IOS b. [If boot system commands fail, use default fallback sequence to locate the IOS (Flash, TFTP, ROM)?]
If no boot system commands in startup-config use the default fallback sequence in locating the IOS:
a. Flash (sequential)
b. TFTP server (netboot)
c. ROM (partial IOS) or keep retrying TFTP depending upon router model
5. If IOS is loaded, but there is no startup-config file, the router will use the default fallback sequence for locating the IOS and then it will enter setup mode or the setup dialogue.

QUESTION 124
Refer to the exhibit. What can be determined about the router from the console output?



A. No configuration file was found in NVRAM.
B. No configuration file was found in flash.
C. No configuration file was found in the PCMCIA card.
D. Configuration file is normal and will load in 15 seconds.

Answer: A
Explanation:
When no startup configuration file is found in NVRAM, the System Configuration Dialog will appear to ask if we want to enter the initial configuration dialog or not.

QUESTION 125
Which three elements must be used when you configure a router interface for VLAN trunking? (Choose three.)

A. one physical interface for each subinterface
B. one IP network or subnetwork for each subinterface
C. a management domain for each subinterface
D. subinterface encapsulation identifiers that match VLAN tags
E. one subinterface per VLAN
F. subinterface numbering that matches VLAN tags

Answer: BDE
Explanation:
This scenario is commonly called a router on a stick. A short, well written article on this operation can be found here:
http://www.thebryantadvantage.com/RouterOnAStickCCNACertificationExamTutorial.htm

QUESTION 126
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? (Choose two.)

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

Answer: BE
Explanation:
In the router ospf
command, the ranges from 1 to 65535 so o is an invalid number -> but To configure OSPF, we need a wildcard in the "network" statement, not a subnet mask. We also need to assgin an area to this process -> .

QUESTION 127
A router receives information about network 192.168.10.0/24 from multiple sources. What will the router consider the most reliable information about the path to that network?

A. a directly connected interface with an address of 192.168.10.254/24
B. a static route to network 192.168.10.0/24
C. a RIP update for network 192.168.10.0/24
D. an OSPF update for network 192.168.0.0/16
E. a default route with a next hop address of 192.168.10.1
F. a static route to network 192.168.10.0/24 with a local serial interface configured as the next hop

Answer: A
Explanation:
When there is more than one way to reach a destination, it will choose the best one based on a couple of things. First, it will choose the route that has the longest match; meaning the most specific route. So, in this case the /24 routes will be chosen over the /16 routes. Next, from all the /24 routes it will choose the one with the lowest administrative distance. Directly connected routes have an AD of 1 so this will be the route chosen.

QUESTION 128

What is the default maximum number of equal-cost paths that can be placed into the routing table of a Cisco OSPF router?

A. 2
B. 4
C. 16
D. unlimited

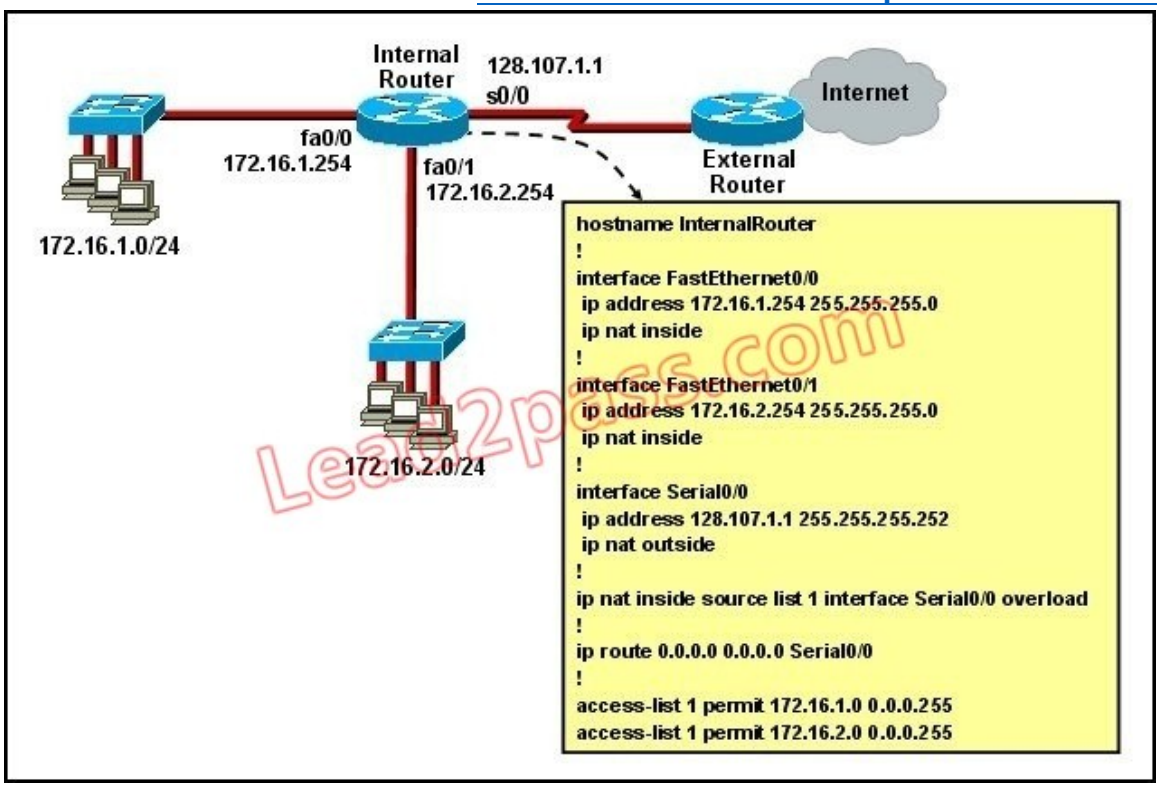
Answer: B
Explanation:
maximum-paths (OSPF)
To control the maximum number of parallel routes that Open Shortest Path First (OSPF) can support, use the maximum-paths command.
Syntax Description
maximum
Maximum number of parallel routes that OSPF can install in a routing table. The range is from 1 to 16 routes.
Command Default
8 paths

QUESTION 129
Which command shows your active Telnet connections?

A. show cdp neigbors
B. show session
C. show users
D. show vty logins

Answer: B
Explanation:
The "show users" shows telnet/ssh connections to your router while "show sessions" shows telnet/ssh connections from your router (to other devices). The question asks about "your active Telnet connections", meaning connections from your router so the answer should be A.

QUESTION 130
Refer to the exhibit. What statement is true of the configuration for this network?



A. The configuration that is shown provides inadequate outside address space for translation of the number of inside addresses that are supported.
B. Because of the addressing on interface FastEthernet0/1, the Serial0/0 interface address will not support the NAT configuration as shown.
C. The number 1 referred to in the ip nat inside source command references access-list number 1.
D. ExternalRouter must be configured with static routes to networks 172.16.1.0/24 and 172.16.2.0/24.

Answer: C
Explanation:
The "list 1 refers to the access-list number 1.

QUESTION 131
Which type of EIGRP route entry describes a feasible successor?

A. a backup route, stored in the routing table
B. a primary route, stored in the routing table
C. a backup route, stored in the topology table
D. a primary route, stored in the topology table

Answer: C
Explanation:
EIGRP uses the Neighbor Table to list adjacent routers. The Topology Table list all the learned routers to destination whilst the Routing Table contains the best route to a destination, which is known as the Successor. The Feasible Successor is a backup route to a destination which is kept in the Topology Table.

QUESTION 132

Which statement describes the process of dynamically assigning IP addresses by the DHCP server?

A. Addresses are allocated after a negotiation between the server and the host to determine the length of the agreement.
B. Addresses are permanently assigned so that the hosts uses the same address at all times.
C. Addresses are assigned for a fixed period of time, at the end of the period, a new request for an address must be made.
D. Addresses are leased to hosts, which periodically contact the DHCP server to renew the lease.

Answer: D
Explanation:
The DHCP lifecycle consists of the following:
Release: The client may decide at any time that it no longer wishes to use the IP address it was assigned, and may terminate the lease, releasing the IP address.

QUESTION 133
What are two benefits of using NAT? (Choose two.)

A. NAT facilitates end-to-end communication when IPsec is enabled.
B. NAT eliminates the need to re-address all hosts that require external access.
C. NAT conserves addresses through host MAC-level multiplexing.
D. Dynamic NAT facilitates connections from the outside of the network.
E. NAT accelerates the routing process because no modifications are made on the packets.
F. NAT protects network security because private networks are not advertised.

Answer: BF
Explanation:
By not revealing the internal Ip addresses, NAT adds some security to the inside network -> F is correct.
NAT has to modify the source IP addresses in the packets -> E is not correct.
Connection from the outside of the network through a "NAT" network is more difficult than a more network because IP addresses of inside hosts are hidden -> C is not correct.
In order for IPsec to work with NAT we need to allow additional protocols, including Internet Key Exchange (IKE), Encapsulating Security Payload (ESP) and Authentication Header (AH) -> more complex -> A is not correct.
By allocating specific public IP addresses to inside hosts, NAT eliminates the need to re-address the inside hosts -> B is correct.
NAT does conserve addresses but not through host MAC-level multiplexing. It conserves addresses by allowing many private IP addresses to use the same public IP address to go to the Internet -> C is not correct.

QUESTION 134
On which options are standard access lists based?

A. destination address and wildcard mask
B. destination address and subnet mask
C. source address and subnet mask
D. source address and wildcard mask

Answer: D
Explanation:
Standard ACL's only examine the source IP address/mask to determine if a match is made. Extended ACL's examine the source and destination address, as well as port information.

QUESTION 135
A network engineer wants to allow a temporary entry for a remote user with a specific username and password so that the user can access the entire network over the Internet. Which ACL can be used?

A. standard
B. extended
C. dynamic
D. reflexive

Answer: C
Explanation:
We can use a dynamic access list to authenticate a remote user with a specific username and password. The authentication process is done by the router or a central access server such as a TACACS+ or RADIUS server. The configuration of dynamic ACL can be read here:
http://www.cisco.com/en/US/tech/tk583/tk822/technologies_tech_note09186a0080094524.shtml

QUESTION 136
How does a DHCP server dynamically assign IP addresses to hosts?

A. Addresses are permanently assigned so that the host uses the same address at all times.
B. Addresses are assigned for a fixed period of time. At the end of the period, a new request for an address must be made, and another address is then assigned.
C. Addresses are leased to hosts. A host will usually keep the same address by periodically contacting the DHCP server to renew the lease.
D. Addresses are allocated after a negotiation between the server and the host to determine the length of the agreement.

Answer: C
Explanation:
DHCP works in a client/server mode and operates like any other client/server relationship. When a PC connects to a DHCP server, the server assigns or leases an IP address to that PC. The PC connects to the network with that leased IP address until the lease expires. The host must contact the DHCP server periodically to extend the lease. This lease mechanism ensures that hosts that move or power off do not hold onto addresses that they do not need. The DHCP server returns these addresses to the address pool and reallocates them as necessary.

QUESTION 137
Refer to the exhibit. Which rule does the DHCP server use when there is an IP address conflict?

```
Router# show ip dhcp conflict
IP address        Detection method   Detection time
172.16.1.32       Ping               Feb 16 1998 12:28 PM
172.16.1.64       Gratuitous ARP     Feb 23 1998 08:12 AM
```

A. The address is removed from the pool until the conflict is resolved.
B. The address remains in the pool until the conflict is resolved.
C. Only the IP detected by Gratuitous ARP is removed from the pool.
D. Only the IP detected by Ping is removed from the pool.
E. The IP will be shown, even after the conflict is resolved.

Answer: A

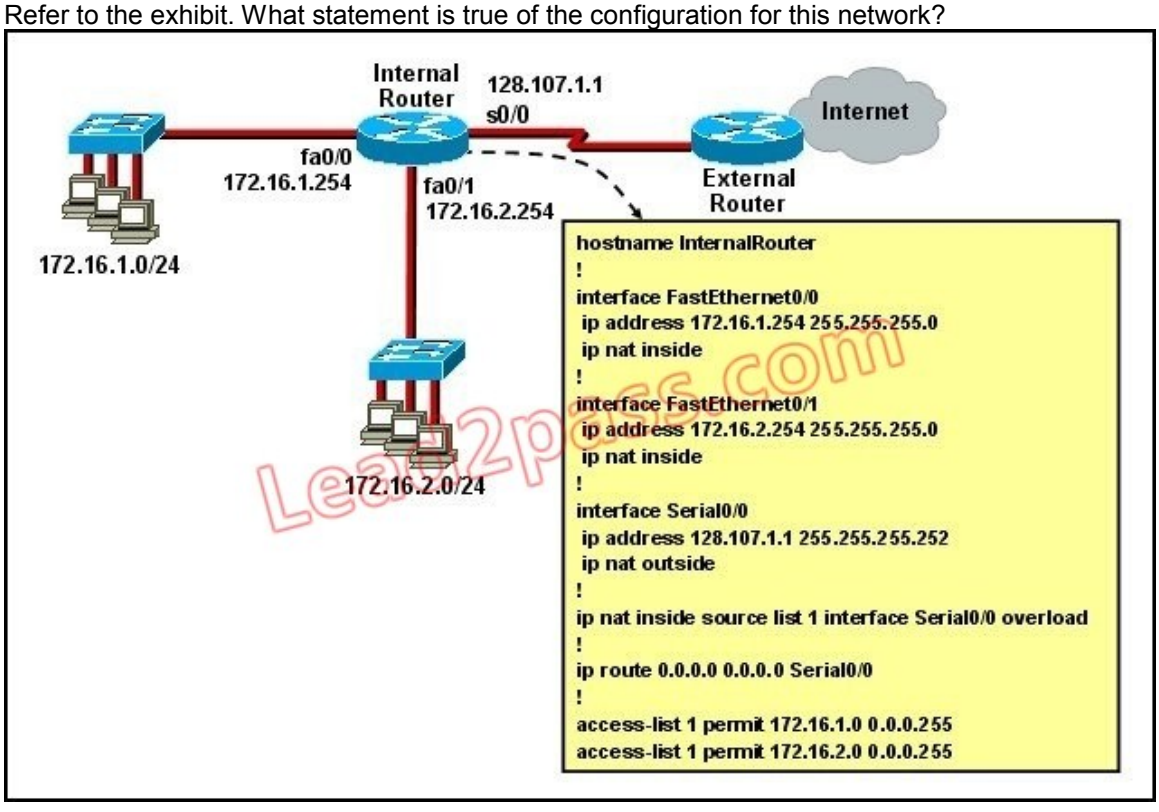
Explanation:
An address conflict occurs when two hosts use the same IP address. During address assignment, DHCP checks for conflicts using ping and gratuitous ARP. If a conflict is detected, the address is removed from the pool. The address will not be assigned until the administrator resolves the conflict.
http://www.cisco.com/en/US/docs/ios/12_1/iproute/configuration/guide/1cddhcp.html

QUESTION 138
Which two tasks does the Dynamic Host Configuration Protocol perform? (Choose two.)

A. Set the IP gateway to be used by the network.
B. Perform host discovery used DHCPDISCOVER message.
C. Configure IP address parameters from DHCP server to a host.
D. Provide an easy management of layer 3 devices.
E. Monitor IP performance using the DHCP server.
F. Assign and renew IP address from the default pool.

Answer: CF
Explanation:
The Dynamic Host Configuration Protocol (DHCP) is a network protocol used to configure devices that are connected to a network (known as hosts) so they can communicate on that network using the Internet Protocol (IP). It involves clients and a server operating in a client-server model. DHCP servers assigns IP addresses from a pool of addresses and also assigns other parameters such as DNS and default gateways to hosts.

QUESTION 139
Refer to the exhibit. What statement is true of the configuration for this network?



A. The configuration that is shown provides inadequate outside address space for translation of the number

of inside addresses that are supported.
B. Because of the addressing on interface FastEthernet0/1, the Serial0/0 interface address will not support the NAT configuration as shown.
C. The number 1 referred to in the ip nat inside source command references access-list number 1.
D. ExternalRouter must be configured with static routes to networks 172.16.1.0/24 and 172.16.2.0/24.

Answer: C
Explanation:
The "list 1 refers to the access-list number 1.

QUESTION 140
When a DHCP server is configured, which two IP addresses should never be assignable to hosts? (Choose two.)

A. network or subnetwork IP address
B. broadcast address on the network
C. IP address leased to the LAN
D. IP address used by the interfaces
E. manually assigned address to the clients
F. designated IP address to the DHCP server

Answer: AB
Explanation:
Network or subnetwork IP address (for example 11.0.0.0/8 or 13.1.0.0/16) and broadcast address (for example 23.2.1.255/24) should never be assignable to hosts. When try to assign these addresses to hosts, you will receive an error message saying that they can't be assignable.

QUESTION 141
Which two statements about static NAT translations are true? (Choose two.)

A. They allow connections to be initiated from the outside.
B. They require no inside or outside interface markings because addresses are statically defined.
C. They are always present in the NAT table.
D. They can be configured with access lists, to allow two or more connections to be initiated from the outside.

Answer: AC
Explanation:
Static NAT is to map a single outside IP address to a single inside IP address. This is typically done to allow incoming connections from the outside (Internet) to the inside. Since these are static, they are always present in the NAT table even if they are not actively in use.

QUESTION 142
Which statement about access lists that are applied to an interface is true?

A. You can place as many access lists as you want on any interface.
B. You can apply only one access list on any interface.
C. You can configure one access list, per direction, per Layer 3 protocol.
D. You can apply multiple access lists with the same protocol or in different directions.

Answer: C
Explanation:
We can have only 1 access list per protocol, per direction and per interface. It means:

+ We can not have 2 inbound access lists on an interface + We can have 1 inbound and 1 outbound access list on an interface

QUESTION 143
Which item represents the standard IP ACL?

A. access-list 110 permit ip any any
B. access-list 50 deny 192.168.1.1 0.0.0.255
C. access list 101 deny tcp any host 192.168.1.1
D. access-list 2500 deny tcp any host 192.168.1.1 eq 22

Answer: B
Explanation:
The standard access lists are ranged from 1 to 99 and from 1300 to 1999 so only access list 50 is a standard access list.

QUESTION 144
A network administrator is configuring ACLs on a Cisco router, to allow traffic from hosts on networks 192.168.146.0, 192.168.147.0, 192.168.148.0, and 192.168.149.0 only. Which two ACL statements, when combined, would you use to accomplish this task? (Choose two.)

A. access-list 10 permit ip 192.168.146.0 0.0.1.255
B. access-list 10 permit ip 192.168.147.0 0.0.255.255
C. access-list 10 permit ip 192.168.148.0 0.0.1.255
D. access-list 10 permit ip 192.168.149.0 0.0.255.255
E. access-list 10 permit ip 192.168.146.0 0.0.0.255
F. access-list 10 permit ip 192.168.146.0 255.255.255.0

Answer: AC
Explanation:
access-list 10 permit ip 192.168.146.0 0.0.1.255 will include the 192.168.146.0 and 192.168.147.0 subnets, while access-list 10 permit ip 192.168.148.0 0.0.1.255 will include

QUESTION 145
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 access-class command.

Answer: DE
Explanation:
It is a waste to administratively shut down the interface. Moreover, someone can still access the virtual terminal interfaces via other interfaces ->
We can not physically secure a virtual interface because it is "virtual" -> To apply an access list to a virtual terminal interface we must use the "access-class" command. The "access-group" command is only used to apply an access list to a physical interface -> C is not correct.
The most simple way to secure the virtual terminal interface is to configure a username & password to prevent unauthorized login.

QUESTION 146
Which two commands correctly verify whether port security has been configured on port FastEthernet 0/12 on a switch? (Choose two.)

A. SW1#show port-secure interface FastEthernet 0/12
B. SW1#show switchport port-secure interface FastEthernet 0/12
C. SW1#show running-config
D. SW1#show port-security interface FastEthernet 0/12
E. SW1#show switchport port-security interface FastEthernet 0/12

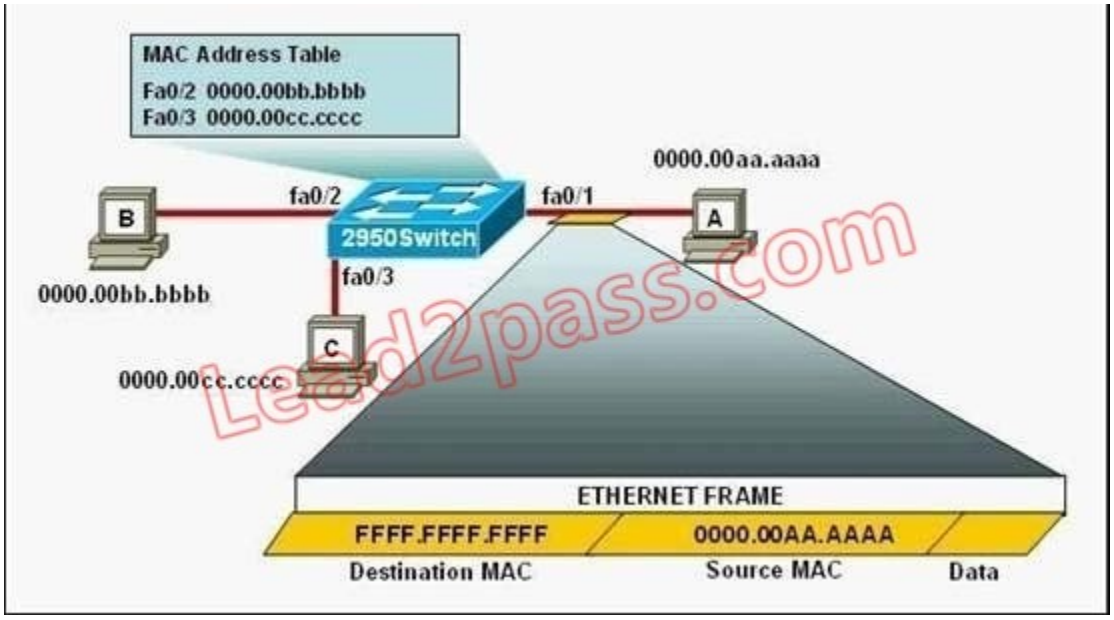
Answer: CD
Explanation:
We can verify whether port security has been configured by using the "show running-config" or "show port-security interface " for more detail. An example of the output of "show port-security interface " command is shown below:

```
Switch# show port-security interface fa0/12
Port Security              : Enabled
Port Status                : Secure-down
Violation Mode             : Shutdown
Aging Time                 : 0 mins
Aging Type                 : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses      : 2
```

QUESTION 147
Refer to the exhibit. The following commands are executed on interface fa0/1 of 2950Switch.

```
2950Switch(config-if)# switchport port-security
2950Switch(config-if)# switchport port-security mac-address sticky
2950Switch(config-if)# switchport port-security maximum 1
```

The Ethernet frame that is shown arrives on interface fa0/1.
What two functions will occur when this frame is received by 2950Switch? (Choose two.)



A. The MAC address table will now have an additional entry of fa0/1 FFFF.FFFF.FFFF.
B. Only host A will be allowed to transmit frames on fa0/1.
C. This frame will be discarded when it is received by 2950Switch.
D. All frames arriving on 2950Switch with a destination of 0000.00aa.aaaa will be forwarded out fa0/1.
E. Hosts B and C may forward frames out fa0/1 but frames arriving from other switches will not be forwarded out fa0/1.
F. Only frames from source 0000.00bb.bbbb, the first learned MAC address of 2950Switch, will be forwarded out fa0/1.

Answer: BD
Explanation:
The configuration shown here is an example of port security, specifically port security using sticky addresses. You can use port security with dynamically learned and static MAC addresses to restrict a port's ingress traffic by limiting the MAC addresses that are allowed to send traffic into the port. When you assign secure MAC addresses to a secure port, the port does not forward ingress traffic that has source addresses outside the group of defined addresses. If you limit the number of secure MAC addresses to one and assign a single secure MAC address, the device attached to that port has the full bandwidth of the port. Port security with sticky MAC addresses provides many of the same benefits as port security with static MAC addresses, but sticky MAC addresses can be learned dynamically. Port security with sticky MAC addresses retains dynamically learned MAC addresses during a link-down condition.

QUESTION 148
What will be the result if the following configuration commands are implemented on a Cisco switch?

```
Switch(config-if)# switchport port-security
Switch(config-if)# switchport port-security mac-address sticky
```

A. A dynamically learned MAC address is saved in the startup-configuration file.
B. A dynamically learned MAC address is saved in the running-configuration file.
C. A dynamically learned MAC address is saved in the VLAN database.
D. Statically configured MAC addresses are saved in the startup-configuration file if frames from that address are received.

E. Statically configured MAC addresses are saved in the running-configuration file if frames from that address are received.

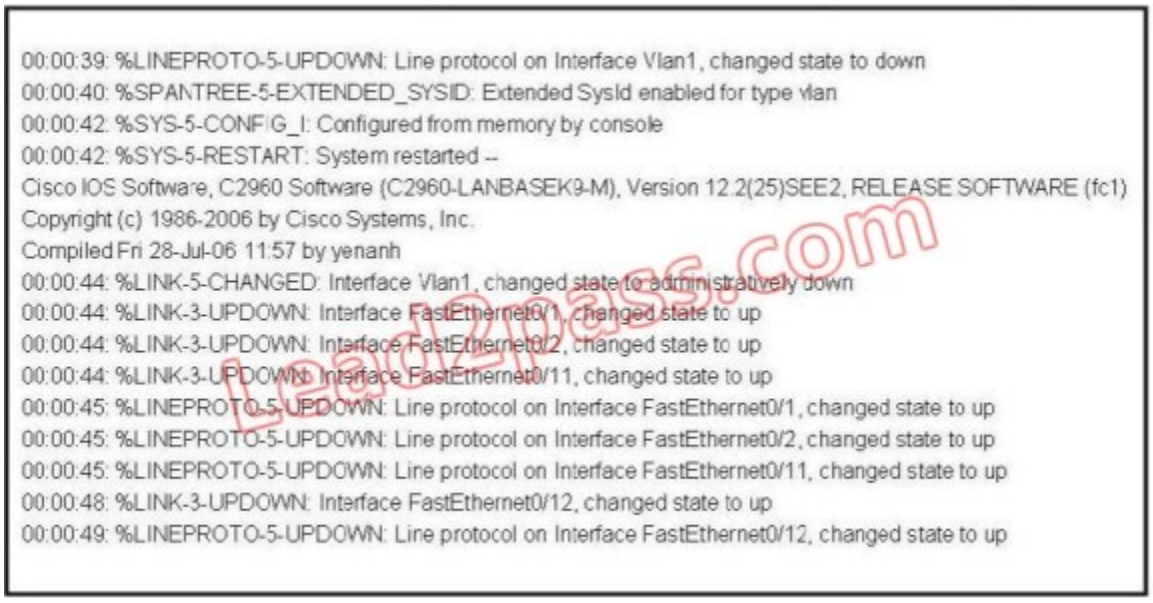
Answer: B
Explanation:
In the interface configuration mode, the command switchport port-security mac-address sticky enables sticky learning. When entering this command, the interface converts all the dynamic secure MAC addresses to sticky secure MAC addresses.

QUESTION 149
The network administrator cannot connect to Switch1 over a Telnet session, although the hosts attached to Switch1 can ping the interface Fa0/0 of the router. Given the information in the graphic and assuming that the router and Switch2 are configured properly, which of the following commands should be issued on Switch1 to correct this problem?

A.
```
Switch1(config)# line con0
Switch1(config-line)# password cisco
Switch1(config-line)#login
```
B.
```
Switch1(config)# interface fa0/1
Switch1(config-if)# ip address 192.168.24.3 255.255.255.0
```
C.
```
Switch1(config)# ip default-gateway 192.168.24.1
```
D.
```
Switch1(config)# interface fa0/1
Switch1(config-if)# duplex full
Switch1(config-if)# speed 100
```
E.
```
Switch1(config)# interface fa0/1
Switch1(config-if)# switchport mode trunk
```

Answer: C
Explanation:
Since we know hosts can reach the router through the switch, we know that connectivity, duplex. Speed, etc. are good. However, for the switch itself to reach networks outside the local one, the ip default-gateway command must be used.

QUESTION 150
Refer to the exhibit. Which of these statements correctly describes the state of the switch once the boot process has been completed?



A. As FastEthernet0/12 will be the last to come up, it will be blocked by STP.
B. Remote access management of this switch will not be possible without configuration change.
C. More VLANs will need to be created for this switch.
D. The switch will need a different IOS code in order to support VLANs and STP.

Answer: B
Explanation:
Notice the line, which says "Interface VLAN1, changed state to administratively down". This shows that VLAN1 is shut down. Hence remote management of this switch is not possible unless VLAN1 is brought back up. Since VLAN1 is the only interface shown in the output, you have to assume that no other VLAN interface has been configured with an IP Address.