Lead2pass.640-802

Number: 640-802
Passing Score: 790
Time Limit: 120 min
File Version: 12.69

Vendor: Cisco

Exam Code: 640-802

Exam Name: CCNA - Cisco Certified Network Associate

Basic Operation Questions
How a Network Works
IP Services
IPv6
Layer 2 Security
Layer 3 Security
have been fixed and explanations for most all questions.

More than anything thanks to Spike for creating this VCE.

Sections

13. Troubleshoot Routing
14. Troubleshoot Switching
15. VLAN
16. VoIP
17. VTP
18. WAN
19. WLAN

Exam A

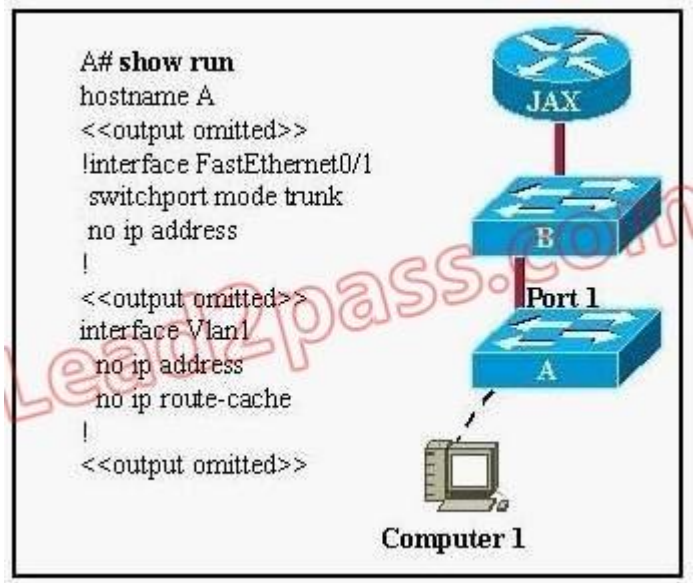
QUESTION 1
It has become necessary to configure an existing serial interface to accept a second Frame Relay virtual circuit.
Which of the following procedures are required to accomplish this task? (Choose three.)

A. configure static frame relay map entries for each subinterface network.
B. remove the ip address from the physical interface
C. create the virtual interfaces with the interface command
D. configure each subinterface with its own IP address
E. disable split horizon to prevent routing loops between the subinterface networks
F. encapsulate the physical interface with multipoint PPP

Correct Answer: BCD
Section: WAN
Explanation

Explanation/Reference:

QUESTION 2
Refer to the graphic. Computer 1 is consoles into switch A.
Telnet connections and pings run from the command prompt on switch A fail. Which of the following could cause this problem?

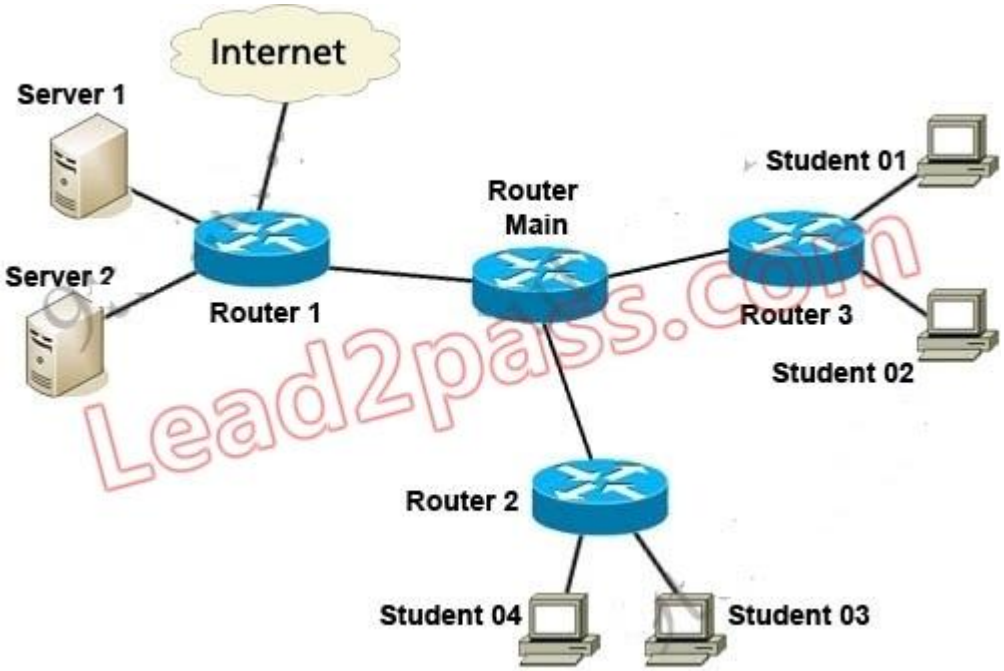


A. switch A dose not have a cdp entry for switch B or router JAX
B. Switch A does not have an IP address.
C. port 1 on switch A should be an access port rather than a trunk port
D. switch A is not directly connected to router JAX
E. switch A does not have a default gateway assigned

Correct Answer: B
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 3
Refer to the exhibit.
Which three variables (router,protocol port,and router ACL direction) apply to an extended ACL that will prevent student 01 from securely browsing the internet?



A. OUT
B. Router 3
C. HTTP
D. IN
E. Router 1

Correct Answer: BCD
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 4
Which command can you use to determine the cisco ios feature set on a cisco router?

A. show version
B. dir flash:|include ios

C. show environment
D. show diag
E. show inventory

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
If you want to keep the same features as the version that currently runs on your router, and you are not sure which feature set you use, issue the **show version** command on your router.

QUESTION 5
What are three benefits of implementing vlans?(choose three)

A. A more efficient use of bandwidth can be achieved allowing many physical groups to use the same network infrastructure
B. Broadcast storms can be mitigated by decreasing the number of broadcast domains,thus increasing their size.
C. A higher level of network security can be reached by separating sensitive data traffic from other network traffic.
D. Port-based vlans increase switch-port use efficient,thanks to 802.1Q trunks
E. A more efficient use of bandwidth can be achieved allowing many logical networks to use the same network infrastructure.
F. Broadcast storms can be mitigated by increasing the number of broadcast domains,thus reducing their size.
G. VLANs make it easier for IT staff to configure new logical groups,because the vlans all belong to the same broadcast domain.

Correct Answer: CEF
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 6
In the implementation of VLSM techniques on a network using a single Class C IP address, which subnet mask is the most efficient for point-to-point serial links?

A. 255.255.255.240
B. 255.255.255.254
C. 255.255.255.252
D. 255.255.255.0
E. 255.255.255.248

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 7
A switch has been configured with two vlans and is connected to a router with a trunk for inter-vlan routing.
OSPF has been configured on the router,as the routing protocol for the network. Which statement about this network is true?

A. For the two vlans to communicate,a network statement for the trunk interface needs to be added to the OSPF configuration.
B. For the two vlans to communicate,a network statement for each subinterface needs to be added to the OSPF configuration.
C. Direct inter-vlan communication does not require OSPF.
D. OSPF cannot be used if router-on-a-stick is configured on the router.

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

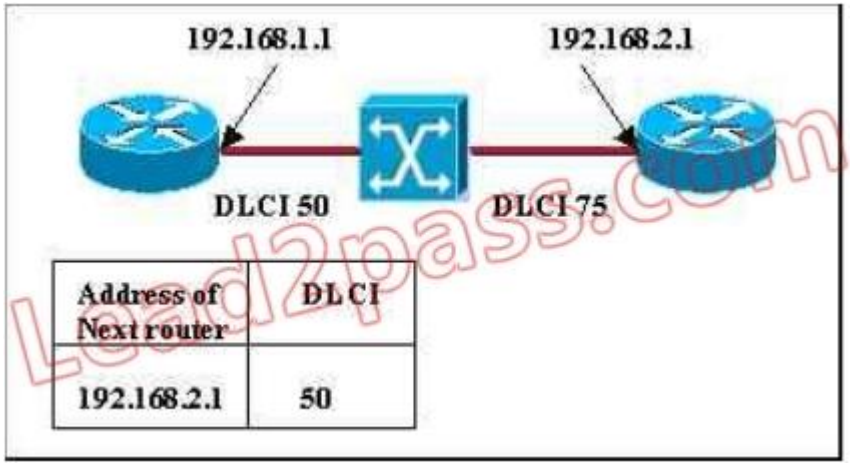
QUESTION 8
Which command enables IPv6 forwarding on a cisco router?

A. ipv6 host
B. ipv6 unicast-routing
C. ipv6 local
D. ipv6 neighbor

Correct Answer: B
Section: IPv6
Explanation

Explanation/Reference:
Router(config)#ipv6 unicast-routing (Enables the forwarding of IPv6 unicast datagrams globally on the router)

QUESTION 9
RouterA is unable to reach RouterB.
Both routers are running IOS version 12.0.
After reviewing the command output and graphic, what is the most likely cause of the problem?



A. incorrect bandwidth configuration
B. incorrect LMI configuration
C. incorrect map statement
D. incorrect IP address

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:

QUESTION 10
A Cisco router is booting and has just completed the POST process.
It is now ready to find and load an IOS image. What function does the router perform next?

A. It checks the configuration register
B. It attempts to boot from a TFTP server
C. It loads the first image file in flash memory
D. It inspects the configuration file in NVRAM for boot instructions

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
When you turn the router on, it runs through the following boot process.
The Power-On Self Test (POST) checks the router's hardware. When the POST completes successfully, the System OK LED indicator comes on.
The router checks the configuration register to identify where to load the IOS image from. **A setting of 0×2102 means** that the router will use information in the startup-config file to locate the IOS image. If the startup-config file is missing or does not specify a location, it will check the following locations for the IOS image:

1. Flash (the default location)
2. TFTP server
3. ROM (used if no other source is found)

The router loads the configuration file into RAM (which configures the router). The router can load a configuration file from:
+ NVRAM (startup-configuration file)
+ TFTP server
If a configuration file is not found, the router starts in setup mode.

QUESTION 11
Which three approaches can be used while migrating from an ipv4 addressing scheme to an ipv6 scheme? (choose three)

A. statically map IPV4 address to IPV6 addresses
B. configure IPv4 tunnels between IPv6 islands
C. use DHCPv6 to map IPV4 addresses to IPV6 addresses
D. use proxying and translation to translate IPV6 packets into IPV4 packets
E. configure IPV6 directly
F. enable dual-stack routing

Correct Answer: BDF
Section: IPv6
Explanation

Explanation/Reference:
Migrating to IPv6 can accomplished by dual stacking, 6to4 tunneling, and NAT-PT

QUESTION 12

Which protocol provides a method of sharing VLAN configuration information between two Cisco switches?

A. VTP
B. 802.1Q
C. RSTP
D. STP

Correct Answer: A
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 13
DNS servers provide what service?

A. They run a spell check on host names to ensure accurate routing
B. They convert domain names into IP addresses.
C. Given an IP address, they determine the name of the host that is sought
D. They map individual hosts to their specific IP addresses

Correct Answer: B
Section: IP Services
Explanation

Explanation/Reference:

DNS Domain Name System: Used to resolve hostnames to IP addresses.

QUESTION 14

```
line vty 0 4
 password 7 030752180500
 login
 transport input ssh
```

Refer to the exhibit. What is the effect of the configuration that is shown?

A. It tells the router or switch to try establish an SSH connection first and if that fail to use telnet.
B. It configures a Cisco network device to use the SSH protocol on incoming communications via the virtual terminal ports.
C. It allows seven failed login attempts before the VTY lines are temporarily shutdown.
D. It configures the virtual terminal lines with the password 030752180500.
E. It configures SSH globally for all logins.

Correct Answer: B
Section: Layer 3 Security
Explanation

Explanation/Reference:
Secure Shell (SSH) is a protocol which provides a secure remote access connection to network devices.
Communication between the client and server is encrypted in both SSH version 1 and SSH version 2. If you want to prevent non-SSH connections, add the "transport input ssh" command under the lines to limit the router to SSH connections only. Straight (non-SSH) Telnets are refused.

QUESTION 15
Which IPV6 routing protocol uses multicast group FFO2::8 to send updates?

A. RIPng
B. OSPFv3
C. IS-IS for IPv6
D. static

Correct Answer: C
Section: IPv6
Explanation

Explanation/Reference:

Well-known IPv6 multicast addresses

Address	Description
ff02::1	All nodes on the local network segment
ff02::2	All routers on the local network segment
ff02::5	OSPFv3 All SPF routers
ff02::6	OSPFv3 All DR routers
ff02::8	IS-IS for IPv6 routers
ff02::9	RIP routers
ff02::a	EIGRP routers
ff02::d	PIM routers
ff02::16	MLDv2 reports (defined in RFC 3810)
ff02::1:2	All DHCP servers and relay agents on the local network segment (defined in RFC 3315)
ff02::1:3	All LLMNR hosts on the local network segment (defined in RFC 4795)
ff05::1:3	All DHCP servers on the local network site (defined in RFC 3315)
ff0x::c	Simple Service Discovery Protocol
ff0x::fb	Multicast DNS
ff0x::101	Network Time Protocol
ff0x::108	Network Information Service
ff0x::114	Used for experiments

QUESTION 16
Which of the following are true regarding the debug output shown in the graphic? (Choose two)

```
RtrA#debug ip rip
RIP protocol debugging is on
RtrA#
1d05h: RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.16.1.1)
1d05h: RIP: build update entries
1d05h:  network 10.0.0.0 metric 1
1d05h:  network 192.168.1.0 metric 2
1d05h: RIP: sending v1 update to 255.255.255.255 via Serial0/0 (10.0.8.1)
1d05h: RIP: build update entries
1d05h:  network 172.16.0.0 metric 1
RtrA#
1d05h: RIP: received v1 update from 10.0.15.2 on Serial0/0
1d05h:      192.168.1.0 in 1 hops
1d05h:      192.168.168.0 in 16 hops (inaccessible)
```


A. This router was configured with the commands:
RtrA(config)#router rip
RtrA(config-router)#version 2
RtrA(config-router)#network 172.16.0.0
RtrA(config-router)#network 10.0.0.0

B. This router was configured with the commands:
RtrA(config)#router rip
RtrA(config-router)#network 172.16.0.0
RtrA(config-router)#network 10.0.0.0

C. Network 10.0.0.0 will be displayed in the routing table.

D. Network 192.168.168.0 will be displayed in the routing table.

E. This router was configured with the commands:
RtrA(config)#router rip
RtrA(config-router)#network 192.168.1.0
RtrA(config-router)#network 10.0.0.0
RtrA(config-router)#network 192.168.168.0

F. split-horizon was disabled on this router.

Correct Answer: BC

Section: Routing
Explanation

Explanation/Reference:
Routing Information Protocol (rip) is a distance vector protocol that uses hop as a metric.
Rip routing metriC. rip uses single routing metric (hops) to measure the distance from source network to destination network.
From source to destination, every hop is given a value, which is usually 1.
When routers receive route update information of new or changed destination network, the metric value will be added 1 and then stored into a routing table,
the ip address of the sender will be used as the next hop address.

QUESTION 17
The network administrator is asked to configure 113 point-to-point links.
Which IP addressing scheme best defines the address range and subnet mask that meet the requirement and waste the fewest subnet and host addresses?

A. 10.10.0.0/18 subnetted with mask 255.255.255.252
B. 10.10.0.0/25 subnetted with mask 255.255.255.252
C. 10.10.0.0/24 subnetted with mask 255.255.255.252
D. 10.10.0.0/23 subnetted with mask 255.255.255.252
E. 10.10.0.0/16 subnetted with mask 255.255.255.252

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:
113 subnets? Not possible to get the 113 subnets exactly.

The Network address is 10.10.0.0

So 16 bits must be network bits. So we need find the subnet bits.

Formula to find the subnets = (2^subnetbits)

(2^1) = 2
(2^2) = 4
(2^3) = 8
(2^4) = 16

(2^5) = 32
(2^6) = 64
(2^7) = 128

So 7 has 128 subnet bits.

Therefore 16 (Network bits) + 7 Subnet bits = 23

Take 10.10.0.0 /23

Host Range = 10.10.0.1 - 10.10.1.254

With 255.255.255.252, the subnets will be

10.10.0.0/30
10.10.0.4/30
10.10.0.8/30
10.10.0.12/30
...
10.10.1.248/30
10.10.0.252/30

So from 0.0,0.4,0.8,...1.252 you can get 128 subnets.

Thats for sure D is Right

QUESTION 18
In which integration method is an IPv6 packet encapsulated within an IPv4 protocol?

A. dual-stack
B. tunneling
C. proxy
D. dot1q

Correct Answer: B
Section: IPv6

Explanation

Explanation/Reference:
6to4 Tunneling will create a tunnel that will carry the IPv6 traffic across the IPv4 network.

QUESTION 19
A network administrator is configuring ACLs on a Cisco router,
to allow IP access from the 192.168.146.0/24, 192.168.147.0/24, 192.168.148.0/2,. and 192.168.149.0/24 networks only.
Which two ACLs, when combined, should be used?

A. access-list 10 permit ip 192.168.146.0 0.0.0.255
B. access-list 10 permit ip 192.168.146.0 255 255.255.0
C. access-list 10 permit ip 192.168.147.0 0.0.255 255
D. access-list 10 permit ip 192.168.149.0 0.0.255.255.0
E. access-list 10 permit ip 192.168.148.0 0.0.1.255
F. access-list 10 permit ip 192.168.146.0 0.0.1.255

Correct Answer: EF
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 20
Which two commands correctly verify whether port security has been configured on port FastEthernet 0/12 on a switch? (Choose two)?

A. sw1#show switchport port-secure interface FastEthernet 0/12
B. sw1#show switchport port-security interface FastEthernet 0/12
C. sw1#show port-secure interface FastEthernet 0/12
D. sw1#show running-config
E. sw1#show port-security interface FastEthernet 0/12

Correct Answer: DE
Section: Layer 2 Security
Explanation

Explanation/Reference:
SW1#show running-config
SW1#show port-security interface FastEthernet 0/12

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 21
Which two are advantages of static routing when compared to dynamic routing? (Choose two)

A. Route summarization is computed automatically by the router
B. Routing traffic load is reduced when used in stub network links
C. Routing updates are automatically sent to neighbors
D. Security increases because only the network administrator may change the routing table
E. Configuration complexity decreases as network size increases
F. An efficient algorithm is used to build routing tables, using automatic updates
G. Routing tables adapt automatically to topology changes.

Correct Answer: BD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 22

Which two statements about using the CHAP authentication mechanism in a PPP link are true? (Choose two)

A. CHAP users a two-way handshake
B. CHAP authentication periodically occurs after link establishment.
C. CHAP uses a three-way handshake
D. CHAP authentication is performed only upon link establishment.
E. CHAP authentication passwords are sent in plaintext.
F. CHAP has no protection from playback attacks.

Correct Answer: BC
Section: WAN
Explanation

Explanation/Reference:

QUESTION 23
Which three are characteristics of an IPv6 anycast address? (Choose three)

A. one-to-many communication model
B. delivery of packets to the group interface that is closest to the sending device
C. any-to-many communication model
D. a unique IFV6 address for each device in the group
E. the same address for multiple devices in the group
F. one-to-nearest communication model

Correct Answer: BEF
Section: IPv6
Explanation

Explanation/Reference:
Anycast communication allows the same address to be placed on more than one device so that when traffic is sent to one device addressed in this way, it is routed to the nearest host that shares the same address.

QUESTION 24
Which router IOS commands can be used to troubleshoot LAN connectivity problems? (Choose three.)

A. winipcfg
B. tracert

C. ping
D. ip config
E. show ip route
F. show interfaces

Correct Answer: CEF
Section: Troubleshoot Switching
Explanation

Explanation/Reference:
While all of the above commands are useful in gathering network information and troubleshooting, only choices C, E, and F are Cisco IOS problems, while the other choices are DOS command prompt commands used by windows based stations.

QUESTION 25
Which PPP subprotocol negotiates authentication options?

A. SLIP
B. NCP
C. ISDN
D. LCP
E. DLCI

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:
LCP: A method of establishing, configuring, maintaining, and terminating the point-to-point connection.
Link-establishment phase LCP packets are sent by each PPP device to configure and test the link.
These packets contain a field called the Configuration Option that allows each device to see the size of the data, compression, and authentication.
If no Configuration Option field is present, then the default configurations are used.

QUESTION 26
The network administrator has been asked to give reasons for moving from ipv4 to ipv6. What are two valid reasons for adopting ipv6 over ipv4? (Choose two)

A. telnet access does not require a password
B. nat
C. no broadcast
D. chanage of destination address in the ipv6 header

E. chanage of source address in the ipv6 header
F. autoconfiguration

Correct Answer: CF
Section: IPv6
Explanation

Explanation/Reference:
IPv6 networks provide autoconfiguration capabilities. They are simpler, flatter and more manageable, especially for large installations.

IPv6 supports multicast rather than broadcast. Multicast allows bandwidth-intensive packet flows (like multimedia streams) to be sent to multiple destinations simultaneously, saving network bandwidth.

QUESTION 27
When you are troubleshooting an ACL issue on a router,which command can help you to verify which interfaces are affected by the ACL?

A. show access-lists
B. show interface
C. show ip interface
D. show ip access-lists
E. list ip interface

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:
Incorrect answer:
show ip access-lists does not show interfaces affected by anACL.

QUESTION 28
Three switches are connected to one another via trunk ports.
Assuming the default switch configuration, which switch is elected as the root bridge for the spanning-tree instance of VLAN 1?

A. the switch with the highest MAC address.
B. the switch with the lowest IP address.
C. the switch with the lowest MAC address
D. the switch with the highest IP address.

Correct Answer: C
Section: Switching
Explanation

Explanation/Reference:

QUESTION 29
Which three statements about VTP features are true? (Choose Three)

A. When properly configured, VTP minimizes VLAN misconfigurations and configuration inconsistencies.
B. To configure a switch to be part of two VTP domains, each domain must have its own Password.
C. Client, server, and transparent are valid VTP modes.
D. When properly configured, VTP maintains VLAN configuration consistency and accelerates trunk link negotiation.
E. VTP works at Layer 3 of the OSI model and requires that a management VLAN IP address be configured.
F. VTP pruning is used to increase available bandwidth in trunk links.
G. Each broadcast domain on a switch can have its own Unique VTP Domain.

Correct Answer: ACF
Section: VTP
Explanation

Explanation/Reference:
Reference:"Understanding VLAN Trunk Protocol (VTP)"
http://www.cisco.com/en/US/tech/tk389/tk689/technologies_tech_note09186a0080094c52.shtml#v tp_modes

QUESTION 30
At which layer of the OSI model does PPP perform?

A. Layer 2
B. Layer 4
C. Layer 5
D. Layer 3

Correct Answer: A
Section: How a network works
Explanation

Explanation/Reference:

Point-to-Point Protocol (PPP)

Let's spend a little time on Point-to-Point Protocol (PPP). Remember that it's a Data Link layer protocol that can be used over either asynchronous serial (dial-up) or synchronous serial (ISDN) media. It uses Link Control Protocol (LCP) to build and maintain data-link connections. Network Control Protocol (NCP) is used to allow multiple Network layer protocols (routed protocols) to be used on a point-to-point connection.

QUESTION 31
Which ip address would a network technician ping on the local host, to test the ip stack?

A. 224.0.0.9
B. 224.0.0.5
C. 127.0.0.1
D. 255.255.255.255

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 32
Which command allows you to verify the encapsulation type (CISCO or IETF) for a frame Relay link?

A. show frame-relay map
B. show frame-relay pvc
C. show frame-relay lmi
D. show interfaces serial

Correct Answer: A
Section: WAN
Explanation

Explanation/Reference:

QUESTION 33
When you are troubleshooting an ACL issue on a router, which command can help you to verify which interfaces are affected by the ACL?

A. show ip interface
B. show interface
C. list ip interface
D. show ip access-list
E. show access-list

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:

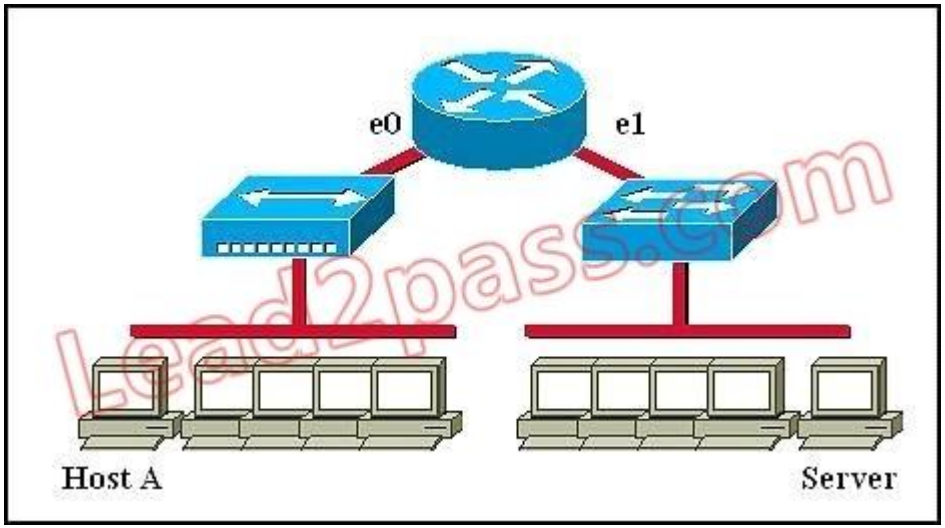
QUESTION 34
Which two data integrity algorithms are commonly used in VPN solutions? (Choose two)

A. RSA
B. HMAC-SHA-1
C. DH2
D. HMAC-MD5
E. DH1

Correct Answer: AB
Section: Layer 3 Security
Explanation

Explanation/Reference:
Data Integrity HMAC-SHA-1 and RSA are two data integrity algorithms that are commonly used in VPN solutions. HMAC-SHA-1 provides hashing of the data to verify the data was not altered along the way, and RSA provides encrypted key exchange between two peers so that each host has the key to unencrypt the data when received.

QUESTION 35
Refer to the graphic.



Host A is communicating with the server. What will be the source MAC address of the frames received by Host A from the server?

A. the MAC address of the server network interface
B. the MAC address of host A
C. the MAC address of router interface e1
D. the MAC address of router interface e0

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
Whereas switches can only examine and forward packets based on the contents of the MAC header, routers can look further into the packet to discover the network for which a packet is destined.
Routers make forwarding decisions based on the packet's network-layer header (such as an IPX header or IP header). These network-layer headers contain source and destination network addresses.
Local devices address packets to the router's MAC address in the MAC header. After receiving the packets, the router must perform the following steps:
1. Check the incoming packet for corruption, and remove the MAC header . The router checks the packet for MAC-layer errors.
The router then strips off the MAC header and examines the networklayer header to determine what to do with the packet.
2. Examine the age of the packet. The router must ensure that the packet has not come too far to be forwarded. For example, IPX headers contain a hop count. By default, 15 hops is the maximum
number of hops (or routers) that a packet can cross. If a packet has a hop count of 15, the router discards the packet. IP headers contain a Time to Live (TTL) value. Unlike the IPX hop count,
which increments as the packet is forwarded through each router, the IP TTL value decrements as the IP packet is forwarded through each router. If an

IP packet has a TTL value of 1, the router
discards the packet. A router cannot decrement the TTL value to 1 and then forward the packet.
3. Determine the route to the destination. Routers maintain a routing table that lists available networks, the direction to the desired network (the outgoing interface number), and the distance to
those networks. After determining which direction to forward the packet, the router must build a new header. (If you want to read the IP routing tables on a Windows 95/98 workstation, type
ROUTE PRINT in the DOS box.)
4. Build the new MAC header and forward the packet. Finally, the router builds a new MAC header for the packet. The MAC header includes the router's MAC address and the final destination's
MAC address or the MAC address of the next router in the path.

QUESTION 36
Which encapsulation type is a Frame Relay encapsulation type that is supported by Cisco routers?

A. Q9333-AAnnexA
B. ANSI Annex D
C. HDLC
D. IETF

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 37
Which Cisco IOS diagnostics command can disrupt the operation of a router under high-load conditions?

A. debug all
B. show running-config
C. show processes cpu
D. logging host ip address

Correct Answer: A
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

Initial Troubleshooting

Once you notice any of the symptoms from the Symptoms of High CPU Utilization:
·Check for a possible security issue. Commonly, high CPU utilization is caused by a security issue, such as a worm or virus operating in your network. This is especially likely to be the cause if there have not been recent changes to the network. Usually, a configuration change, such as adding additional lines to your access lists can mitigate the effects of this problem. Cisco Product Security Advisories and Notices contains information on detection of the most likely causes and specific workarounds.
For additional information, refer to:
o100 Questions and Answers about Internet Threats
oCisco Product Security Advisories and Notices
oCisco Threat Defense System
·Make sure all debugging commands in your router are turned off by issuing the undebug all or no debug all commands. For more information on the use of debugging commands, refer to Using Debug Commands.
·Are you able to issue show commands on the router? If yes, start collecting more information immediately, using these showcommands.
·Is the router inaccessible? Can you reproduce this problem? If yes, power-cycle the router and, before reproducing the problem, configure the scheduler interval 500 command. This schedules low priority processes to run every 500 milliseconds, which provides time for you to run some commands, even if CPU usage is at 100 percent. On Cisco 7200 and Cisco 7500 Series Routers, use the scheduler allocate 3000 1000 command.
·Does the router show symptoms of high CPU utilization at brief and unpredictable intervals? If yes, periodically collect the output of the show processes cpu command, which shows if the high CPU utilization is caused by interrupts or by a certain process. Use this UNIX script and, based on the first findings, modify the script to collect data needed for further investigation of the issue.

From the following Link:
http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a00800a70f2.sh tml

QUESTION 38
Which Cisco IOS command can help to determine the timing of various debug events, relative to each other, when you are debugging a complicated router issue?

A. service timestamps log datetime msec
B. clock calendar-valid
C. show clock detail
D. service timestamps debug datetime msec

Correct Answer: A
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 39
What are the possible trunking modes for a switch port? (Choose three.)

A. transparent

B. auto
C. on
D. desirable
E. client
F. forwarding

Correct Answer: BCD
Section: Switching
Explanation

Explanation/Reference:

QUESTION 40
Refer to the exhibit.

```
Router# show interface s0/0/0
Serial 0/0/0 is administratively down, line protocol is down
```

What is the reason that the interface status is "administratively down, line protocol down"?

A. There is no encapsulation type configured.
B. There is a mismatch in encapsulation types.
C. The interface is not receiving any keepalives.
D. The interface has been configured with the shutdown command.
E. The interface needs to be configured as a DTE device.
F. The wrong type of cable is connected to the interface.

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 41
What are two security appliances that can be installed in a network? (Choose two.)

A. ATM
B. IDS
C. IOS
D. IOX
E. IPS
F. SDM

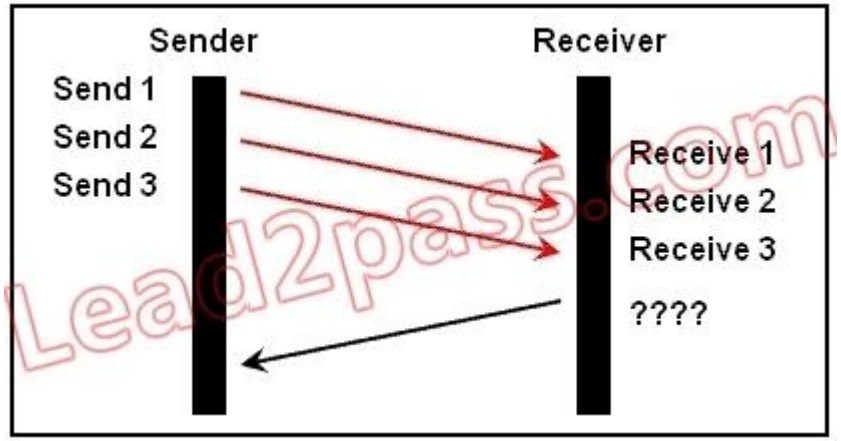
Correct Answer: BE
Section: Layer 3 Security
Explanation

Explanation/Reference:

(IDS) intrusion detection system: An intrusion detection system (IDS) inspects all inbound and outbound network activity and identifies suspicious patterns that may indicate a network or system attack from someone attempting to break into or compromise a system. An IDS evaluates a suspected intrusion once it has taken place and signals an alarm. An IDS also watches for attacks that originate from within a system.

(IPS) intrusion prevention system: An IPS, or intrusion prevention system is used in computer security. It provides policies and rules for network traffic along with an intrusion detection system for alerting system or network administrators to suspicious traffic, but allows the administrator to provide the action upon being alerted. Some compare an IPS to a combination of IDS and an application layer firewall for protection.

QUESTION 42
A TCP/IP transfer is diagrammed in the exhibit.



A window size of three has been negotiated for this transfer.
Which message will be returned from the receiver to the sender as part of this TCP/IP transfer?

A. Send ACK 1-3
B. Send ACK 3
C. Send ACK 4
D. Send ACK 4-6
E. Send ACK 6
F. Send ACK 7

Correct Answer: C
Section: IP Services
Explanation

Explanation/Reference:
In response, the receiver replies with an ACK. The acknowledgment number is set to one more than the received sequence number. The ACK means “I have got all messages up to sequence number n-1 so please send me the message for sequence number n”.

QUESTION 43
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

Correct Answer: CE
Section: Basic device operation
Explanation

Explanation/Reference:
The following locations can be configured as a source for the IOS image:
+ Flash (the default location)
+ TFTP server
+ ROM (used if no other source is found)
(Please read the explanation of Question 4 for more information

QUESTION 44
What is the default administrative distance of OSPF?

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

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

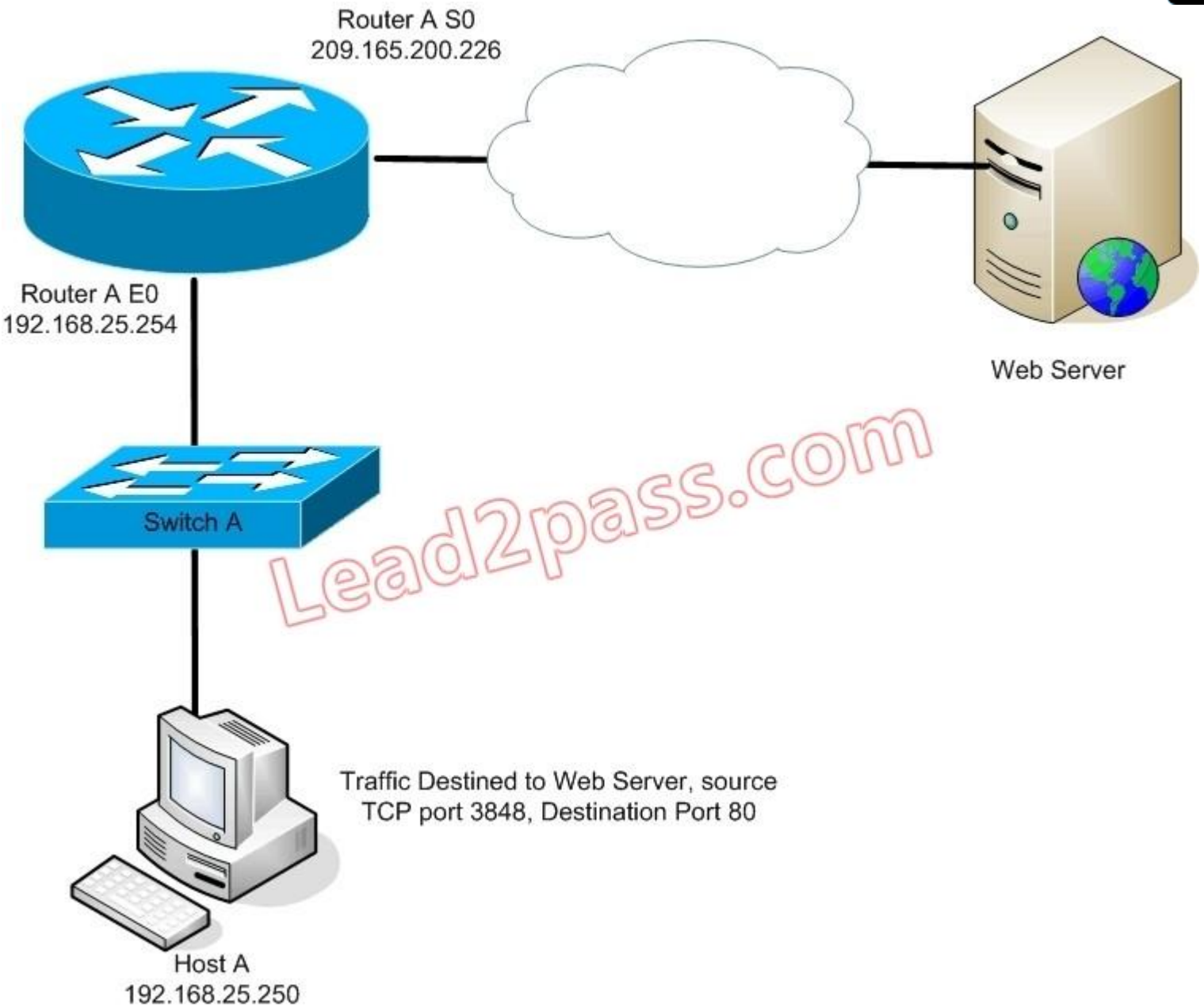
QUESTION 45
Which command shows your active Telnet connections?

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

Correct Answer: B
Section: IP Services
Explanation

Explanation/Reference:
The “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 B.

QUESTION 46
Refer to the exhibit.



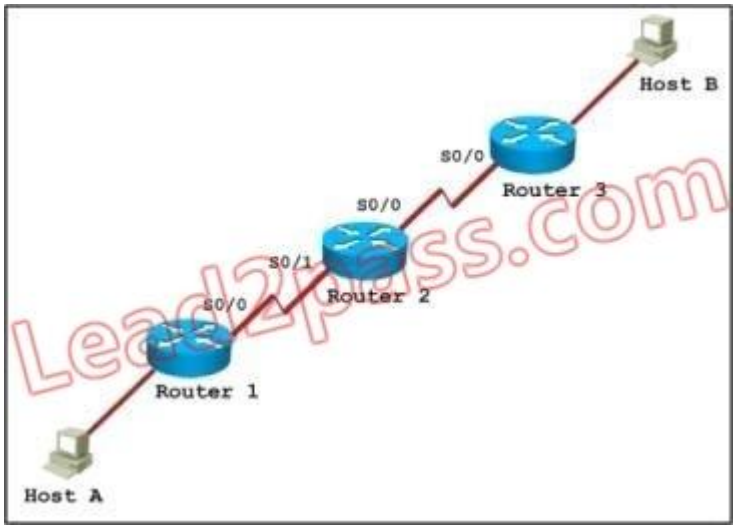
NAT Overload is enabled on R1. Which statement is true when host A communicates with the web server?

A. The web server uses 209.165.200.226 as the destination address and 80 as the destination port when sending packets to host A.
B. Host A uses 192.168.25.254 as the destination address and 80 as the source port when sending packets to the web server.
C. The web server uses 209.165.200.225 as the destination address and 3648 as the destination port when sending packets to host A.
D. Host A uses 209.165.200.198 as the destination address and 3648 as the destination port when sending packets to the web server.

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 47
Refer to the exhibit.



Host A pings interface S0/0 on router 3. What is the TTL value for that ping?

A. 252
B. 253
C. 254
D. 255

Correct Answer: B
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 48
Refer to exhibit.

```
Router#show running-config
Building configuration...

Current configuration : 659 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Router
!

enable secret 5 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0
!

interface FastEthernet0/0
 ip address 192.168.1.1 255.255.255.0
 ip access-group 101 in
 duplex auto
 speed auto
!
access-list 101 deny tcp any any eq 22
access-list 101 permit ip any any
!
line con 0
 password 7 0822455D0A16
 login
line vty 0 4
 login
line vty 5 14
 login
!
end
```


A network administrator cannot establish a Telnet session with the indicated router. What is the cause of this failure?

A. A Level 5 password is not set.
B. An ACL is blocking Telnet access.
C. The vty password is missing.
D. The console password is missing.

Correct Answer: C

Section: Layer 3 Security
Explanation

Explanation/Reference:

Telnet Password

To set the user-mode password for Telnet access into the router, use the `line vty` command. Routers that aren't running the Enterprise edition of the Cisco IOS default to five VTY lines, 0 through 4. But if you have the Enterprise edition, you'll have significantly more. The best way to find out how many lines you have is to use that question mark:

```
Todd(config-line)#line vty 0 ?
% Unrecognized command
Todd(config-line)#exit
Todd(config)#line vty 0 ?
  <1-1180>  Last Line number
  <cr>
Todd(config)#line vty 0 1180
Todd(config-line)#password telnet
Todd(config-line)#login
```

Remember, you cannot get help from your `(config-line)#` prompt. You must go back to privilege mode in order to use the question mark (?).

FYI:
line vty 0 4 is to configure the first 5 default virtual terminal sessions.

vty 5 15 is to configure the 10 optional virtual terminals.

QUESTION 49
What are three reasons that an organization with multiple branch offices and roaming users might implement a Cisco VPN solution instead of point-to-point WAN links? (Choose three.)

A. reduced cost
B. better throughput
C. broadband incompatibility

D. increased security
E. scalability
F. reduced latency

Correct Answer: ADE
Section: Layer 3 Security
Explanation

Explanation/Reference:
Cisco IPsec remote access solutions also enable you to provide customized VPN access through SSL VPN without adding hardware or complexity to your network. Cost-effective, easy to use, and easy to customize, Cisco IPsec VPNs deliver scalability, high security, and simple VPN client management. Features include:
Simplified management: Easy provisioning and user management through a centralized policy management interface
High scalability and integrated load balancing: Scalable up to 8000 users per device; dynamic load balancing and clustering features that extend scalability to tens of thousands
Hardware VPN clients: Independence from desktop software and simple VPN implementation and support
Threat-protected VPN: Integrated security features that protect against viruses, worms, spyware, and other attacks against the VPN connection

QUESTION 50
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

Correct Answer: D
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 51
Which command can be used from a PC to verify the connectivity between hosts that connect through a switch in the same LAN?

A. ping address
B. tracert address
C. traceroute address
D. arp address

Correct Answer: A
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 52
What is the result of issuing the frame-relay map ip 192.168.1.2 202 broadcast command?

A. defines the destination IP address that is used in all broadcast packets on DCLI 202
B. defines the source IP address that is used in all broadcast packets on DCLI 202
C. defines the DLCI on which packets from the 192.168.1.2 IP address are received
D. defines the DLCI that is used for all packets that are sent to the 192.168.1.2 IP address

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 53
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

Correct Answer: C
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 54
At which layer of the OSI model does IPsec operate?

A. network
B. transport
C. session
D. application

Correct Answer: A
Section: How a network works
Explanation

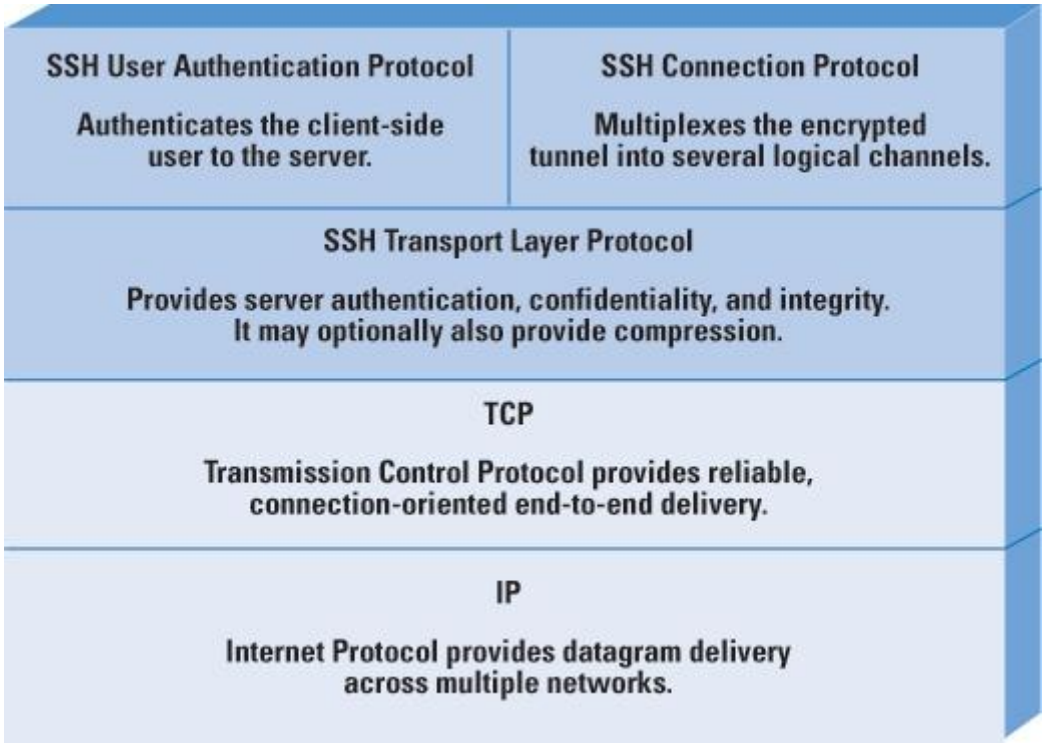
Explanation/Reference:
Simply put, IPSec is an industry-wide standard suite of protocols and algorithms that allows for secure data transmission over an IP-based network that functions at the layer 3 network layer of the OSI model.

QUESTION 55
What are two characteristics of SSH? (Choose two.)

A. most common remote-access method
B. unsecured
C. encrypted
D. uses port 22
E. operates at the transport layer

Correct Answer: DE
Section: Layer 3 Security
Explanation

Explanation/Reference:
The standard TCP port 22 has been assigned for contacting SSH servers



QUESTION 56
Which of the following is true regarding unused ports on a switch?

A. Unsecured ports can create a security hole.
B. If a device is plugged into an unused port, it will not be added to the network.
C. Secure unused ports by using the shutdown command.
D. To disable a port, you must use the switchport disable command.

Correct Answer: C
Section: Layer 2 Security
Explanation

Explanation/Reference:

9. How To Secure Unused Ports

Disabling unused switch ports a simple method many network administrators use to help secure their network from unauthorized access. Disabling an unused port stops traffic from flowing through the port(s)

Step 1: Disable interface Fa0/10 on SW1.

Enter interface configuration mode for FastEthernet 0/17 and shut down the port.

```
SW1(config)#interface fa0/10
SW1(config-if)#shutdown
```

Step 2: Disable interfaces Fa0/1 to Fa0/24 on SW1

```
SW1(config)#interface range fa0/1-24
SW1(config-if)#shutdown
```

QUESTION 57
Which of the following is a characteristic of full-duplex communication?

A. It is a CSMA/CD network.
B. It is a CSMA/CA network.
C. It is point-to-point only.
D. Hub communication is done via full duplex.

Correct Answer: C
Section: Switching
Explanation

Explanation/Reference:
Point-to-point is the correct answer as full-duplex uses a point-to-point connection between the transmitter of the transmitting device and the receiver of the receiving device. Hubs can only work at half duplex and CDMA/ CD and CDMA/CA is also part of half duplex.

QUESTION 58
A config-register setting of 0x2122 indicates which of the following?

A. ignores break
B. boots into the bootstrap
C. performs a boot from a network device
D. console baud rate of 9600

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:

0x2122	• Ignores break • Boots into ROM if initial boot fails • 19200 console baud rate
0x2124	• NetBoot • Ignores break • Boots into ROM if initial boot fails • 19200 console speed

QUESTION 59
Which command displays the CHAP authentication process as it occurs between two routers?

A. debug chap authentication
B. debug authentication
C. debug chap ppp
D. debug ppp authentication

Correct Answer: D
Section: Layer 3 Security
Explanation

Explanation/Reference:
To display the CHAP authentication process as it occurs between two routers in the network, just use the command `debug ppp authentication`.

QUESTION 60
Which two data link layers are supported by Cisco IOS Software for IPv6? (Choose two.)

A. FDDI
B. PPP
C. NBMA
D. Frame Relay SVC

E. Frame Relay PVC

Correct Answer: AE
Section: IPv6
Explanation

Explanation/Reference:

The following data links are supported for IPv6:

ATM permanent virtual circuit (PVC) and ATM LANE,
Ethernet, Fast Ethernet, Gigabit Ethernet,
FDDI,
Frame Relay PVC,
Cisco High-Level Data Link Control (HDLC),
PPP over Packet over SONET (PoS),
ISDN, serial interfaces
dynamic packet transport (DPT).

QUESTION 61
Which two are features of IPv6? (Choose two.)

A. anycast
B. broadcast
C. multicast
D. podcast
E. allcast

Correct Answer: AC
Section: IPv6
Explanation

Explanation/Reference:

QUESTION 62
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.

Correct Answer: D
Section: IP Services
Explanation

Explanation/Reference:

QUESTION 63
If an ethernet port on a router was assigned an IP address of 172.16.112.1/20, what is the maximum number of hosts allowed on this subnet?

A. 1024
B. 2046
C. 4094
D. 4096
E. 8190

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 64
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, are the best for accomplishing 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

Correct Answer: AC
Section: NAT & ACLs

Explanation

Explanation/Reference:

QUESTION 65
An employee of ABC company has moved to an office on a different floor.
Although the administrator is able to telnet to all of the routers, the address of Switch F is needed in order to verify that the employee remains in the same VLAN.
Which action could be used by the administrator to find the IP address of Switch F?

A. Issue the show ip route command on Router A.
B. Issue the show ip route command on Router C.
C. Issue the show cdp neighbors command on Router B.
D. Issue the show cdp neighbors detail command on Router C.
E. Issue the show arp command on Router A.
F. Issue the show arp command on Router B.

Correct Answer: D
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 66
After the show ip route command has been entered, the following routes are displayed.
Which route will not be entered into the routing table of a neighboring router?

A. R 192.168.8.0/24 [120/1] via 192.168.2.2, 00:00:10, Serial0
B. R 192.168.11.0/24 [120/7] via 192.168.9.1, 00:00:03, Serial1
C. C 192.168.1.0/24 is directly connected, Ethernet0
D. R 192.168.5.0/24 [120/15] via 192.168.2.2, 00:00:10, Serial0 459

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 67
What is the subnetwork address for a host with the IP address 201.100.5.68/28?

A. 201.100.5.0
B. 201.100.5.32
C. 201.100.5.64
D. 201.100.5.65
E. 201.100.5.31
F. 201.100.5.1

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 68
Which statement describes the rule of split horizon?

A. Only routers can split boundaries (horizons) between concentric networks.
B. All distance vector protocols require fall back routes that may cause momentary loops as the topology changes.
C. Networks can only remain fully converged if all information about routes is sent out all active interfaces.
D. Information about a route should not be sent back in the direction from which the original update came.
E. Each AS must keep routing tables converged to prevent dead routes from being advertised across the AS boundary.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 69
While troubleshooting a network problem, a technician discovers that the current copy of the Cisco IOS is outdated and needs to be updated. Which of the following commands would the technician issue to replace the Cisco router IOS with the newer version?

A. Router# copy tftp flash
B. Router(config)# restore flash
C. Router(config)# repair flash

D. Router# copy flash run
E. Router> copy start flash
F. Router# copy start flash

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:

Restoring or Upgrading the Cisco Router IOS

What happens if you need to restore the Cisco IOS to flash memory to replace an original file that has been damaged or if you want to upgrade the IOS? You can download the file from a TFTP server to flash memory by using the `copy tftp flash` command. This command requires the IP address of the TFTP host and the name of the file you want to download.

But before you begin, make sure the file you want to place in flash memory is in the default TFTP directory on your host. When you issue the command, TFTP won't ask you where the file is, so if the file you want to use isn't in the default directory of the TFTP host, this just won't work.

```
Router#copy tftp flash
Address or name of remote host []?1.1.1.2
Source filename []?c2800nm-advsecurityk9-mz.124-12.bin
```

QUESTION 70
A network administrator is planning a network installation for a large organization.
The design requires 100 separate subnetworks, so the company has acquired a Class B network address.
What subnet mask will provide the 100 subnetworks required, if 500 usable host addresses are required per subnet?

A. 255.255.240.0
B. 255.255.248.0
C. 255.255.252.0
D. 255.255.254.0
E. 255.255.255.0

F. 255.255.255.192

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 71
An administrator must assign static IP addresses to the servers in a network.
For network 192.168.20.24/29, the router is assigned the first usable host address while the sales server is given the last usable host address.
Which of the following should be entered into the IP properties box for 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

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
Take 192.168.20.24/29 Network

Host IP Range : 192.168.20.25 - 192.168.20.30

The IP address and Default Gateway must be in this range.

QUESTION 72
The network administrator of the Oregon router adds the following command to the router configuration:

`ip route 192.168.12.0 255.255.255.0 172.16.12.1`.

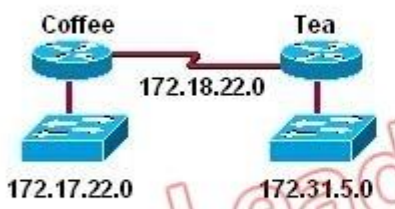
What are the results of adding this command? (Choose two.)

A. The command establishes a static route.
B. The command invokes a dynamic routing protocol for 192.168.12.0.
C. Traffic for network 192.168.12.0 is forwarded to 172.16.12.1.
D. Traffic for all networks is forwarded to 172.16.12.1.
E. This route is automatically propagated throughout the entire network.
F. Traffic for network 172.16.12.0 is forwarded to the 192.168.12.0 network.

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:

QUESTION 73
Users on the 172.17.22.0 network cannot reach the server located on the 172.31.5.0 network.
The network administrator connected to router Coffee via the console port, issued the show ip route command, and was able to ping the server.




```
Coffee#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 172.19.22.2 to network 0.0.0.0

C    172.17.22.0 is directly connected, FastEthernet0/0
C    172.18.22.0 is directly connected, Serial0/0
S*   0.0.0.0/0 [1/0] via 172.19.22.2
```

Based on the output of the show ip route command and the topology shown in the graphic, what is the cause of the failure?

A. The network has not fully converged.
B. IP routing is not enabled.
C. A static route is configured incorrectly.
D. The FastEthernet interface on Coffee is disabled.
E. The neighbor relationship table is not correctly updated.
F. The routing table on Coffee has not updated .

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
The default route or the static route was configured with incorrect next-hop ip address 172.19.22.2
The correct ip address will be 172.18.22.2 to reach server located on 172.31.5.0 network. Ip route 0.0.0.0 0.0.0.0 172.18.22.2

QUESTION 74
The network administrator has found the following problem.

```
Central# debug ip rip

<some output text omitted>

Central#debug ip rip
1d00h: RIP: received v1 update from 172.16.100.2 on Serial0/0
1d00h:      172.16.10.0 in 1 hops
1d00h:      172.16.20.0 in 1 hops
1d00h:      172.16.30.0 in 1 hops

Central# show ip route

Gateway of last resort is not set

     172.16.0.0/24 is subnetted, 8 subnets
C       172.16.150.0 is directly connected, FastEthernet0/0
C       172.16.220.0 is directly connected, Loopback2
C       172.16.210.0 is directly connected, Loopback1
C       172.16.200.0 is directly connected, Loopback0
R       172.16.30.0 [120/1] via 172.16.100.2, 00:00:07, Serial0/0
S       172.16.20.0 [1/0] via 172.16.150.15
R       172.16.10.0 [120/1] via 172.16.100.2, 00:00:07, Serial0/0
C       172.16.100.0 is directly connected, Serial0/0
```

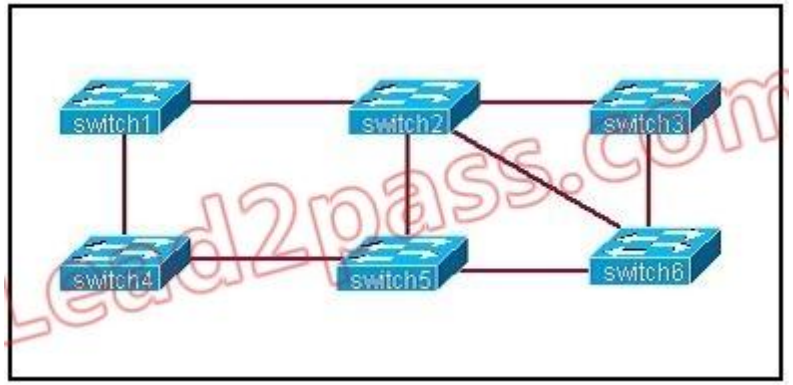

The remote networks 172.16.10.0, 172.16.20.0, and 172.16.30.0 are accessed through the Central router's serial 0/0 interface.
No users are able to access 172.16.20.0. After reviewing the command output shown in the graphic, what is the most likely cause of the problem?

A. no gateway of last resort on Central
B. Central router's not receiving 172.16.20.0 update
C. incorrect static route for 172.16.20.0
D. 172.16.20.0 not located in Central's routing table

Correct Answer: C
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 75
Refer to Exhibit:



Based on the network shown in the graphic which option contains both the potential networking problem and the protocol or setting that should be used to prevent the problem?

A. routing loops, hold down timers
B. switching loops, split horizon
C. routing loops, split horizon
D. switching loops, VTP
E. routing loops, STP
F. switching loops, STP

Correct Answer: F
Section: Switching
Explanation

Explanation/Reference:
The Spanning-Tree Protocol (STP) prevents loops from being formed when switches or bridges are interconnected via multiple paths. Spanning-Tree Protocol implements the 802.1D IEEE algorithm by exchanging BPDU messages with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This algorithm guarantees that there is one and only one active path between two network devices.

QUESTION 76
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

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:

QUESTION 77
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.

Correct Answer: ACE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 78
Which protocol reduces administrative overhead in a switched network by allowing the configuration of a new VLAN to be distributed to all the switches in a domain?

A. STP
B. VTP
C. GVRP
D. SNMP
E. DHCP

Correct Answer: B
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 79
A network administrator is trying to add a new router into an established OSPF network.
The networks attached to the new router do not appear in the routing tables of the other OSPF routers.
Given the information in the partial configuration shown below, what configuration error is causing this problem?

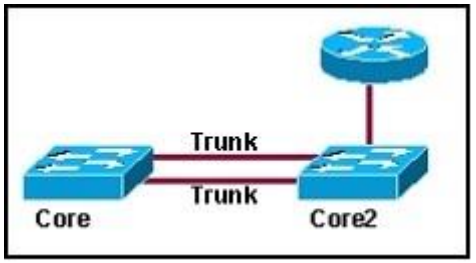
```
Router(config)# router ospf 1
Router(config-router)# network 10.0.0.0 255.0.0.0 area 0
```

A. The process id is configured improperly.
B. The OSPF area is configured improperly.
C. The network wildcard mask is configured improperly.
D. The network number is configured improperly.
E. The AS is configured improperly.
F. The network subnet mask is configured improperly.

Correct Answer: C
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
When configuring OSPF, the mask used for the network statement is a wildcard mask similar to an access list.
In this specific example, the correct syntax would have been "network 10.0.0.0 0.0.0.255 area 0."

QUESTION 80
The switches shown in the diagram, Core and Core2, are both Catalyst 2950s.



The addressing scheme for each company site is as follows:

- Router Ethernet port - 1st usable address
- Core - 2nd usable address
- Core2 - 3rd usable address

For this network, which of the following commands must be configured on Core2 to allow it to be managed remotely from any subnet on the network? (Choose three.)

A. Core2(config)# interface f0/0
   Core2(config-if)# ip address 192.168.1.10 255.255.255.248
B. Core2(config)# interface vlan 1
   Core2(config-if)# ip address 192.168.1.11 255.255.255.248
C. Core2(config)# line con 0
   Core2(config-line)# password cisco
D. Core2(config)# line vty 0 4
   Core2(config-line)# password cisco
E. Core2(config)# ip default-gateway 192.168.1.9
F. Core2(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.8

Correct Answer: BDE
Section: Layer 2 Security
Explanation

Explanation/Reference:

A: BDE
For remote management, configuration management need to switch IP need routing B: IP configuration management.
Layer 2 switches can only be configured in VLAN IP d: Configuring a vty password

E: Configure default gateway The basics: VLAN

QUESTION 81
If all OSPF routers in a single area are configured with the same priority value, what value does a router use for the OSPF router ID in the absence of a loopback interface?

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. the priority value until a loopback interface is configured

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:
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.

QUESTION 82
Which of the following describe the process identifier that is used to run OSPF on a router? (Choose two.)

A. It is locally significant.
B. It is globally significant.
C. It is needed to identify a unique instance of an OSPF database.
D. It is an optional parameter required only if multiple OSPF processes are running on the router.
E. All routers in the same OSPF area must have the same process ID if they are to exchange routing information.

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:

QUESTION 83
The OSPF Hello protocol performs which of the following tasks? (Choose two.)

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

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:

QUESTION 84
Refer to the output of the corporate router routing table shown in the graphic.

```
Corp#show ip route
...
Gateway of last resort is not set

C   192.168.13.0/24 is directly connected, Serial0/1
C   192.168.14.0/24 is directly connected, FastEthernet0/0
C   192.168.15.0/24 is directly connected, Serial0/0.102
C   192.168.20.0/24 is directly connected, Serial0/0.117
R   192.168.16.0/24 [120/1] via 192.168.15.2, 00:00:05, Serial0/0.102
R   192.168.17.0/24 [120/1] via 192.168.15.2, 00:00:05, Serial0/0.102
R   192.168.30.0/24 [120/2] via 192.168.20.2, 00:00:25, Serial0/0.117
R   192.168.19.0/24 [120/1] via 192.168.20.2, 00:00:25, Serial0/0.117
R   192.168.21.0/24 [120/3] via 192.168.20.2, 00:00:25, Serial0/0.117
R   192.168.214.0/24 [120/1] via 192.168.14.2, 00:00:22, FastEthernet0/0
```

The corporate router receives an IP packet with a source IP address of 192.168.214.20 and a destination address of 192.168.22.3.
What will the router do with this packet?

A. It will encapsulate the packet as Frame Relay and forward it out interface Serial 0/0.117.
B. It will discard the packet and send an ICMP Destination Unreachable message out interface FastEthernet 0/0.
C. It will forward the packet out interface Serial 0/1 and send an ICMP Echo Reply message out interface serial 0/0.102.
D. It will change the IP packet to an ARP frame and forward it out FastEthernet 0/0.

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
The destination IP address of 192.168.22.3 is not in the routing table of the Corp router.
Since there is no default route set, as shown by the "gateway of last resort is not set" statement, the packet will be dropped by the router and an ICMP Destination Unreachable message will be sent back to the source, which is Fast Ethernet 0/0 in this case.

QUESTION 85
A network administrator is troubleshooting the OSPF configuration of routers R1 and R2.
The routers cannot establish an adjacency relationship on their common Ethernet link.
The graphic shows the output of the show ip ospf interface e0 command for routers R1 and R2.

```
R1:   Ethernet0 is up, line protocol is up
        Internet address 192.168.1.2/24, Area 0
        Process ID 1, Router ID 192.168.31.33, Network Type BROADCAST, Cost: 10
        Transmit Delay is 1 sec, State DR, Priority 1
        Designated Router (ID) 192.168.31.33, Interface address 192.168.1.2
        No backup designated router on this network
        Timer intervals configured, Hello 5, Dead 20, Wait 20, Retransmit 5
R2:   Ethernet0 is up, line protocol is up
        Internet address 192.168.1.1/24, Area 0
        Process ID 2, Router ID 192.168.31.11, Network Type BROADCAST, Cost: 10
        Transmit Delay is 1 sec, State DR, Priority 1
        Designated Router (ID) 192.168.31.11, Interface address 192.168.1.1
        No backup designated router on this network
        Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
```


Based on the information in the graphic, what is the cause of this problem?

A. The OSPF area is not configured properly.
B. The priority on R1 should be set higher.
C. The cost on R1 should be set higher.
D. The hello and dead timers are not configured properly.
E. A backup designated router needs to be added to the network.
F. The OSPF process ID numbers must match.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 86
What is the default administrative distance of the OSPF routing protocol?

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

E. 130
F. 170

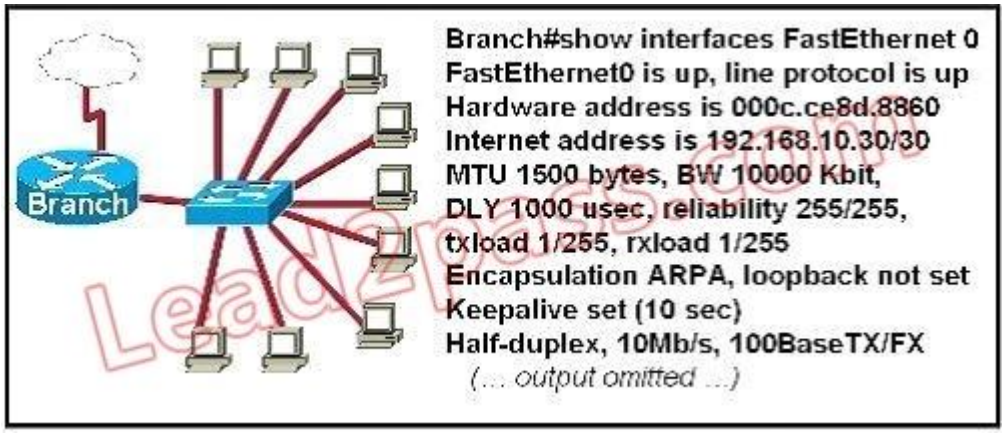
Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:
The default administrative distance of OSPF is 110. In Cisco networks, the default AD is shown in the following table:

Route Source	Default Distance Values
Connected interface	0
Static route*	1
Enhanced Interior Gateway Routing Protocol (EIGRP) summary route	5
External Border Gateway Protocol (BGP)	20
Internal EIGRP	90
IGRP	100
OSPF	110
Intermediate System-to-Intermediate System (IS-IS)	115
Routing Information Protocol (RIP)	120
Exterior Gateway Protocol (EGP)	140
On Demand Routing (ODR)	160
External EIGRP	170
Internal BGP	200

Reference:
http://www.cisco.com/en/US/tech/tk365/technologies_tech_note09186a0080094195.shtml

QUESTION 87
A router has been configured to provide the nine users on the branch office LAN with Internet access, as shown in the diagram.



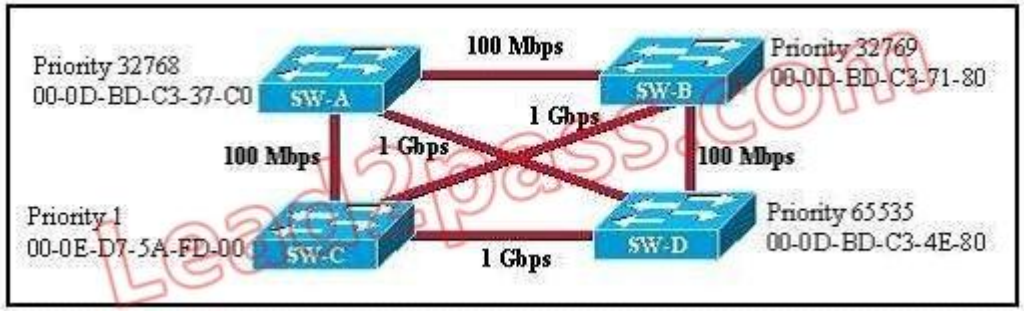
It is found that some of the users on the LAN cannot reach the Internet.
Based on the topology and router output shown, which command should be issued on the router to correct the problem?

A. Branch(config-if)# no shutdown
B. Branch(config-if)# duplex full
C. Branch(config-if)# no keepalive
D. Branch(config-if)# ip address 192.168.10.30 255.255.255.240
E. Branch(config-if)# bandwidth 100
F. Branch(config-if)# encapsulation 802.3

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 88
Refer to the exhibit.



Based on the information given, which switch will be elected root bridge and why?

A. Switch A, because it has the lowest MAC address
B. Switch A, because it is the most centrally located switch
C. Switch B, because it has the highest MAC address
D. Switch C, because it is the most centrally located switch
E. Switch C, because it has the lowest priority
F. Switch D, because it has the highest priority

Correct Answer: E
Section: Spanning Tree
Explanation

Explanation/Reference:
To elect the root bridge in the LAN, first check the priority value. The switch having the lowest priority will win the election process.
If Priority Value is the same then it checks the MAC Address; the switch having the lowest MAC Address will become the root bridge.
In this case, switch C has the lowest MAC Address so it becomes the root bridge.

QUESTION 89
What does a Layer 2 switch use to decide where to forward a received frame?

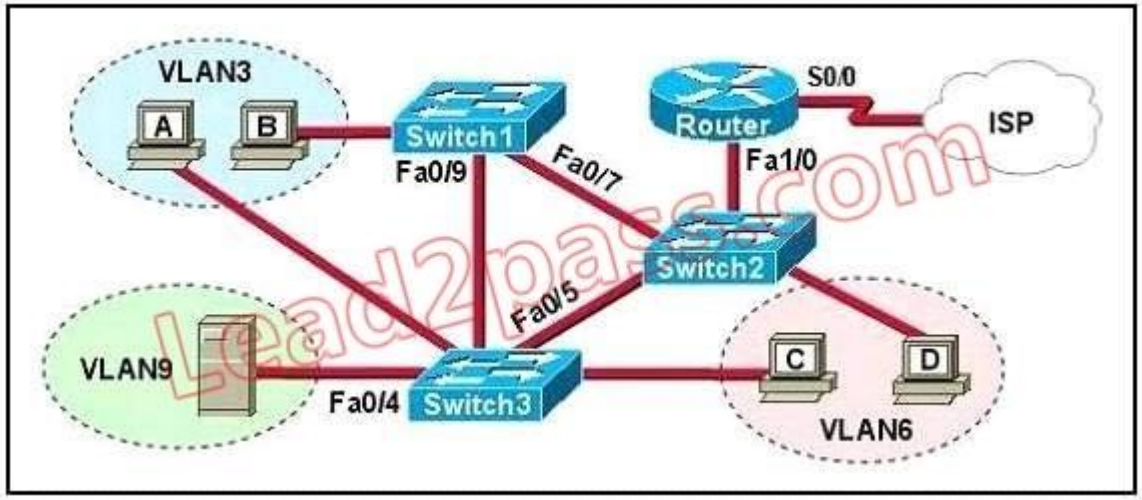
A. source MAC address
B. source IP address
C. source switch port
D. destination IP address
E. destination port address
F. destination MAC address

Correct Answer: F

Section: Switching
Explanation

Explanation/Reference:

QUESTION 90
Refer to the exhibit.



A problem with network connectivity has been observed.
It is suspected that the cable connected to switch port Fa0/9 on Switch1 is disconnected.
What would be an effect of this cable being disconnected?

A. Host B would not be able to access the server in VLAN9 until the cable is reconnected.
B. Communication between VLAN3 and the other VLANs would be disabled.
C. The transfer of files from Host B to the server in VLAN9 would be significantly slower.
D. For less than a minute, Host B would not be able to access the server in VLAN9. Then normal network function would resume.

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
Spanning-Tree Protocol (STP) is a Layer 2 protocol that utilizes a special-purpose algorithm to discover physical loops in a network and effect a logical

loop-free topology. STP creates a loop-free tree structure consisting of leaves and branches that span the entire Layer 2 network. The actual mechanics of how bridges communicate and how the STP algorithm works will be discussed at length in the following topics. Note that the terms bridge and switch are used interchangeably when discussing STP. In addition, unless otherwise indicated, connections between switches are assumed to be trunks.
STP keeps the port either in block or in forward states, when forward port disconnect then within the less then a minute blocked port comes into forward state so packets starts to go through new forward port.
The Spanning Tree Protocol (STP) would identify the best path as well as alternate path to reach in proper destination. In a redundant link, if the primary link fails then the secondary links will automatically start after few minutes. If port Fa0/9 became disconnected, then the packets would be re-routed automatically using the Router-Switch2- Switch3 path.

QUESTION 91
Which command allows you to verify the encapsulation type for a Frame Relay?

A. show frame-relay lmi
B. show frame-relay map
C. show interface serial
D. show framerelay pvc

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
Reasons why C is the answer:

(A) is incorrect LMI is a signaling standard between your router and the first Frame relay switch it connected to.

(B) is incorrect because you use show frame-relay map when connecting Cisco to non-Cisco devices and want to see encapsulation. The question does not say you are connecting Cisco to non-Cisco devices.
show frame-relay map—Displays map entries and information about connections.

(C) is incorrect **show frame-relay pvc**—Displays statistics about PVCs for Frame Relay interfaces.

1841-bott#sh inter serial 0/0/0
Serial0/0/0 is up, line protocol is up
Hardware is GT96K Serial
Internet address is 192.168.2.1/24
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255

Encapsulation FRAME-RELAY IETF, loopback not set
Keepalive set (10 sec)
CRC checking enabled
LMI enq sent 227, LMI stat recvd 227, LMI upd recvd 0, DTE LMI up
LMI enq recvd 0, LMI stat sent 0, LMI upd sent 0
LMI DLCI 1023 LMI type is CISCO frame relay DTE

Scroll to the end of link below and you will see this last line below:

http://www.ciscopress.com/articles/article.asp?p=170741&seqNum=2

> As shown in Example 4-6, the output of the **show interface** command also reveals the Frame Relay encapsulation type configured on that interface. Encapsulation FRAME-RELAY in the output indicates that Cisco Frame Relay encapsulation type is enabled. Encapsulation FRAME-RELAY IETF shows that IETF Frame Relay encapsulation type is in use.

Exam B

QUESTION 1
Which two benefits can be obtained by using VTP in a switching environment? (Choose two.)

A. Allowing frames from multiple VLANs to use a single interface.
B. Allowing switches to read frame tags.
C. Maintaining VLAN consistency across a switched network.
D. Allowing VLAN information to be automatically propagated throughout the switching environment.
E. It allows ports to be assigned to VLANs automatically.

Correct Answer: CD
Section: VTP
Explanation

Explanation/Reference:
VTP minimizes the possible configuration inconsistencies that arise when changes are made. These inconsistencies can result in security violations, because VLANs can crossconnect when duplicate names are used.
They also could become internally disconnected when they are mapped from one LAN type to another, for example, Ethernet to ATM LANE ELANs or FDDI 802.10 VLANs.
VTP provides a mapping scheme that enables seamless trunking within a network employing mixed-media technologies.
VTP provides the following benefits:

QUESTION 2
Which two statements are true about the command ip route 172.16.3.0 255.255.255.0 192.168.2.4? (Choose two.)

A. It establishes a static route to the 172.16.3.0 network.
B. It configures the router to send any traffic for an unknown destination to the 172.16.3.0 network.
C. It creates a static route to the 192.168.2.0 network.
D. It uses the default administrative distance.
E. It configures the router to send any traffic for an unknown destination out the interface with the address 192.168.2.4.
F. It is a route that would be used last if other routes to the same destination exist.

Correct Answer: AD
Section: Routing
Explanation

Explanation/Reference:
This question is to examine the static route-related concept.
ip route 172.16.3.0 255.255.255.0 192.168.2.4

This is a static route configuration command. 172.16.3.0 is the destination network, 192.168.2.4 is the next hop.
The administrative distance is not configured, so the default administrative distance is used. The correct answers are A and D.

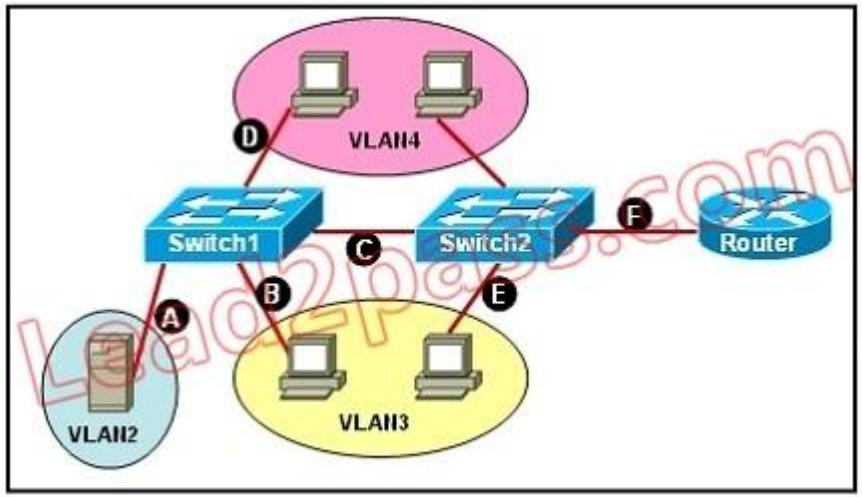
QUESTION 3
Which two of the following are advantages of Layer 2 Ethernet switches over hubs? (Choose two.)

A. To increase the size of broadcast domains
B. To filter frames according to MAC addresses
C. To allow simultaneous frame transmissions
D. To increase the maximum length of UTP cabling between devices
E. decreasing the number of collision domains
F. increasing the size of broadcast domains

Correct Answer: BC
Section: Switching
Explanation

Explanation/Reference:

QUESTION 4
Refer to the exhibit.
A network associate needs to configure the switches and router in the graphic so that the hosts in VLAN3 and VLAN4 can communicate with the enterprise server in VLAN2.
Which two Ethernet segments would need to be configured as trunk links? (Choose two.)



A. A
B. B
C. C
D. D
E. E
F. F

Correct Answer: CF
Section: VTP
Explanation

Explanation/Reference:
Layer 3 routing is needed to implement communication between VLANs, so a trunk link is configured between ROuter and Switch2.
Both Switch1 and Switch2own VLAN3 and VLAN4 members, so a trunk link is configured between Switch1 and Switch2.

QUESTION 5
Which two values are used by Spanning Tree Protocol to elect a root bridge? (Choose two.)

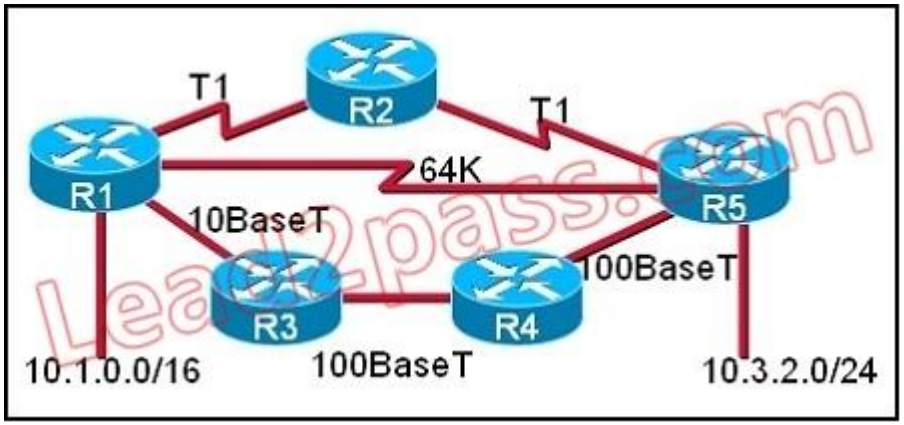
A. bridge priority
B. IP address
C. MAC address
D. IOS version

E. amount of RAM
F. speed of the links

Correct Answer: AC
Section: Spanning Tree
Explanation

Explanation/Reference:
Two values are compared to elect a root bridge in STP: bridge priority and MAC address.
Switch having lowest bridge ID will become the root bridge. The bridge ID is how STP keeps track of all the switches in the network.
It is determined by a combination of the bridge priority (32,768 by default on all Cisco switches) and the base MAC address.
The bridge with the lowest bridge ID becomes the root bridge in the network.

QUESTION 6
Refer to the exhibit.
Assume that the routing protocol referenced in each choice below is configured with its default settings and the given routing protocol is running on all the routers.
Which two conditional statements accurately state the path that will be chosen between networks 10.1.0.0 and 10.3.2.0 for the routing protocol mentioned? (Choose two.)

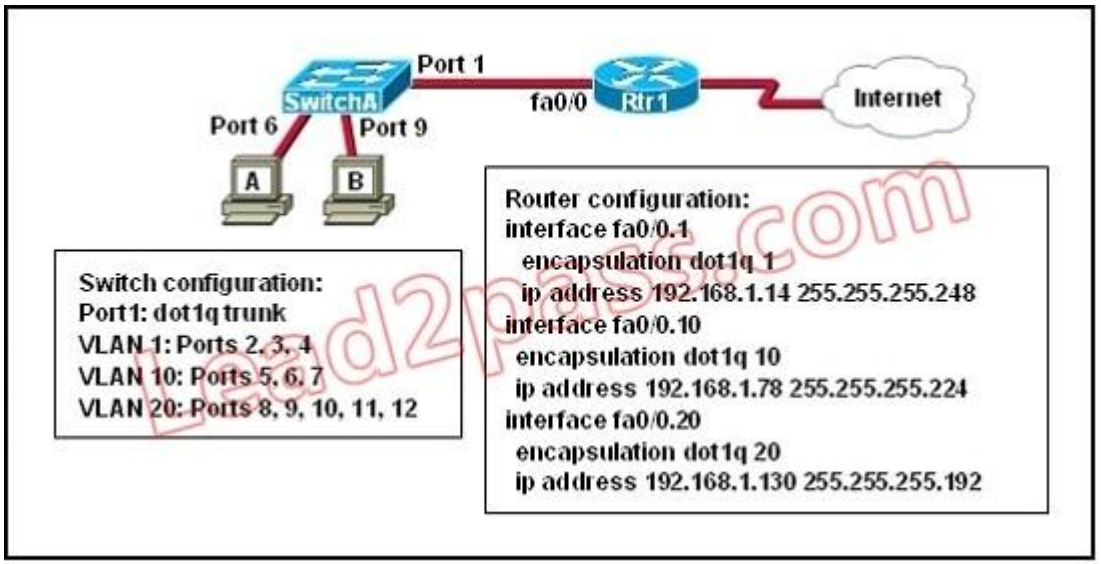


A. If OSPF is the routing protocol, the path will be from R1 to R3 to R4 to R5.
B. If OSPF is the routing protocol, the path will be from R1 to R2 to R5.
C. If OSPF is the routing protocol, the path will be from R1 to R5.
D. If RIPv2 is the routing protocol, the path will be from R1 to R3 to R4 to R5.
E. If RIPv2 is the routing protocol, the path will be from R1 to R5.

Correct Answer: AE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 7
Refer to the exhibit.
A network administrator is adding two new hosts to SwitchA.
Which three values could be used for the configuration of these hosts? (Choose three.)



A. host A IP address: 192.168.1.79
B. host A IP address: 192.168.1.64
C. host A default gateway: 192.168.1.78
D. host B IP address: 192.168.1.128
E. host B default gateway: 192.168.1.129
F. host B IP address: 192.168.1.190

Correct Answer: ACF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 8
What will happen after changing the configuration register to 0x2142 and rebooting the router? (Choose two.)

A. The IOS image will be ignored.
B. The router will prompt to enter initial configuration mode.
C. The router will boot to ROM.
D. Any configuration entries in NVRAM will be ignored.
E. The configuration in flash memory will be booted.

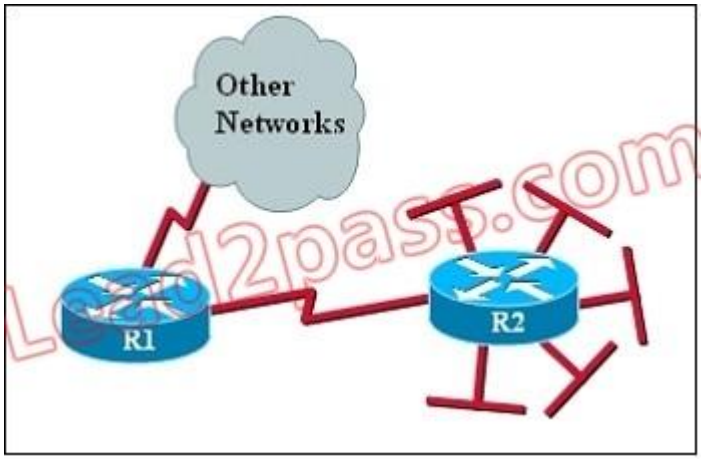
Correct Answer: BD
Section: Basic device operation
Explanation

Explanation/Reference:

0x2142	• Ignores break • Boots into ROM if initial boot fails • 9600 console baud rate • Ignores the contents of Non-Volatile RAM (NVRAM) (ignores configuration)

The router bypasses the startup configuration stored in NVRAM during its boot sequence so the router will enter initial configuration mode. This feature is normally used during a password recovery procedure.

QUESTION 9
Refer to the exhibit.
The networks connected to router R2 have been summarized as a 192.168.176.0/21 route and sent to R1.
Which two packet destination addresses will R1 forward to R2? (Choose two.)



A. 192.168.194.160
B. 192.168.183.41
C. 192.168.159.2
D. 192.168.183.255
E. 192.168.179.4
F. 192.168.184.45

Correct Answer: BE
Section: IP addressing
Explanation

Explanation/Reference:

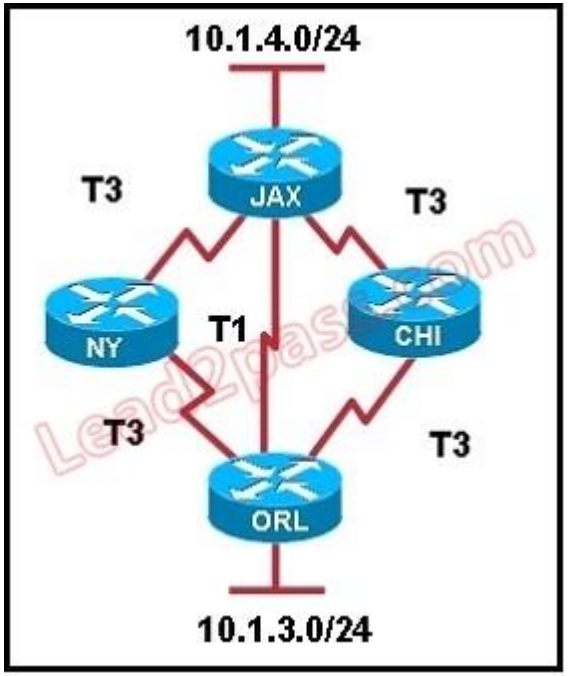
QUESTION 10
Which three statements are typical characteristics of VLAN arrangements? (Choose three.)

A. A new switch has no VLANs configured.
B. Connectivity between VLANs requires a Layer 3 device.
C. VLANs typically decrease the number of collision domains.
D. Each VLAN uses a separate address space.
E. A switch maintains a separate bridging table for each VLAN.
F. VLANs cannot span multiple switches.

Correct Answer: BDE
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 11
Refer to the exhibit.
Which three statements are true about how router JAX will choose a path to the 10.1.3.0/24 network when different routing protocols are configured? (Choose three.)

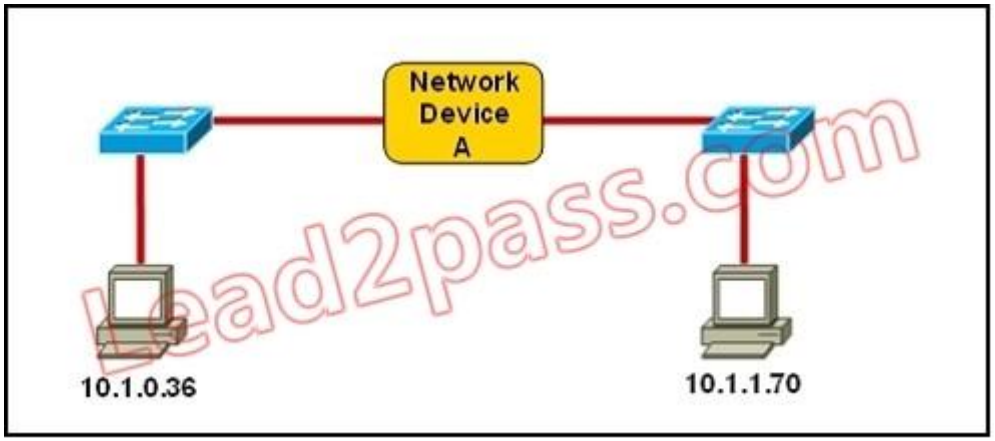


A. By default, if RIPv2 is the routing protocol, only the path JAX-ORL will be installed into the routing table.
B. The equal cost paths JAX-CHI-ORL and JAX- NY-ORL will be installed in the routing table if RIPv2 is the routing protocol.
C. When EIGRP is the routing protocol, only the path JAX-ORL will be installed in the routing table by default.
D. When EIGRP is the routing protocol, the equal cost paths JAX-CHI-ORL, and JAX-NY-ORL will be installed in the routing table by default.
E. With EIGRP and OSPF both running on the network with their default configurations, the EIGRP paths will be installed in the routing table.
F. The OSPF paths will be installed in the routing table, if EIGRP and OSPF are both running on the network with their default configurations.

Correct Answer: ADE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 12
Refer to the exhibit. Which three statements correctly describe Network Device A? (Choose three.)



A. With a network wide mask of 255.255.255.128, each interface does not require an IP address.
B. With a network wide mask of 255.255.255.128, each interface does require an IP address on a unique IP subnet.
C. With a network wide mask of 255.255.255.0, must be a Layer 2 device for the PCs to communicate with each other.
D. With a network wide mask of 255.255.255.0, must be a Layer 3 device for the PCs to communicate with each other.
E. With a network wide mask of 255.255.254.0, each interface does not require an IP address.

Correct Answer: BDE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 13
On the basis of the IEEE 802.1w standard, which two switch ports can forward traffic?

A. alternate
B. backup
C. designated
D. disabled
E. root

Correct Answer: CE
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 14
Refer to the exhibit.
Given the output shown from this Cisco Catalyst 2950, what is the most likely reason that interface FastEthernet 0/10 is not the root port for VLAN 2?

```
Switch# show spanning-tree interface fastethernet0/10
Vlan                Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- -------------------------------
VLAN0001            Root FWD 19        128.1    P2p
VLAN0002            Altn BLK 19        128.2    P2p
VLAN0003            Root FWD 19        128.2    P2p
```

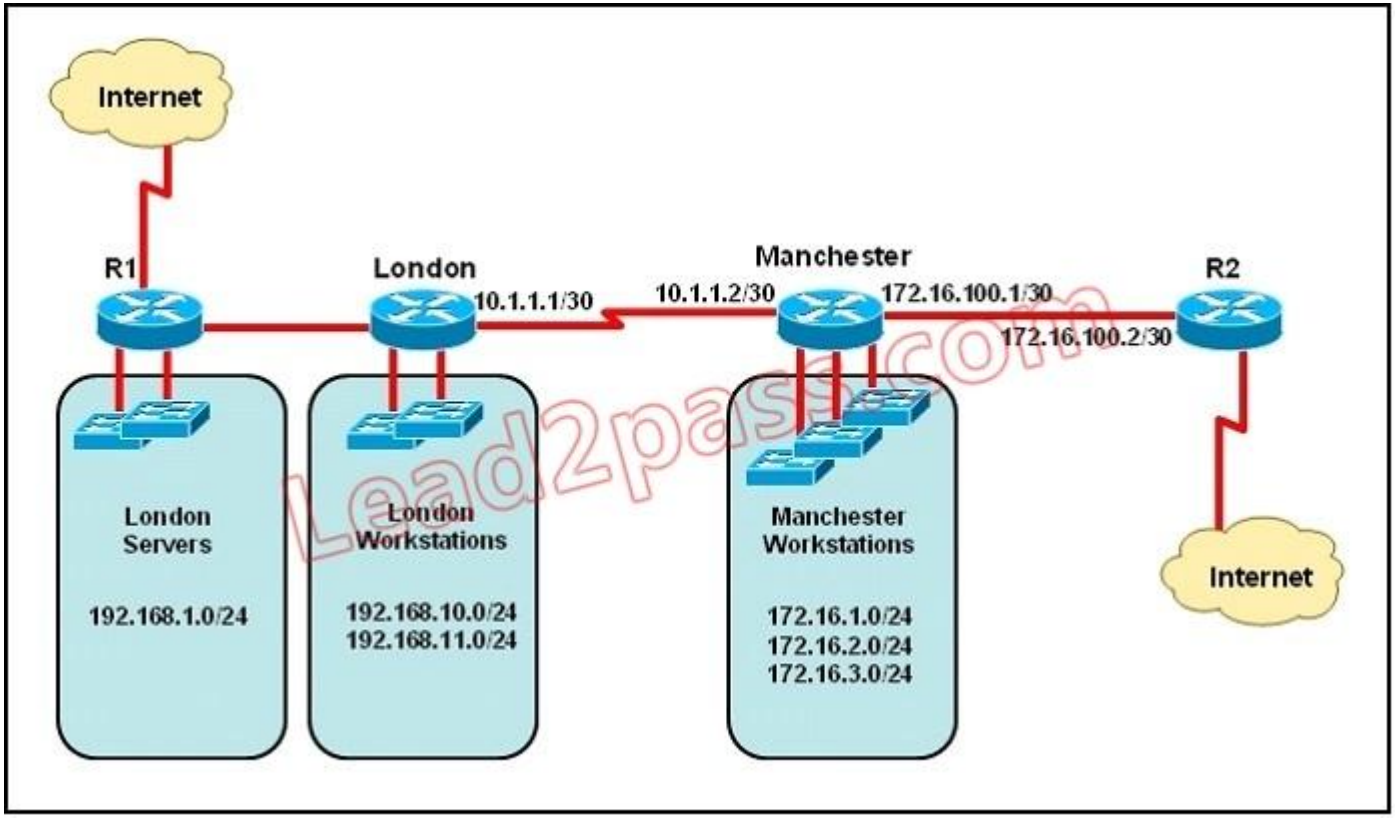

A. This switch has more than one interface connected to the root network segment in VLAN 2.
B. This switch is running RSTP while the elected designated switch is running 802.1d Spanning Tree.
C. This switch interface has a higher path cost to the root bridge than another in the topology.
D. This switch has a lower bridge ID for VLAN 2 than the elected designated switch.

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:
This question is to check the STP technology.
When STP is running in a network with loops, ports will transition into the forwarding state or the blocking state.
Here decisive factor is the cost to reach the root bridge, the port with the higher cost is in the blocking state, while the port with the lower cost is in the

forwarding state.

QUESTION 15
Refer to the exhibit.
The network administrator must establish a route by which London workstations can forward traffic to the Manchester workstations.
What is the simplest way to accomplish this?



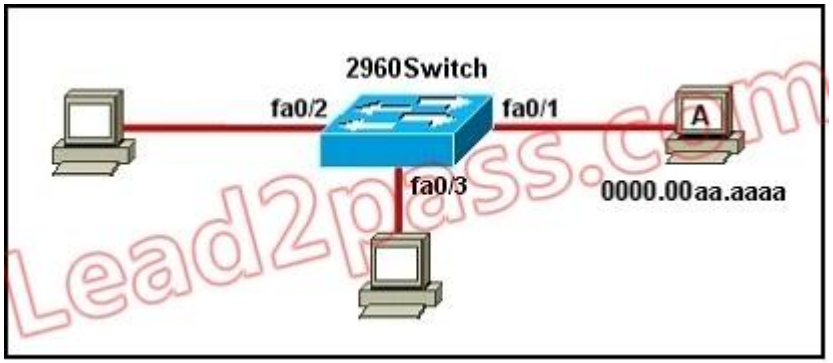
A. Configure a dynamic routing protocol on London to advertise all routes to Manchester.
B. Configure a dynamic routing protocol on London to advertise summarized routes to Manchester.
C. Configure a dynamic routing protocol on Manchester to advertise a default route to the London router.
D. Configure a static default route on London with a next hop of 10.1.1.1.
E. Configure a static route on London to direct all traffic destined for 172.16.0.0/22 to 10.1.1.2.
F. Configure Manchester to advertise a static default route to London.

Correct Answer: E
Section: Routing
Explanation

Explanation/Reference:

QUESTION 16
Refer to the exhibit.
This command is executed on 2960Switch:

2960Switch(config)# mac-address-table static 0000.00aa.aaaa vlan 10 interface fa0/1



Which two of these statements correctly identify results of executing the command? (Choose two.)

A. Port security is implemented on the fa0/1 interface.
B. MAC address 0000.00aa.aaaa does not need to be learned by this switch.
C. Only MAC address 0000.00aa.aaaa can source frames on the fa0/1 segment.
D. Frames with a Layer 2 source address of 0000.00aa.aaaa will be forwarded out fa0/1.
E. MAC address 0000.00aa.aaaa will be listed in the MAC address table for interface fa0/1 only.

Correct Answer: BE
Section: Switching
Explanation

Explanation/Reference:

QUESTION 17

Which of the following describes the roles of devices in a WAN? (Choose three.)

A. A CSU/DSU terminates a digital local loop.
B. A modem terminates a digital local loop.
C. A CSU/DSU terminates an analog local loop.
D. A modem terminates an analog local loop.
E. A router is commonly considered a DTE device.
F. A router is commonly considered a DCE device.

Correct Answer: ADE
Section: WAN
Explanation

Explanation/Reference:
Layer 2 switching is considered hardware-based bridging because it uses specialized hardware called an application-specific integrated circuit (ASIC). ASICs can run up to gigabit speeds with very low latency rates. A router is commonly considered to be a DTE device, while a CSU/DSU is considered the DCE device.
Switches usually have higher port number then bridge. Generally bridges have two ports. Both operates on Data link layer.

QUESTION 18
What are two characteristics of Telnet? (Choose two.)

A. It sends data in clear text format.
B. It is no longer supported on Cisco network devices.
C. It is more secure than SSH.
D. It requires an enterprise license in order to be implemented.
E. It requires that the destination device be configured to support Telnet connections.

Correct Answer: AE
Section: IP Services
Explanation

Explanation/Reference:
Telnet sends data in clear text. If a remote device wants to access the destination device through Telnet, the destination device must be configured to support Telnet connections.

QUESTION 19
Which two security appliances will you use in a network? (Choose two.)

A. ATM

B. ids
C. ios
D. iox
E. ips
F. SDM

Correct Answer: BE
Section: Layer 3 Security
Explanation

Explanation/Reference:

QUESTION 20
A single 802.11g access point has been configured and installed in the center of a square office.
A few wireless users are experiencing slow performance and drops while most users are operating at peak efficiency.
What are three likely causes of this problem? (Choose three.)

A. mismatched TKIP encryption
B. null SSID
C. cordless phones
D. mismatched SSID
E. metal file cabinets
F. antenna type or direction

Correct Answer: CEF
Section: WLAN
Explanation

Explanation/Reference:
A. Cordless phones may interfere in wireless NIC.
B. mismatched SSID
SSID(Service Set Identifier)can also be written as ESSID, which is used to distinguish different networks and has 32 characters at most , WLAN cards set up different SSID to enter different networks.
SSID is usually broadcast by AP, you can view SSID of the present area through XP built-in scanning feature .Taking security into consideration, SSID can be not broadcast, meanwhile users need to set up SSID
manually to enter the appropriate network. In simple terms, SSID is the name of a local area network; only those computers that set up the same SSID values can communicate with each other. If SSID fails to match,
wireless will fail in connection, and no wireless network inefficiency will appear.
C. metal file cabinets may have a certain amount of shielding
D. antenna type or direction

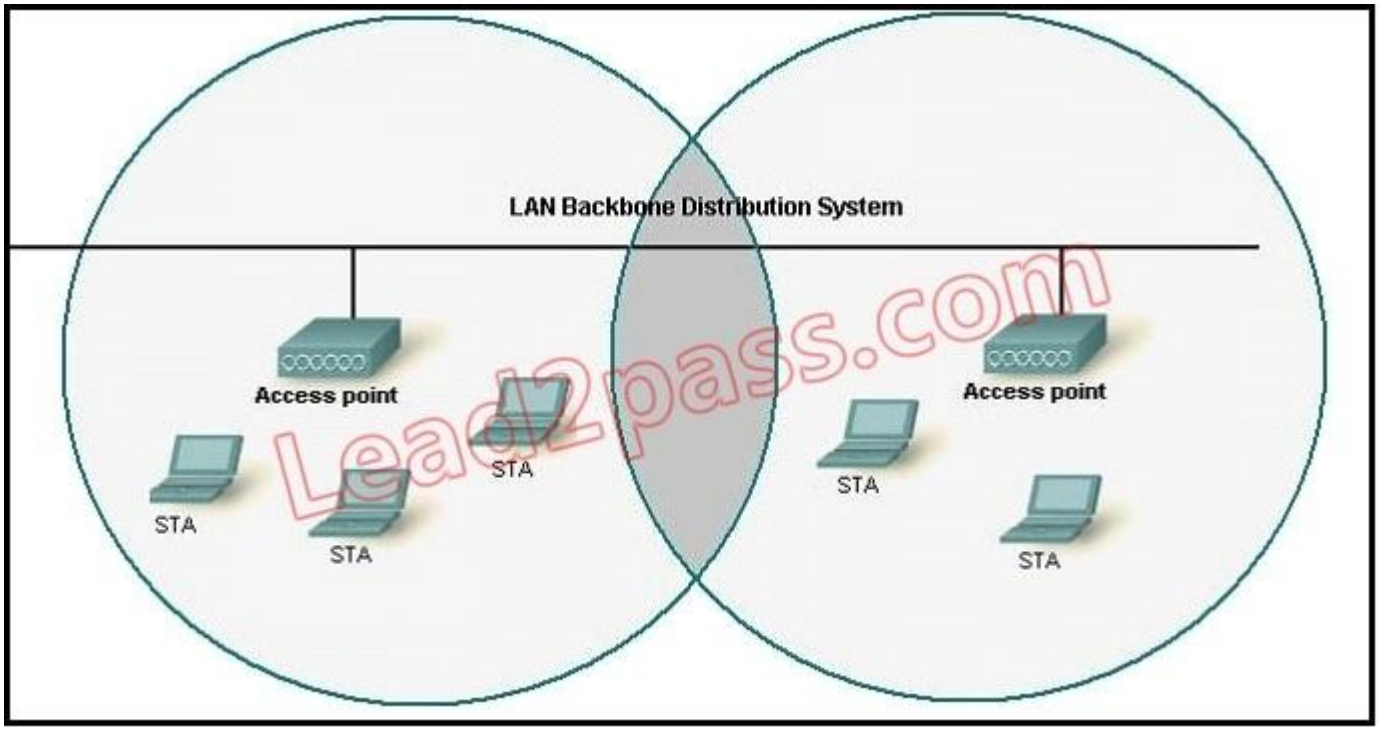
QUESTION 21
Given that Host A and Host B are in different networks. When Host A is trying to communicate with Host B, which step will Host A take first?

A. Send a TCP SYN and wait for the SYN ACK with the IP address of Host B.
B. Drop the data.
C. Create an ARP request to get a MAC address for Host B.
D. Send the data frames to the default gateway.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
The answer "Create an ARP request to get a MAC address for Host B." is NOT correct, the host will know if the destination is not on the local network and will send to MAC address of its default gateway setting, it will not ARP for MAC address of remote destination.

QUESTION 22
Refer to the exhibit. What two facts can be determined from the WLAN diagram? (Choose two.)



A. The area of overlap of the two cells represents a basic service set (BSS).
B. The network diagram represents an extended service set (ESS).
C. Access points in each cell must be configured to use channel 1.
D. The area of overlap must be less than 10% of the area to ensure connectivity.
E. The two APs should be configured to operate on different channels.

Correct Answer: BE
Section: WLAN
Explanation

Explanation/Reference:

QUESTION 23
Which two devices can interfere with the operation of a wireless network because they operate on similar frequencies? (Choose two.)

A. toaster
B. IP phone
C. AM radio
D. cordless phone
E. microwave oven
F. copier

Correct Answer: DE
Section: WLAN
Explanation

Explanation/Reference:
The microwave and cordless phone in the 2.4GHz spectrum band will interfere with the operation of a wireless network.

QUESTION 24
Which two descriptions are correct about characteristics of IPv6 unicast addressing? (Choose two.)

A. Global addresses start with 2000::/3.
B. Link-local addresses start with FE00:/12.
C. Link-local addresses start with FF00::/10.
D. There is only one loopback address and it is ::1.
E. If a global address is assigned to an interface, then that is the only allowable address for the interface.

Correct Answer: AD
Section: IPv6
Explanation

Explanation/Reference:
Below is the list of common kinds of IPv6 addresses:

Loopback address	::1
Link-local address	FE80::/10
Site-local address	FEC0::/10
Global address	2000::/3
Multicast address	FF00::/8

QUESTION 25

Refer to the exhibit. Which statement is true?

```
SwitchA# show spanning-tree vlan 20

VLAN0020
  Spanning tree enabled protocol rstp
  Root ID    Priority    24596
             Address     0017.596d.2a00
             Cost        38
             Port        11(FastEthernet0/10)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    28692  (priority 28672 sys-id-ext 1)
             Address     0017.596d.1580
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------
Fa0/11           Root FWD 19        128.11   P2p
Fa0/12           Altn BLK 19        128.12   P2p
```


A. The Fa0/11 role confirms that SwitchA is the root bridge for VLAN 20.
B. VLAN 20 is running the Per VLAN Spanning Tree Protocol.
C. The MAC address of the root bridge is 0017.596d.1580.
D. SwitchA is not the root bridge, because not all of the interface roles are designated.

Correct Answer: D
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 26
Which two of these statements are true of IPv6 address representation? (Choose two.)

A. There are four types of IPv6 addresses: unicast, multicast, anycast, and broadcast.

B. A single interface may be assigned multiple IPv6 addresses of any type.
C. Every IPv6 interface contains at least one loopback address.
D. The first 64 bits represent the dynamically created interface ID.
E. Leading zeros in an IPv6 16 bit hexadecimal field are mandatory.

Correct Answer: BC
Section: IPv6
Explanation

Explanation/Reference:
IPv6 Address Types
IPv6 does not use classes. IPv6 supports the following three IP address types: unicast,multicast, anycast
Unicast and multicast messaging in IPv6 are conceptually the same as in IPv4. IPv6 does not support broadcast, but its multicast mechanism accomplishes essentially the same effect. (A) is incorrect

(B) is correct IPv6 supports single interface mulitple address
(C) is correct Every IPv6-enabled interface must contain at least one loopback and one link-local address.

The last 64 bits of an IPv6 address are the interface identifier that is unique to the 64-bit prefix of the IPv6 address (D) is incorrect

Leading zero are mandatory (F) is incorrect

QUESTION 27
What are three basic parameters to configure on a wireless access point? (Choose three.)

A. SSID
B. RTS/CTS
C. AES-CCMP
D. TKIP/MIC
E. RF channel
F. authentication method

Correct Answer: AEF
Section: WLAN
Explanation

Explanation/Reference:
SSID (Service Set Identifier) can also be written as ESSID, which is used to distinguish different networks. It has 32 characters at most, WLAN cards set up different SSID to enter different networks.
SSID is usually broadcast by AP or wireless routers , you can view SSID of the present area through XP built-in scanning feature .
Taking security into consideration, SSID can be not broadcast, meanwhile users need to set up SSID manually to enter the appropriate network.
Simply speaking, SSID is the name of a local area network, only those computers that set up the same SSID value can communicate with each other.
RF is an acronym for Radio Frequency. It is the electromagnetic frequency that can be radiated to space, frequency range from 300 KHz to 30GHz.

QUESTION 28
Refer to the exhibit.
A system administrator installed a new switch using a script to configure it. IP connectivity was tested using pings to SwitchB.
Later attempts to access NewSwitch using Telnet from SwitchA failed. Which statement is true?

```
SwitchA# show spanning-tree vlan 20

VLAN0020
  Spanning tree enabled protocol rstp
  Root ID    Priority    24596
             Address     0017.596d.2a00
             Cost        38
             Port        11 (FastEthernet0/11)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID  Priority    28692  (priority 28672 sys-id-ext 20)
             Address     0017.596d.1580
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 300
Interface          Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- ---------
Fa0/11             Root FWD 19        128.11   P2p
Fa0/12             Altn BLK 19        128.12   P2p
```


A. Executing password recovery is required.
B. The virtual terminal lines are misconfigured.
C. Use Telnet to connect to RouterA and then to NewSwitch to correct the error.
D. Power cycle of NewSwitch will return it to a default configuration.

Correct Answer: C

Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 29
Which two of these statements regarding RSTP are correct? (Choose two.)

A. RSTP cannot operate with PVST+.
B. RSTP defines new port roles.
C. RSTP defines no new port states.
D. RSTP is a proprietary implementation of IEEE 802.1D STP.
E. RSTP is compatible with the original IEEE 802.1D STP.

Correct Answer: BE
Section: Spanning Tree
Explanation

Explanation/Reference:
When network topology changes, rapid spanning tree protocol (IEEE802.1W, referred to as RSTP) will speed up significantly the speed to re-calculate spanning tree.
RSTP not only defines the role of other ports: alternative port and backup port, but also defines status of 3 ports: discarding status, learning status, forwarding status.
RSTP is 802.1D standard evolution, not revolution. It retains most of the parameters, and makes no changes.

QUESTION 30
Which three of these statements regarding 802.1 Q trunking are correct? (Choose three.)

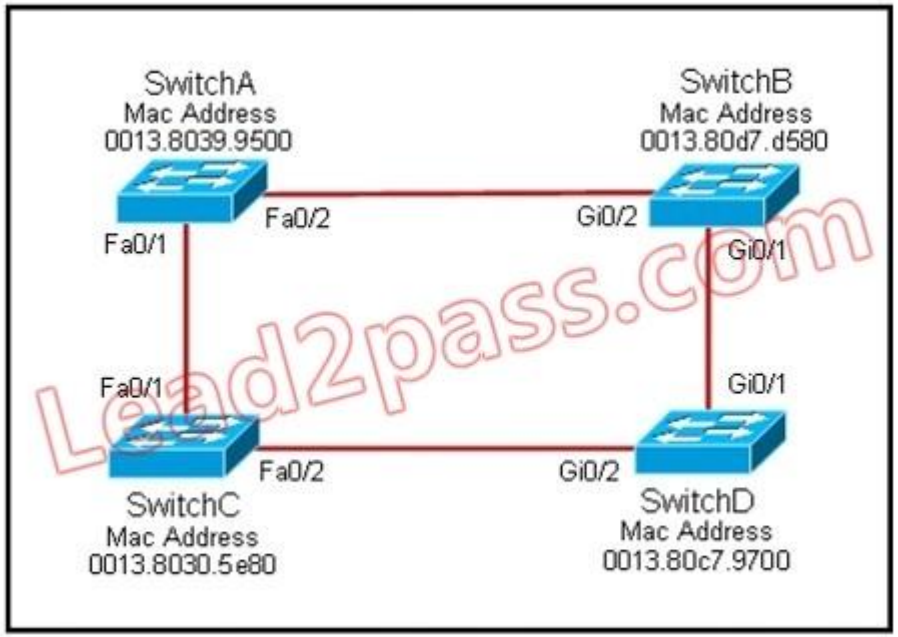
A. 802.1 Q native VLAN frames are untagged by default.
B. 802.1 Q trunking ports can also be secure ports.
C. 802.1 Q trunks can use 10 Mb/s Ethernet interfaces.
D. 802.1 Q trunks require full-duplex, point-to-point connectivity.
E. 802.1 Q trunks should have native VLANs that are the same at both ends.

Correct Answer: ACE
Section: VLAN
Explanation

Explanation/Reference:
By default, 802.1Q trunk defined Native VLAN in order to forward unmarked frame. Switches can forward Layer 2 frame from Native VLAN on unmarked

trunks port.
Receiver switches will transmit all unmarked packets to Native VLAN. Native VLAN is the default VLAN configuration of port.
Note: for the 802.1Q trunk ports between two devices, the same Native VLAN configuration is required on both sides of the link.
If the Native VLAN in 802.1Q trunk ports on same trunk link is properly configured, it could lead to layer 2 loops.
The 802.1Q trunk link transmits VLAN information through Ethernet.

QUESTION 31
Refer to the exhibit.
Each of these four switches has been configured with a hostname, as well as being configured to run RSTP. No other configuration changes have been made.
Which three of these show the correct RSTP port roles for the indicated switches and interfaces? (Choose three.)

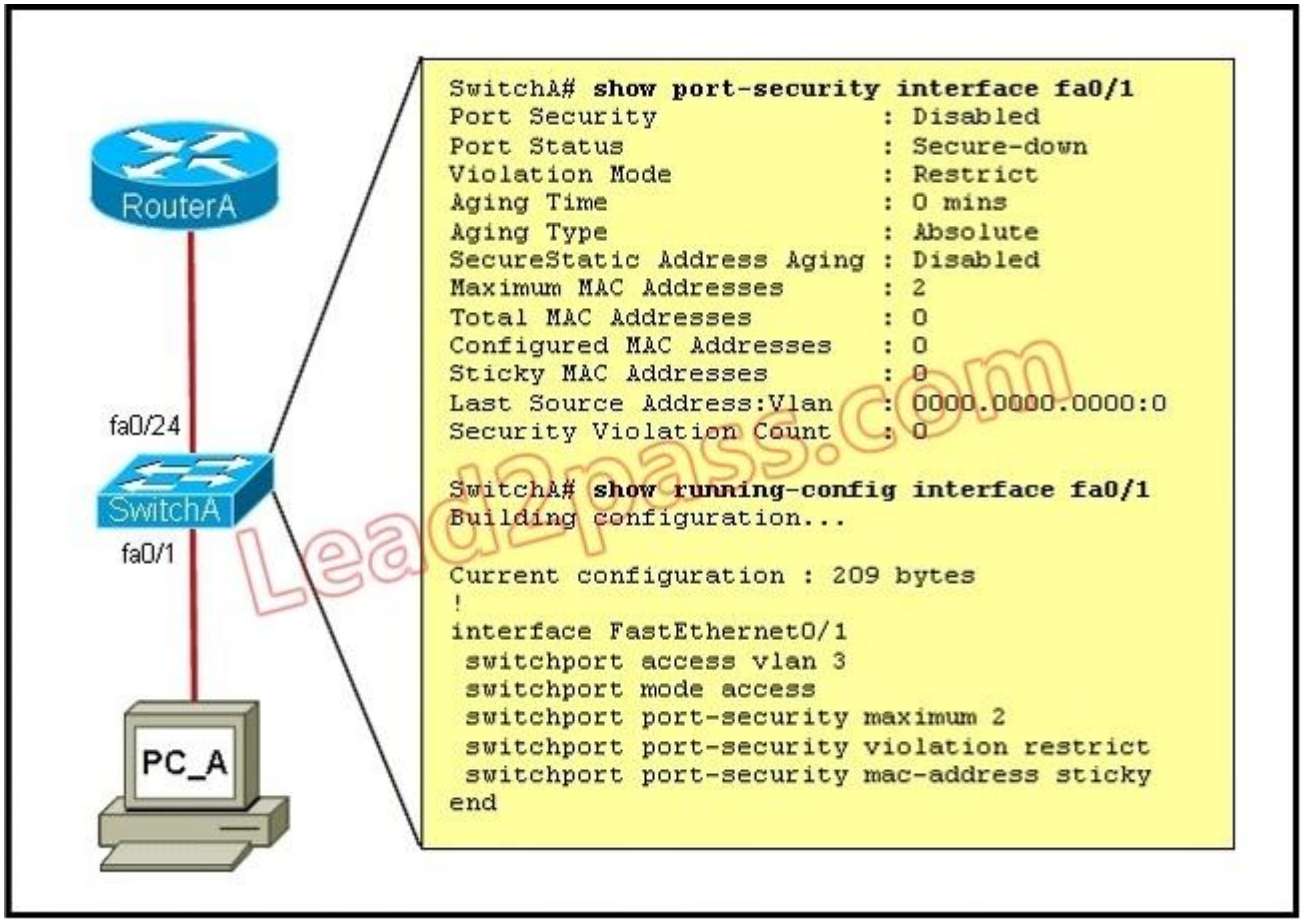


A. SwitchA, Fa0/2, designated
B. SwitchA, Fa0/1, root
C. SwitchB, Gi0/2, root
D. SwitchB, Gi0/1, designated
E. SwitchC, Fa0/2, root
F. SwitchD, Gi0/2, root

Correct Answer: ABF
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 32
Refer to the exhibit.
A junior network administrator was given the task of configuring port security on SwitchA to allow only PC_A to access the switched network through port fa0/1.
If any other device is detected, the port is to drop frames from this device.
The administrator configured the interface and tested it with successful pings from PC_A to RouterA, and then observes the output from these two show commands.



Which two of these changes are necessary for SwitchA to meet the requirements? (Choose two.)

A. Configure port security to shut down the interface in the event of a violation.
B. Port security needs to be enabled on the interface.
C. Enable port security globally.
D. Port security needs to be configured to allow only one learned MAC address.
E. Port security interface counters need to be cleared before using the show command.
F. The port security configuration needs to be saved to NVRAM before it can become active.

Correct Answer: BD

Section: Layer 2 Security
Explanation

Explanation/Reference:
As we see in the output, the “Port Security” is in “Disabled” state (line 2 in the output). To enable Port security feature, we must enable it on that interface first with the command:
SwitchA(config-if)#switchport port-security
-> B is correct.

Also from the output, we learn that the switch is allowing 2 devices to connect to it (switchport port-security maximum 2) but the question requires allowing only PC_A to access the network so we need to reduce the maximum number to 1 -> D is correct.

QUESTION 33
Which of the following correctly describe steps in the OSI data encapsulation process? (Choose two)

A. The transport layer divides a data stream into segments and may add reliability and flow control information.
B. The data link layer adds physical source and destination addresses and an FCS to the segment.
C. Packets are created when the network layer encapsulates a frame with source and destination host addresses and protocol-related control information.
D. Packets are created when the network layer adds Layer 3 addresses and control information to a segment.
E. The presentation layer translates bits into voltages for transmission across the physical link.

Correct Answer: AD
Section: How a network works
Explanation

Explanation/Reference:
The transport layer segments data into smaller pieces for transport. Each segment is assigned a sequence number, so that the receiving device can reassemble the data on arrival.

The transport layer also use flow control to maximize the transfer rate while minimizing the requirements to retransmit. For example, in TCP, basic flow control is implemented by acknowledgment by the receiver of the receipt of data; the sender waits for this acknowledgment before sending the next part.
-> A is correct.

The Network layer (Layer 3) has two key responsibilities. First, this layer controls the logical addressing of devices. Second, the network layer determines the best path to a particular destination network, and routes the data appropriately.

-> D is correct.

QUESTION 34
For which type of connection should a straight-through cable be used?

A. switch to switch
B. switch to hub
C. switch to router
D. hub to hub
E. router to PC

Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:

Straight-Through Cable

The *straight-through cable* is used to connect

- Host to switch or hub
- Router to switch or hub

QUESTION 35
Which set of commands is recommended to prevent the use of a hub in the access layer?

A. switch(config-if)#switchport mode trunk
switch(config-if)#switchport port-security maximum 1
B. switch(config-if)#switchport mode trunk
switch(config-if)#switchport port-security mac-address 1
C. switch(config-if)#switchport mode access
switch(config-if)#switchport port-security maximum 1
D. switch(config-if)#switchport mode access
switch(config-if)#switchport port-security mac-address 1

Correct Answer: C
Section: Layer 2 Security
Explanation

Explanation/Reference:

In order to satisfy the requirements of this question, you should perform the following configurations in the interface mode:

First, configure the interface mode as the access mode

Second, enable the port security and set the maximum number of connections to 1.

QUESTION 36
By default, each port in a Cisco Catalyst switch is assigned to VLAN1. Which two recommendations are key to avoid unauthorized management access? (Choose two.)

A. Create an additional ACL to block the access to VLAN 1.
B. Move the management VLAN to something other than default.
C. Move all ports to another VLAN and deactivate the default VLAN.
D. Limit the access in the switch using port security configuration.
E. Use static VLAN in trunks and access ports to restrict connections.
F. Shutdown all unused ports in the Catalyst switch.

Correct Answer: BF
Section: Layer 2 Security
Explanation

Explanation/Reference:
Answer B - Switches use VLAN 1 as the default VLAN for most things including Native trunking VLAN and management. It is a good idea to avoid the use of VLAN 1 all together

Answer F -

9. How To Secure Unused Ports

Disabling unused switch ports a simple method many network administrators use to help secure their network from unauthorized access. Disabling an unused port stops traffic from flowing through the port(s)

Step 1: Disable interface Fa0/10 on SW1.

Enter interface configuration mode for FastEthernet 0/17 and shut down the port.

```
SW1(config)#interface fa0/10
SW1(config-if)#shutdown
```

Step 2: Disable interfaces Fa0/1 to Fa0/24 on SW1

```
SW1(config)#interface range fa0/1-24
SW1(config-if)#shutdown
```

QUESTION 37
Which Cisco Catalyst feature automatically disables the port in an operational PortFast upon receipt of a BPDU?

A. BackboneFast
B. UplinkFast
C. Root Guard
D. BPDU Guard
E. BPDU Filter

Correct Answer: D
Section: Layer 2 Security
Explanation

Explanation/Reference:
PortFast BPDU Guard is a feature that shuts down a PortFast-enabled port in the event a BPDU is received. This feature ensures that a bridging loop cannot form, because the switch's shutting down the port removes the possibility for a loop forming.

QUESTION 38
Which type of cable is used to connect the COM port of a host to the COM port of a router or switch?

A. crossover
B. straight-through
C. rolled
D. shielded twisted-pair

Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:

Rolled Cable

Although *rolled cable* isn't used to connect any Ethernet connections together, you can use a rolled Ethernet cable to connect a host to a router console serial communication (com) port.

QUESTION 39

What is known as "one-to-nearest" addressing in IPv6?

A. global unicast
B. anycast
C. multicast
D. unspecified address

Correct Answer: B
Section: IPv6
Explanation

Explanation/Reference:

Address types are:

- Unicast: one-to-one (global, link local, unique local, compatible)
- Anycast: one-to-nearest (allocated from Unicast)
- Multicast: one-to-many (also replaces broadcast addresses)

QUESTION 40
Which option is a valid IPv6 address?

A. 2001:0000:130F::099a::12a
B. 2002:7654:A1AD:61:81AF:CCC1
C. FEC0:ABCD:WXYZ:0067::2A4
D. 2004:1:25A4:886F::1

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:
Answer (A) is incorrect because you cannot have more than one **"::"**

Answer (B) is incorrect because there are only 96 bits. 6 * 4 * 4 = **96 bits** - 2002:7654: A1AD:61: 81AF:CCC1

Answer (C) is incorrect because hex is from 0-F **"WXYZ" is not possible**

2004:1:25A4:886F::1 is 2004:0001:25A4:886F:0000:0000:0000:0001 - **128 bit address (D) is Correct**

QUESTION 41
How many bits are contained in each field of an IPv6 address?

A. 24
B. 4
C. 8
D. 16

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:
There are:
+ 8 groups of 4 hexadecimal digits.
+ **Each group represents 16 bits (4 hexa digits * 4 bit)**
+ Separator is ":"
+ Hex digits are not case sensitive, so "**DBCA**" is same as "dbca" or "DBca"…

QUESTION 42
Which layer of the OSI reference model uses the hardware address of a device to ensure message delivery to the proper host on a LAN?

A. physical
B. data link
C. network
D. transport

Correct Answer: B
Section: How a network works
Explanation

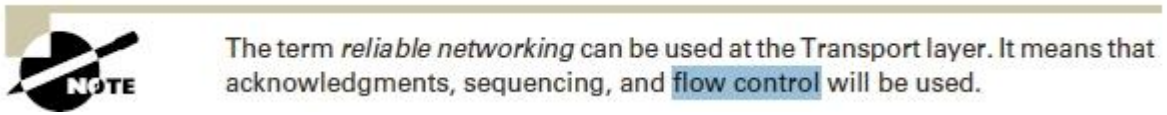
Explanation/Reference:
The hardware address of a device or the Media Access Control (MAC) address is added in the Data Link layer. An Ethernet MAC address is a 48-bit binary value expressed as 12 hexadecimal digits (for example: 00:15:A4:CB:03:CA).

QUESTION 43
Which layer of the OSI reference model uses flow control, sequencing, and acknowledgments to ensure that reliable networking occurs?

A. data link
B. network
C. transport
D. presentation
E. physical

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:



QUESTION 44
What is the principle reason to use a private IP address on an internal network?

A. Subnet strategy for private companies.
B. Manage and scale the growth of the internal network.
C. Conserve public IP addresses so that we do not run out of them.
D. Allow access reserved to the devices.

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
This question is to examine the concept of the private IP address.
Class A. 10.0.0.0 --10.255.255.255
Class B. 172.16.0.0--172.31.255.255
Class C. 192.168.0.0--192.168.255.255
The three classes of addresses shown above cannot be used on the Internet, they can only be used for the interior LAN addressing scheme. Because of the practical exhaustion of the IPv4 address space, private IP addresses are generated to save the address resources.
The correct answer is C.

QUESTION 45

Which IP address can be assigned to an Internet interface?

A. 10.180.48.224
B. 9.255.255.10
C. 192.168.20.223
D. 172.16.200.18

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 46
What will happen if a private IP address is assigned to a public interface connected to an ISP?

A. Addresses in a private range will be not routed on the Internet backbone.
B. Only the ISP router will have the capability to access the public network.
C. The NAT process will be used to translate this address in a valid IP address.
D. Several automated methods will be necessary on the private network.
E. A conflict of IP addresses happens, because other public routers can use the same range.

Correct Answer: A
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 47
When is it necessary to use a public IP address on a routing interface?

A. Connect a router on a local network.
B. Connect a router to another router.
C. Allow distribution of routes between networks.
D. Translate a private IP address.
E. Connect a network to the Internet.

Correct Answer: E

Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 48
What is the first 24 bits in a MAC address called?

A. NIC
B. BIA
C. OUI
D. VAI

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:
Organizational Unique Identifier (OUI) is the first 24 bits of a MAC address for a network device, which indicates the specific vendor for that device as assigned by the Institute of Electrical and Electronics Engineers, Incorporated (IEEE). This identifier uniquely identifies a vendor, manufacturer, or an organization..

QUESTION 49
In an Ethernet network, under what two scenarios can devices transmit? (Choose two.)

A. when they receive a special token
B. when there is a carrier
C. when they detect no other devices are sending
D. when the medium is idle
E. when the server grants access

Correct Answer: CD
Section: How a network works
Explanation

Explanation/Reference:
Ethernet network is a shared environment so all devices have the right to access to the medium. If more than one device transmits simultaneously, the signals collide and can not reach the destination.

If a device detects another device is sending, it will wait for a specified amount of time before attempting to transmit. When there is no traffic detected, a device will transmit its message. While this transmission is occurring, the device continues to listen for traffic or collisions on the LAN. After the message is sent, the device returns to its default listening mode.

So we can see C and D are the correct answers. But in fact “answer C – when they detect no other devices are sending” and “when the medium is idle” are nearly the same.

QUESTION 50
Which term describes the process of encapsulating IPv6 packets inside IPv4 packets?

A. tunneling
B. hashing
C. routing
D. NAT

Correct Answer: A
Section: IPv6
Explanation

Explanation/Reference:

6to4 Tunneling

6to4 tunneling is really useful for carrying IPv6 data over a network that’s still IPv4. It’s quite possible that you’ll have IPv6 subnets or other portions of your network that are all IPv6, and those networks will have to communicate with each other. Not so complicated, but when you consider that you might find this happening over a WAN or some other network that you don’t control, well, that could be a bit ugly. So what do we do about this if we don’t control the whole tamale? Create a tunnel that will carry the IPv6 traffic for us across the IPv4 network, that’s what.

The whole idea of tunneling isn’t a difficult concept, and creating tunnels really isn’t as hard as you might think. All it really comes down to is snatching the IPv6 packet that’s happily traveling across the network and sticking an IPv4 header onto the front of it. Kind of like catch and release fishing, except for the fish doesn’t get something plastered on its face before being thrown back into the stream.

QUESTION 51
Which statement about RIPng is true?

A. RIPng uses broadcasts to exchange routes.
B. RIPng is enabled on each interface separately.
C. There can be only one RIPng process per router.

D. RIPng allows for routes with up to 30 hops.

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 52
Which statement about IPv6 is true?

A. Addresses are not hierarchical and are assigned at random.
B. Only one IPv6 address can exist on a given interface.
C. There are 2.7 billion addresses available.
D. Broadcasts have been eliminated and replaced with multicasts.

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:
This question is to check the concept of IPv6.
IPv4 supports three address types: unicast, multicast and broadcast. In IPv6, broadcasts have been eliminated and replaced with multicasts.
At the same time, IPv6 introduces another address type - anycast.

QUESTION 53
Which line from the output of the show ip interface command indicates a layer 1 problem?

A. Serial0/1 is up, line protocol is down
B. Serial0/1 is down, line protocol is down
C. Serial0/1 is up, line protocol is up
D. Serial0/1 is administratively down, line protocol is down

Correct Answer: B
Section: How a network works
Explanation

Explanation/Reference:
The first part of the “Serial0/0 is down, line protocol is down” indicates a layer 1 problem while the second part indicates a

layer 2 problem

QUESTION 54
A network admin wants to know every hop the packets take when he accesses cisco.com. Which command is the most appropriate to use?

A. path cisco.com
B. debug cisco.com
C. trace cisco.com
D. traceroute cisco.com

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 55
QoS policies are applied on the switches of a LAN. Which type of command will show the effects of the policy in real time?

A. show command
B. debug command
C. configuration command
D. rommon command

Correct Answer: B
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 56
Which command will show the MAC addresses of stations connected to switch ports?

A. show mac-address
B. show arp
C. show table
D. show switchport

Correct Answer: B
Section: Switching
Explanation

Explanation/Reference:
BTW, there in no "show mac-address". The correct command is show mac address-table

QUESTION 57
What is the name of the VTP mode of operation that enables a switch to forward only VTP advertisements while still permitting the editing of local VLAN information?

A. server
B. client
C. tunnel
D. transparent

Correct Answer: D
Section: VTP
Explanation

Explanation/Reference:

QUESTION 58
Which port state is introduced by Rapid-PVST?

A. learning
B. listening
C. discarding
D. forwarding

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:

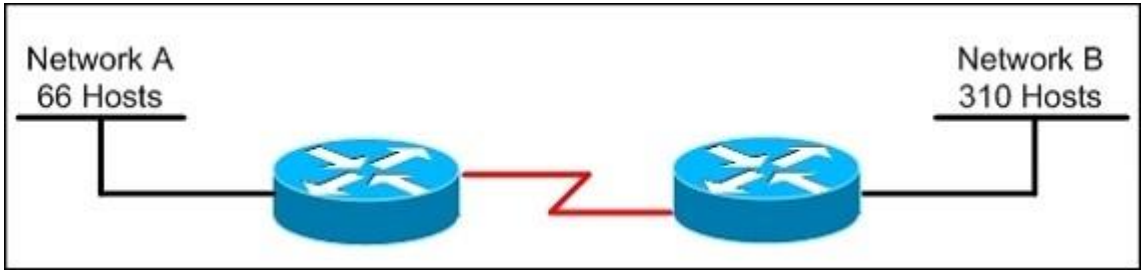
QUESTION 59
What speeds must be disabled in a mixed 802.11b/g WLAN to allow only 802.11g clients to connect?

A. 6, 9, 12, 18
B. 1, 2, 5.5, 6
C. 5.5, 6, 9, 11
D. 1, 2, 5.5, 11

Correct Answer: D
Section: WLAN
Explanation

Explanation/Reference:
802.11G uses both DSSS/OFDM to communicate with B and G. B uses 1,2,5.5 and 11 mbps and DSSS Technology. But G uses 6,9,12,18,24,36,48,54 mbps and OFDM Technology. So If we disable 1,2,5.5 and 11, No B communication, only G devices can communicate

QUESTION 60
Refer to the exhibit. Which VLSM mask will allow for the appropriate number of host addresses for Network A?



A. /25
B. /26
C. /27
D. /28

Correct Answer: A
Section: IP addressing
Explanation

Explanation/Reference:
We need 66 hosts < 128 = 2^7 -> We need 7 bits 0 -> The subnet mask should be 1111 1111.1111 1111.1111 1111.1000 0000 -> /25

QUESTION 61

Refer to the exhibit. Which subnet mask will place all hosts on Network B in the same subnet with the least amount of wasted addresses?

A. 255.255.255.0
B. 255.255.254.0
C. 255.255.252.0
D. 255.255.248.0

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:
310 hosts < 512 = 2^9 -> We need a subnet mask of 9 bits 0 -> 1111 1111.1111 1111.1111 1110.0000 0000 -> 255.255.254.0

QUESTION 62
A new hardware item is using an IEEE 802.11b a wireless LAN. What is the maximum data rate specified for this WLAN?

A. 10 mbps
B. 11 Mbps
C. 1000 Mbps
D. 16 Mbps
E. 100 Mbps

Correct Answer: B
Section: WLAN
Explanation

Explanation/Reference:
The maximum speed for 802.11b is 11 Mbps.

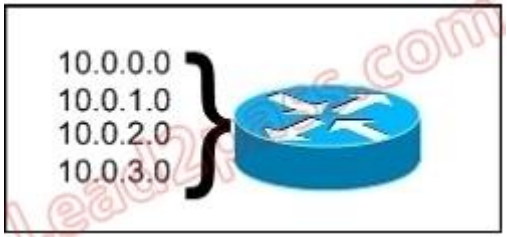
QUESTION 63
Refer to the exhibit. Which mask is correct to use for the WAN link between the routers that will provide connectivity while wasting the least amount of addresses?

A. /23
B. /24
C. /25
D. /30

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:
This question is to examine the IP addressing scheme. In the serial port network, only two IP addresses can be assigned. In order to save IP addresses, we often use the /30 subnet mask.
So the correct answer is D.

QUESTION 64
Refer to the exhibit. What is the most appropriate summarization for these routes?



A. 10.0.0.0 /21

B. 10.0.0.0 /22
C. 10.0.0.0 /23
D. 10.0.0.0 /24

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:
We need to summarize 4 subnets so we have to move left 2 bits ($2^2 = 4$). In this question we can guess the initial subnet mask is /24 because 10.0.0.0, 10.0.1.0, 10.0.2.0, 10.0.3.0 belong to different networks. So "/24″ moves left 2 bits -> /22.

QUESTION 65
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

Correct Answer: CF
Section: IP Services
Explanation

Explanation/Reference:

QUESTION 66
Which two benefits are provided by using a hierarchical addressing network addressing scheme? (Choose two.)

A. reduces routing table entries
B. auto-negotiation of media rates
C. efficient utilization of MAC addresses
D. dedicated communications between devices
E. ease of management and troubleshooting

Correct Answer: AE

Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 67
Which two benefits are provided by creating VLANs? (Choose two.)

A. added security
B. dedicated bandwidth
C. provides segmentation
D. allows switches to route traffic between subinterfaces
E. contains collisions

Correct Answer: AC
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 68
Which two link protocols are used to carry multiple VLANs over a single link? (Choose two.)

A. VTP
B. 802.1q
C. IGP
D. isl
E. 802.3u

Correct Answer: BD
Section: VLAN
Explanation

Explanation/Reference:
This question is to check the trunking protocol.
IGP is an interior gateway protocol and also a routing protocol, such as OSPF and EIGRP.
802.1q and ISL are trunking protocols which can be used to carry the traffic of multiple VLANs over a single link.
ISL is a Cisco proprietary protocol.
802.3u (100Base-T) is 100 Mbps Ethernet standard.

QUESTION 69
Which two protocols are used by bridges and/or switches to prevent loops in a layer 2 network? (Choose two.)

A. 802.1d
B. VTP
C. 802.1q
D. STP
E. SAP

Correct Answer: AD
Section: Switching
Explanation

Explanation/Reference:
This question is to examine the STP protocol.
STP (802.1d) is used to prevent Layer 2 loops.
802.1q is a Frame Relay protocol which belongs to VLAN.
SAP is a concept of the OSI model.
So the correct answers are A and D.

QUESTION 70
On the network 131.1.123.0/27, what is the last IP address that can be assigned to a host?

A. 131.1.123.30
B. 131.1.123.31
C. 131.1.123.32
D. 131.1.123.33

Correct Answer: A
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 71
The ip subnet zero command is not configured on a router. What would be the IP address of Ethernet 0/0 using the first available address from the sixth subnet of the network 192.168.8.0/29?

A. 192.168.8.25

B. 192.168.8.41
C. 192.168.8.49
D. 192.168.8.113

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
The “ip subnet zero” is not configured so the first subnet will start at 192.168.8.8 (ignoring 192.168.8.0).

Increment: 8
1st subnet: 192.168.8.8
2nd subnet: 192.168.8.16
3rd subnet: 192.168.8.24
4th subnet: 192.168.8.32
5th subnet: 192.168.8.40
6th subnet: 192.168.8.48 -> The first usable IP address of 6th subnet is 192.168.8.49

QUESTION 72
For the network 192.0.2.0/23, which option is a valid IP address that can be assigned to a host?

A. 192.0.2.0
B. 192.0.2.255
C. 192.0.3.255
D. 192.0.4.0

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 73
How many addresses for hosts will the network 124.12.4.0/22 provide?

A. 510
B. 1022
C. 1024

D. 2048

Correct Answer: B
Section: IP addressing
Explanation

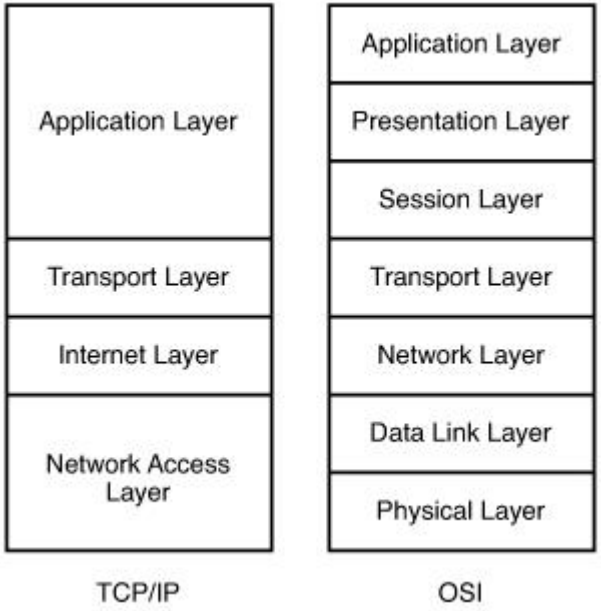
Explanation/Reference:

QUESTION 74
Where does routing occur within the DoD TCP/IP reference model?

A. application
B. internet
C. network
D. transport

Correct Answer: B
Section: How a network works
Explanation

Explanation/Reference:
The picture below shows the comparison between TCP/IP model & OSI model. Notice that the Internet Layer of TCP/IP is equivalent to the Network Layer which is responsible for routing decision.



QUESTION 75
Which VTP mode is capable of creating only local VLANs and does not synchronize with other switches in the VTP domain?

A. client
B. dynamic
C. server
D. static
E. transparent

Correct Answer: E
Section: VTP
Explanation

Explanation/Reference:

QUESTION 76
Which switch would STP choose to become the root bridge in the selection process?

A. 32768: 11-22-33-44-55-66

B. 32768: 22-33-44-55-66-77
C. 32769:11-22-33-44-55-65
D. 32769: 22-33-44-55-66-78

Correct Answer: A
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 77
A switch is configured with all ports assigned to VLAN 2. In addition, all ports are configured as full-duplex FastEthernet.
What is the effect of adding switch ports to a new VLAN on this switch?

A. The additions will create more collisions domains.
B. An additional broadcast domain will be created.
C. More bandwidth will be required than was needed previously.
D. IP address utilization will be more efficient.

Correct Answer: B
Section: VLAN
Explanation

Explanation/Reference:
A VLAN is a group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location.
A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same LAN segment.
Networks that use the campus-wide or end-to-end VLANs logically segment a switched network based on the functions of an organization, project teams, or applications rather than on a physical or geographical basis.
For example, all workstations and servers used by a particular workgroup can be connected to the same VLAN, regardless of their physical network connections or interaction with other workgroups.
Network reconfiguration can be done through software instead of physically relocating devices.
Cisco recommends the use of local or geographic VLANs that segment the network based on IP subnets. Each wiring closet switch is on its own VLAN or subnet and traffic between each switch is routed by the router.
The reasons for the Distribution Layer 3 switch and examples of a larger network using both the campus-wide and local VLAN models will be discussed later.
A VLAN can be thought of as a broadcast domain that exists within a defined set of switches. Ports on a switch can be grouped into VLANs in order to limit unicast, multicast, and broadcast traffic flooding.
Flooded traffic originating from a particular VLAN is only flooded out ports belonging to that VLAN, including trunk ports, so a switch that connects to another switch will normally introduce an additional broadcast domain.

VLAN (Virtual Local Area Network) technology is to solve the problem that switches can't limit broadcast within the LAN interconnection.
This technology can divide a LAN into more logical LAN- VLAN, each VLAN is a broadcast domain, the communication between the hosts within a VLAN is like that of the hosts in a LAN,
while the communication can't be achieved between VLANs directly. Thus the broadcast datagram is limited within a LAN. So, creating a new VLAN on switch is the same as adding a new broadcast domain.

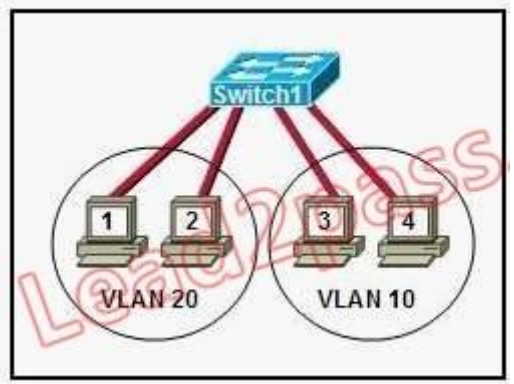
QUESTION 78
VLAN is a most useful technology, which is often used in different network environments.
It is important for you to have a real understanding of the changes brought by VLAN.
Refer to the following statements about VLAN, which two are correct?

A. VLANs increase the size of collision domains.
B. VLANs allow logical grouping of users by function.
C. VLANs simplify switch administration.
D. VLANs enhance network security.

Correct Answer: BD
Section: VLAN
Explanation

Explanation/Reference:
Refer to the divided VLANs. The number of collision domains does not change because each switch port is a collision domain. So A is wrong.
VLANs do not simplify switch administration. On the contrary, many configurations are required.
VTP can simplify theses configurations. C is wrong.
VLANs allow logical grouping of users by function. Communication cannot be achieved between VLANs without the layer 3 device, which restricts the mutual access and improves the network security.

QUESTION 79
Refer to the exhibit.
Hosts on the same VLAN can communicate with each other but are unable to communicate with hosts on different VLANs.
What is needed to allow communication between VLANs?



A. a router with an IP address on the physical interface that is connected to the switch
B. a router with subinterfaces configured on the physical interface that is connected to the switch
C. a switch with an access link that is configured between the switches
D. a switch with a trunk link that is configured between the switches

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
Different VLANs can't communicate with each other , they can communicate with the help of Layer3 router. Hence ,it is needed to connect a router to a switch,
then make the sub-interface on the router to connect to the switch, establishing Trunking links to achieve communications of devices which belong to different VLANs.
When using VLANs in networks that have multiple interconnected switches, you need to use VLAN trunking between the switches. With VLAN trunking, the switches tag each frame sent between switches so that the receiving switch knows to what VLAN the frame belongs. End user devices connect to switch ports
that provide simple connectivity to a single VLAN each. The attached devices are unaware of any VLAN structure.
By default, only hosts that are members of the same VLAN can communicate. To change this and allow inter-VLAN communication, you need a router or a layer 3 switch.
Here is the example of configuring the router for inter-vlan communication

RouterA(config)#int f0/0.1
RouterA(config-subif)#encapsulation ?
dot1Q IEEE 802.1Q Virtual LAN

RouterA(config-subif)#encapsulation dot1Q or isl VLAN ID
RouterA(config-subif)# ip address x.x.x.x y.y.y.y

QUESTION 80
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

Correct Answer: AB
Section: IP Services
Explanation

Explanation/Reference:
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 81
How does a DHCP server dynamically assign IP addresses to hosts?

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. A host will usually keep the same address by periodically contacting the DHCP server to renew the lease.

Correct Answer: D
Section: IP Services
Explanation

Explanation/Reference:

QUESTION 82
Which network protocol does DNS use?

A. FTP

B. TFTP
C. TCP
D. UDP
E. SCP

Correct Answer: D
Section: IP Services
Explanation

Explanation/Reference:
Normally a client sends a DNS Query using UDP Protocol over Port 53. If it does not get response from a DNS Server, it must re-transmit the DNS Query using TCP after 3-5 seconds. So we can say DNS prefers using UDP to TCP -> the answer should be UDP.

QUESTION 83
When two hosts are trying to communicate across a network, how does the host originating the communication determine the hardware address of the host that it wants to "talk" to?

A. RARP request
B. Show Network Address request
C. Proxy ARP request
D. ARP request
E. Show Hardware Address request

Correct Answer: D
Section: How a network works
Explanation

Explanation/Reference:
The address resolution protocol (ARP) is a protocol used to map IP network addresses to the hardware addresses.

+ If the destination host is inside the local network, the originating host will broadcast an ARP Request to ask the MAC address of that host.
+ If the destination host is outside the local network, the originating host will broadcast an ARP Request to ask the MAC address of the local port (the port in the same subnet with our device) of the default gateway. Notice that the IP of the default gateway has been already configured in our device.

QUESTION 84
During the data transmission between hosts over a network, which process does the data experience?

A. standardization
B. conversion
C. encapsulation
D. synchronization

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:
Two hosts are communicating through Internet. The communication process includes encapsulation and de-encapsulation.
From down to top, de-encapsulation is required.
From top to down, encapsulation is required.

QUESTION 85
An administrator attempts a traceroute but receives a "Destination Unreadable" message. Which protocol is responsible for that message?

A. RARP
B. RUDP
C. ICMP
D. SNMP

Correct Answer: C
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
This question is to examine the command ping.
The ping command is often used to check the network connectivity. Ping sends an ICMP echo request to the destination and tells whether a corresponding ICMP echo reply message is received or not.

QUESTION 86
When you are logged into a switch, which prompt indicates that you are in privileged mode?

A. %
B. @
C. >
D. $

E. #

Correct Answer: E
Section: Basic device operation
Explanation

Explanation/Reference:

Privileged EXEC Mode

Privileged EXEC mode is password protected, and allows the use of all EXEC mode commands ava
on the system. To enter privileged EXEC mode from user EXEC mode, use the **enable** command
Privileged EXEC mode allows access to global configuration mode through the use of the **enable**
command. The privileged EXEC mode prompt consists of the devices's host name followed by the p
sign: `Router#` .

QUESTION 87
Which command shows system hardware and software version information?

A. show configuration
B. show environment
C. show inventory
D. show platform
E. show version

Correct Answer: E
Section: Basic device operation
Explanation

Explanation/Reference:

Remember what the command **`show version`** provides. The `show version` command will provide basic configuration for the system hardware as well as the software version, the names and sources of configuration files, the `config-register` setting, and the boot images.

QUESTION 88
Cisco Catalyst switches CAT1 and CAT2 have a connection between them using ports FA0/13.
An 802.1Q trunk is configured between the two switches.
On CAT1, VLAN 10 is chosen as native, but on CAT2 the native VLAN is not specified.
What will happen in this scenario?

A. 802.1 Q giants frames could saturate the link.
B. VLAN 10 on CAT1 and VLAN 1 on CAT2 will send untagged frames.
C. A native VLAN mismatch error message will appear.
D. VLAN 10 on CAT1 and VLAN 1 on CAT2 will send tagged frames.

Correct Answer: C
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 89
Which command would correctly configure a serial port on a router with the last usable host address in the 192.216.32.32/29 subnet?

A. router (config-if)# ip address 192.216.32.38 255.255.255.240
B. router (config-if)# ip address 192.216.32.39 255.255.255.224
C. router (config-if)# ip address 192.216.32.63 255.255.255.248
D. router (config-if)# ip address 192.216.32.39 255.255.255.248
E. router (config-if)# ip address 192.216.32.63 255.255.255.248
F. router (config-if)# ip address 192.216.32.38 255.255.255.248

Correct Answer: F
Section: IP addressing
Explanation

Explanation/Reference:
This question is to examine the IP addressing.
In the 192.216.32.32/29 subnet, the network number is 192.216.32.32.
The first usable IP address is 192.216.32.33.
The last usable IP address is 192.216.32.38.
192.216.32.39 is the broadcast address, /29 represents 255.255.255.248.

QUESTION 90
The network default gateway applying to a host by DHCP is 192.168.5.33/28. Which option is the valid IP address of this host?

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

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
/28 would look like this X.X.X.11110000
128 64 32 16| 8 4 2 1
so your increment will be 16

networks are as such:
192.168.5.0
192.168.5.16
192.168.5.32 <---This is the network that the router is on
192.168.5.48 <---we can stop there

now just find an ip address in the 31-46 range, as the 192.168.5.47 is the broadcast.

Exam C

QUESTION 1
Which command is used to see the path taken by packets across an IP network?

A. show ip route
B. show route
C. trace route
D. trace ip route

Correct Answer: C
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
This question is to examine the trace route command. When checking the network connectivity, we often use the ping command or the trace route command.
And the trace route command can also trace the network path of Internet routers that packets take as they are forwarded from your computer to a destination address.
The correct answer is C.

QUESTION 2
Which command is used to debug a ping command?

A. debug icmp
B. debug ip icmp
C. debug tcp
D. debug packet

Correct Answer: B
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 3
Which command displays CPU utilization?

A. show protocols
B. show process

C. show system
D. show version

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
The **show processes** command displays information about the active processes. Issue the **show processes cpu** command to display detailed CPU utilization statistics on these processes and the **show processes memory** command to show the amount of memory used.

QUESTION 4
When configuring a serial interface on a router, what is the default encapsulation?

A. atm-dxi
B. frame-relay
C. hdlc
D. lapb
E. ppp

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
This question is to examine the data link layer protocols.

LAPB. Link Access Procedure Balanced for x.25
PPP: Point-to-Point Protocol
HDLC. High-Level Data Link Control

Frame-relay and the three protocols above are data link layer protocols. HDLC is the default serial encapsulation protocol.
The correct answer is C.

QUESTION 5
What must be set correctly when configuring a serial interface so that higher-level protocols calculate the best route?

A. bandwidth
B. delay

C. load
D. reliability

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 6
A company implements video conferencing over IP on their Ethernet LAN. The users notice that the network slows down, and the video either stutters or fails completely. What is the most likely reason for this?

A. minimum cell rate (MCR)
B. quality of service (QoS)
C. modulation
D. packet switching exchange (PSE)
E. reliable transport protocol (RTP)

Correct Answer: B
Section: VoIP
Explanation

Explanation/Reference:
This question is to examine QoS.
Quality of Service is a network security mechanism, which is used to resolve the network delay problem. This mechanism is essential to multimedia application.
When the network is overloaded, QoS will prevent a possible delay in the important data transmission and ensure the efficient operation of the network.
The correct answer is B.

QUESTION 7
Which layer in the OSI reference model is responsible for determining the availability of the receiving program and checking to see if enough resources exist for that communication?

A. transport
B. network
C. presentation
D. session
E. application

Correct Answer: E
Section: How a network works
Explanation

Explanation/Reference:
The Application layer is responsible for identifying and establishing the availability of the intended communication partner and determining whether sufficient resources for the intended communication exist.
The correct answer is E.

QUESTION 8
Data transfer is slow between the source and destination.
The quality of service requested by the transport layer in the OSI reference model is not being maintained.
To fix this issue, at which layer should the troubleshooting process begin?

A. presentation
B. session
C. transport
D. network
E. physical

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 9
Which protocols are found in the network layer of the OSI reference model and are responsible for path determination and traffic switching?

A. LAN
B. routing
C. WAN
D. network

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 10
Which command reveals the last method used to powercycle a router?

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

Correct Answer: D
Section: Basic device operation
Explanation

Explanation/Reference:
The “show version” command can be used to show the last method to powercycle (reset) a router

QUESTION 11
Which three options are valid WAN connectivity methods? (Choose three.)

A. PPP
B. wap
C. HDLC
D. MPLS
E. L2TPv3
F. ATM

Correct Answer: ACF
Section: WAN
Explanation

Explanation/Reference:

QUESTION 12
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

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
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..."
So the correct answer is C.

QUESTION 13
What is the difference between a CSU/DSU and a modem?

A. A CSU/DSU converts analog signals from a router to a leased line; a modem converts analog signals from a router to a leased line.
B. A CSU/DSU converts analog signals from a router to a phone line; a modem converts digital signals from a router to a leased line.
C. A CSU/DSU converts digital signals from a router to a phone line; a modem converts analog signals from a router to a phone line.
D. A CSU/DSU converts digital signals from a router to a leased line; a modem converts digital signals from a router to a phone line.

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 14
A network administrator must configure 200 switch ports to accept traffic from only the currently attached host devices.
What would be the most efficient way to configure MAC-level security on all these ports?

A. Visually verify the MAC addresses and then telnet to the switches to enter the switchport-port security mac-address command.
B. Have end users e-mail their MAC addresses. Telnet to the switch to enter the switchport-port security mac-address command.
C. Use the switchport port-security MAC address sticky command on all the switch ports that have end devices connected to them.
D. Use show mac-address-table to determine the addresses that are associated with each port and then enter the commands on each switch for MAC address port-security.

Correct Answer: C
Section: Layer 2 Security
Explanation

Explanation/Reference:
A and C can be used, but instead of writing all the MAC addresses of the devices associated with each port, we can ask the switch to learn all the MAC addresses of the associated devices automatically by the “switchport port-security mac-address sticky” command which will save much work for the administrator

switchport port-security mac-address sticky [MAC]. The STICKY keyword is used to make the MAC address appear in the running configuration and you can save it for later use. If you do not specify any MAC addresses after the STICKY keyword, the switch will dynamically learn the attached MAC Address and place it into your running-configuration.

QUESTION 15
When troubleshooting a Frame Relay connection, what is the first step when performing a loopback test?

A. Set the encapsulation of the interface to HDLC.
B. Place the CSU/DSU in local-loop mode.
C. Enable local-loop mode on the DCE Frame Relay router.
D. Verify that the encapsulation is set to Frame Relay.

Correct Answer: A
Section: WAN
Explanation

Explanation/Reference:

QUESTION 16
What occurs on a Frame Relay network when the CIR is exceeded?

A. All TCP traffic is marked discard eligible.
B. All UDP traffic is marked discard eligible and a BECN is sent.
C. All TCP traffic is marked discard eligible and a BECN is sent.
D. All traffic exceeding the CIR is marked discard eligible.

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 17
What are two characteristics of Frame Relay point-to-point subinterfaces? (Choose two.)

A. They create split-horizon issues.
B. They require a unique subnet within a routing domain.
C. They emulate leased lines.
D. They are ideal for full-mesh topologies.
E. They require the use of NBMA options when using OSPF.

Correct Answer: BC
Section: WAN
Explanation

Explanation/Reference:

QUESTION 18
Refer to the exhibit. Addresses within the range 10.10.10.0/24 are not being translated to the 1.1.128.0/16 range.
Which command shows if 10.10.10.0/24 are allowed inside addresses?

```
RouterA# show running-config
!
ip nat pool inside_green 1.1.128.1 1.1.255.254
ip nat inside source list 101 pool inside_green
!
```


A. debug ip nat
B. show access-list
C. show ip nat translation
D. show ip nat statistics

Correct Answer: B
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 19
A wireless client cannot connect to an 802.11b/g BSS with a b/g wireless card.
The client section of the access point does not list any active WLAN clients. What is a possible reason for this?

A. The incorrect channel is configured on the client.
B. The client's IP address is on the wrong subnet.
C. The client has an incorrect pre-shared key.
D. The SSID is configured incorrectly on the client.

Correct Answer: D
Section: WLAN
Explanation

Explanation/Reference:
SSID is used to differentiate networks from one another, which has a maximum length of 32 characters.
Wireless network card configured with different SSIDs can access different networks. AP is often used to broadcast SSID. SSID discovery is done by active scanning.
SSID will not be broadcasted for security reasons. Then users need to manually configure the SSID to access the network.
If a client cannot find the efficient network although the wireless card is working normally, the most likely cause is that SSID is configured incorrectly.

QUESTION 20
Which two features did WPAv1 add to address the inherent weaknesses found in WEP? (Choose two.)

A. a stronger encryption algorithm
B. key mixing using temporal keys
C. shared key authentication
D. a shorter initialization vector
E. per frame sequence counters

Correct Answer: BE
Section: WLAN
Explanation

Explanation/Reference:
This question is to examine the differences between WPAv1 and WEP.

QUESTION 21
Which two wireless encryption methods are based on the RC4 encryption algorithm? (Choose two.)

A. WEP
B. CCKM
C. AES
D. TKIP
E. ccmp

Correct Answer: AD
Section: WLAN
Explanation

Explanation/Reference:

QUESTION 22
What are two characteristics of RIPv2? (Choose two.)

A. classful routing protocol
B. variable-length subnet masks
C. broadcast addressing
D. manual route summarization

E. uses SPF algorithm to compute path

Correct Answer: BD
Section: Routing
Explanation

Explanation/Reference:
RIPV2 supports VLSM networks. RIPV1 does not support VLSM.
RIPV2 supports manual route summarization
Incorrect answer:
Classful routing protocol: The original specification of RIP (RIP V1), uses classful routing. RIPv2 included the ability to carry subnet information, thus supportingClassless Inter-Domain Routing (CIDR).
The main difference between RIPv1 and RIPv2 is classless routing. RIPv2 incorporates the addition of the network mask in the update to allow classless routing advertisements.

QUESTION 23
Which two Ethernet fiber-optic modes support distances of greater than 550 meters?

A. 1000BASE-CX
B. 100BASE-FX
C. 1000BASE-LX
D. 1000BASE-SX
E. 1000BASE-ZX

Correct Answer: CE
Section: How a network works
Explanation

Explanation/Reference:

Standard	Cabling	Maximum length
1000BASE-CX	Twinaxial cabling	25 meters
100BASE-FX	Two strands, multimode	400 m
1000BASE-LX	Long-wavelength laser, MM orSM fiber	10 km (SM)3 km (MM)
1000BASE-SX	Short-wavelength laser, MM fiber	220 m with 62.5-micron fiber; 550 mwith 50-micron fiber
1000BASE-ZX	Extended wavelength, SM fiber	100 km

Note:

+ MM: Multimode

+ SM: Single-mode

QUESTION 24
What two things will a router do when running a distance vector routing protocol? (Choose two.)

A. Send periodic updates regardless of topology changes.
B. Send entire routing table to all routers in the routing domain.
C. Use the shortest-path algorithm to the determine best path.
D. Update the routing table based on updates from their neighbors.
E. Maintain the topology of the entire network in its database.

Correct Answer: AD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 25
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

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 26
Which command shows if an access list is assigned to an interface?

A. show ip interface [interface] access-lists
B. show ip access-lists interface [interface]
C. show ip interface [interface]
D. show ip access-lists [interface]

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 27

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.

Correct Answer: A
Section: IP Services
Explanation

Explanation/Reference:

QUESTION 28
Refer to the exhibit. You are connected to the router as user Mike. Which command allows you to see output from the OSPF debug command?

```
Router#show users
    Line        User        Host(s)                Idle        Location
*322 vty 0      Mike        idle                   00:00:00    laptop

  Interface     User                    Mode       Idle      Peer Address

Router#debug ip ospf events
OSPF events debugging is on
Router#
```

A. terminal monitor
B. show debugging

C. show sessions
D. show ip ospf interface

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
By default, Cisco IOS does not send log messages to a terminal session over IP like Telnet, SSH but console connections do have logging feature enabled by default. To display debug command output and system error messages for Telnet or SSH session, use the “terminal monitor” command in privileged mode.

QUESTION 29
Refer to the exhibit. If number 2 is selected from the setup script, what happens when the user runs setup from a privileged prompt?

```
[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.

Enter your selection [2]:
```


A. Setup is additive and any changes will be added to the config script.
B. Setup effectively starts the configuration over as if the router was booted for the first time.
C. Setup will not run if an enable secret password exists on the router.
D. Setup will not run, because it is only viable when no configuration exists on the router.

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:

QUESTION 30
Refer to the exhibit. Which (config-router) command will allow the network represented on the interface to be advertised by RIP?

```
router rip
 version 2
 no auto-summary
!
interface ethernet0
 ip address 10.12.0.1 255.255.0.0
```

A. network ethernet0
B. redistribute 10.12.0.0
C. redistribute ethernet0
D. network 10.12.0.0

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 31
Refer to the exhibit. What information can be gathered from the output?

```
RouterA#debug ip rip
RIP protocol debugging is on

00:34:32: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet0/0 (172.16.1.1)
00:34:32: RIP: build flash update entries
00:34:32:       10.10.1.0/24 via 0.0.0.0, metric 1, tag 0
00:34:32: RIP: sending v2 flash update to 224.0.0.9 via Loopback0 (10.10.1.1)
00:34:32: RIP: build flash update entries
00:34:32:       10.0.0.0/8 via 0.0.0.0, metric 2, tag 0
00:34:32:       172.16.1.0/24 via 0.0.0.0, metric 1, tag 0
00:34:32: RIP: ignored v2 packet from 10.10.1.1 (sourced from one of our addresses)
00:34:33: RIP: received v2 update from 172.16.1.2 on FastEthernet0/0
00:34:33:      10.0.0.0/8 via 0.0.0.0 in 1 hops
00:34:44: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (172.16.1.1)
00:34:44: RIP: build update entries
00:34:44:       10.10.1.0/24 via 0.0.0.0, metric 1, tag 0
```


A. One router is running RIPvl.
B. RIP neighbor is 224.0.0.9.
C. The network contains a loop.
D. Network 10.10.1.0 is reachable.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 32
Refer to the exhibit. What type of connection would be supported by the cable diagram shown?

Pin Number	Color	Function	Pin	Color	Function
1	White/Green	TX+	1	White/Green	TX+
2	Green	TX-	2	Green	TX-
3	White/Orange	RX+	3	White/Orange	RX+
6	Orange	RX-	6	Orange	RX-

A. PC to router
B. PC to switch
C. server to router
D. router to router

Correct Answer: B
Section: How a network works
Explanation

Explanation/Reference:
From the “Pin” and “Color” in the exhibit we know that this is a straight-through cable so it can be used to connect PC to switch.

QUESTION 33
Refer to the exhibit. What type of connection would be supported by the cable diagram shown?

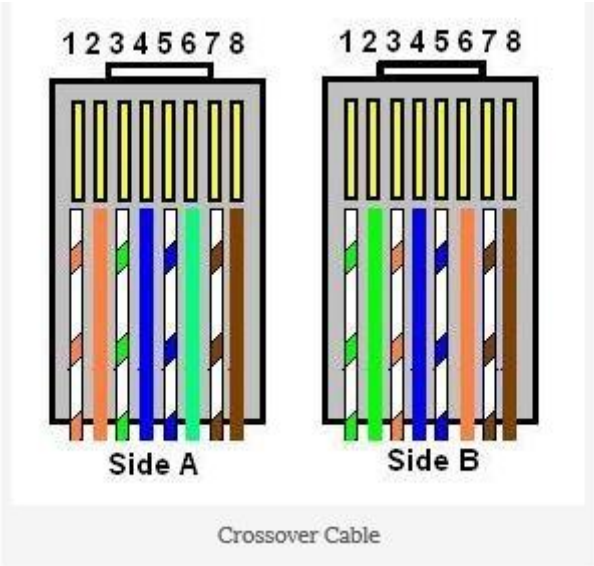
Pin	Color	Function	Pin	Color	Function
1	White/Green	TX+	3	White/Green	RX+
2	Green	TX-	6	Green	RX-
3	White/Orange	RX+	1	White/Orange	TX+
6	Orange	RX-	2	Orange	TX-

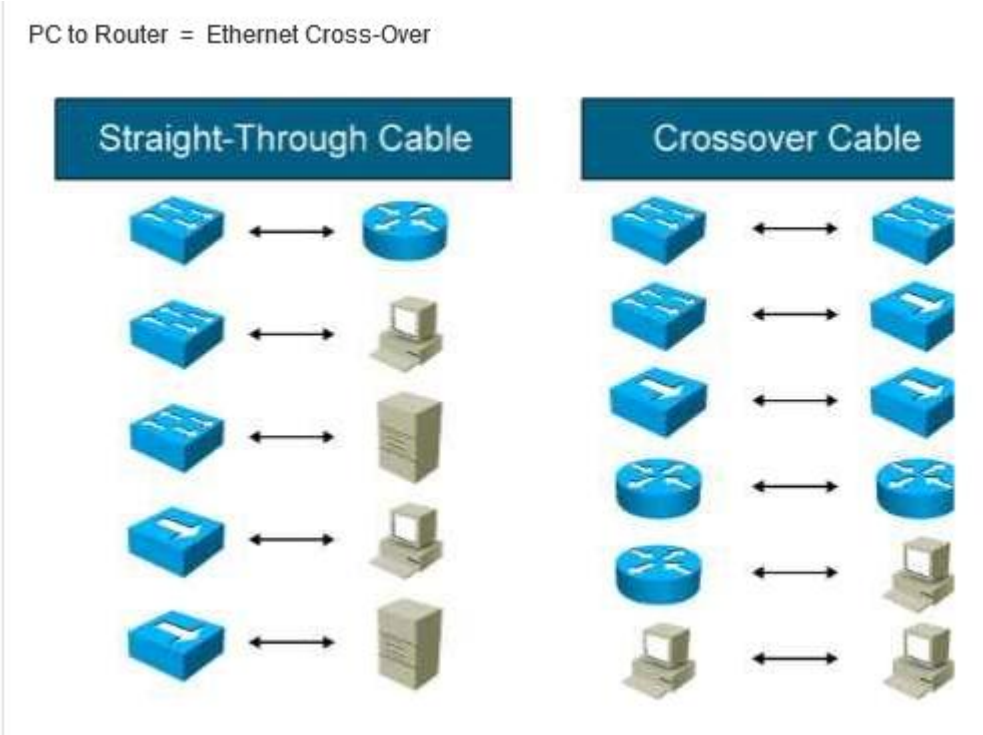
A. PC to router
B. PC to switch
C. server to switch
D. switch to router

Correct Answer: A
Section: How a network works

Explanation

Explanation/Reference:





QUESTION 34
Which two statements describe the Cisco implementation of VLANs? (Choose two.)

A. VLAN 1 is the default Ethernet VLAN.
B. CDP advertisements are only sent on VLAN 1002.
C. By default, the management VLAN is VLAN 1005.
D. By default, the switch IP address is in VLAN 1005.
E. VLANs 1002 through 1005 are automatically created and cannot be deleted.

Correct Answer: AE
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 35
Refer to the exhibit. What can be determined about the router from the console output?

```
1 FastEthernet/IEEE 802.3 interface(s)
125K bytes of non-volatile configuration memory.

65536K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).
8192K bytes of Flash internal SIMM (Sector size 256K).

         --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:
```


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.

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
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 36
Refer to the exhibit. What can be determined from the output?

```
Router#show ip arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  192.168.1.1            -    ca00.17d0.0008  ARPA   FastEthernet0/0
Internet  192.168.3.1            -    ca00.17d0.0008  ARPA   FastEthernet0/0
Internet  192.168.1.2            0    ca01.17d0.0008  ARPA   FastEthernet0/0
```


A. 192.168.1.2 is local to the router.

B. 192.168.3.1 is local to the router.
C. 192.168.1.2 will age out in less than 1 minute.
D. 192.168.3.1 has aged out and is marked for deletion.

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
The “Age” field in the “show ip arp” command is the age in minutes of the cache entry.
A hyphen (-) means the address is local so in this case 192.168.1.1 & 192.168.3.1 are local to this router -> B is correct.
Note: The “Age 0″ means that the address was cached less than 1 minute ago.

QUESTION 37
Refer to the exhibit. Which command would allow the translations to be created on the router?

```
RouterA#show ip nat translations
Pro Inside global         Inside local          Outside local         Outside global
--- 1.1.128.1             10.18.14.90           ---                   ---
--- 1.1.129.107           10.18.14.91           ---                   ---
--- 1.1.130.178           10.18.14.92           ---                   ---
--- 1.1.131.177           10.18.14.89           ---                   ---
--- 1.1.132.171           10.10.16.204          ---                   ---
--- 1.1.133.172           10.10.24.210          ---                   ---
--- 1.1.134.173           10.10.24.216          ---                   ---
--- 1.1.135.168           10.19.16.95           ---                   ---
--- 1.1.134.169           10.19.16.96           ---                   ---
--- 1.1.130.170           10.20.122.234         ---                   ---
--- 1.1.135.174           10.20.122.240         ---                   ---
```


A. ip nat pool mynats 1.1.128.1 1.1.135.254 prefix-length 19
B. ip nat outside mynats 1.1.128.1 1.1.135.254 prefix-length 19
C. ip nat pool mynats 1.1.128.1 1.1.135.254 prefix-length 18
D. ip nat outside mynats 1.1.128.1 1.1.135.254 prefix-length 18

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 38
Refer to the exhibit.
An administrator pings the default gateway at 10.10.10.1 and sees the output as shown. At which OSI layer is the problem?

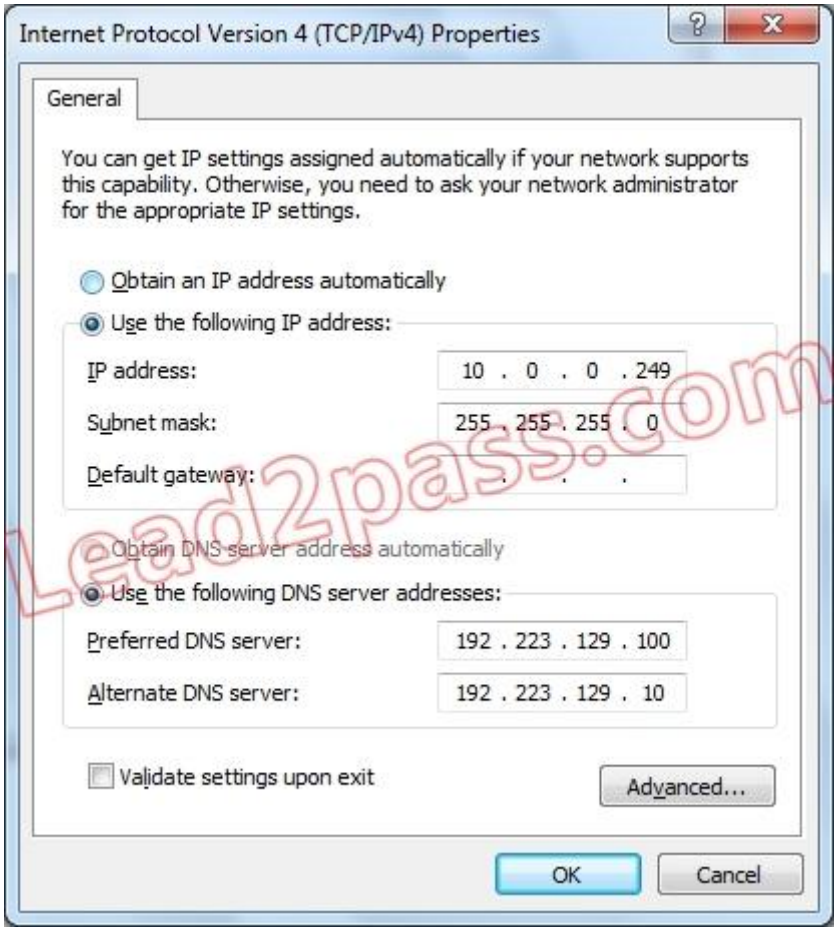
```
C:\> ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss)
```


A. data link layer
B. application layer
C. access layer
D. session layer
E. network layer

Correct Answer: E
Section: How a network works
Explanation

Explanation/Reference:
The command ping uses ICMP protocol, which is a network layer protocol used to propagate control message between host and router.
The command ping is often used to verify the network connectivity, so it works at the network layer.

QUESTION 39
Refer to the exhibit. Which value will be configured for Default Gateway of the Local Area Connection?



A. 10.0.0.0
B. 10.0.0.254
C. 192.223.129.0
D. 192.223.129.254

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 40
Refer to the exhibit. The user at Workstation B reports that Server A cannot be reached. What is preventing Workstation B from reaching Server A?

A. The IP address for Server A is a broadcast address.
B. The IP address for Workstation B is a subnet address.
C. The gateway for Workstation B is not on the same subnet.
D. The gateway for Server A is not on the same subnet.

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:
/27 = 255.255.255.224 = 30 hosts for subnet

S0 = 131.1.123.0/27
S1 = 131.1.123.32/27
S2 = 131.1.123.64/27
S3 = 131.1.123.96/27
S5 = 131.1.123.128/27
S6 = 131.1.123.160/27
S7 = 131.1.123.192/27

S8 = 131.1.123.224/27

So, the IP of Server A is in the S0 subnet. And the GW configured on the Server A is on the S1 subnet. (Server A having an ip: 131.1.123.24/27 GW: 131.1.123.33)199.99.9.57

QUESTION 41
Refer to the exhibit. What does the (*) represent in the output?

```
02:16:29: NAT: s=10.10.0.2->1.2.4.2, d=1.2.4.1 [51607]
02:16:29: NAT: s=1.2.4.1, d=1.2.4.2->10.10.0.2 [55227]
02:16:29: NAT*: s=10.10.0.2->1.2.4.2, d=1.2.4.1 [51608]
02:16:29: NAT*: s=10.10.0.2->1.2.4.2, d=1.2.4.1 [51609]
```


A. Packet is destined for a local interface to the router.
B. Packet was translated, but no response was received from the distant device.
C. Packet was not translated, because no additional ports are available.
D. Packet was translated and fast switched to the destination.

Correct Answer: D
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 42
Refer to the exhibit. What command sequence will enable PAT from the inside to outside network?

```
ip nat pool isp-net 1.2.4.10 1.2.4.240 netmask 255.255.255.0
!
interface ethernet 1
  description ISP Connection
  ip address 1.2.4.2 255.255.255.0
  ip nat outside
!
Interface ethernet 0
  description Ethernet to Firewall eth0
  ip address 10.10.0.1 255.255.255.0
  ip nat inside
!
access-list 1 permit 10.0.0.0 0.255.255.255
```


A. (config) ip nat pool isp-net 1.2.4.2 netmask 255.255.255.0 overload
B. (config-if) ip nat outside overload
C. (config) ip nat inside source list 1 interface ethernetl overload
D. (config-if) ip nat inside overload

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 43
Refer to the exhibit.
What will happen to HTTP traffic coming from the Internet that is destined for 172.16.12.10 if the traffic is processed by this ACL?

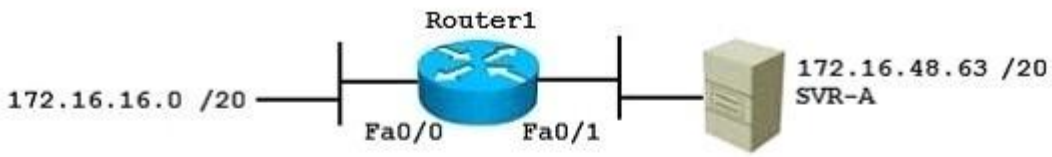
```
router#show access-lists
Extended IP access list 110
    10 deny tcp 172.16.0.0 0.0.255.255 any eq telnet
    20 deny tcp 172.16.0.0 0.0.255.255 any eq smtp
    30 deny tcp 172.16.0.0 0.0.255.255 any eq http
    40 permit tcp 172.16.0.0 0.0.255.255 any
```

A. Traffic will be dropped per line 30 of the ACL.
B. Traffic will be accepted per line 40 of the ACL.
C. Traffic will be dropped, because of the implicit deny all at the end of the ACL.
D. Traffic will be accepted, because the source address is not covered by the ACL.

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:
In Line 30 only deny http Traffic that come from 172.16.0.0 and goes to any.

QUESTION 44
Refer to the exhibit.
Which statement describes the effect that the Router1 configuration has on devices in the 172.16.16.0 subnet when they try to connect to SVR-A using Telnet or SSH?




```
Router1#show ip access-lists
Extended IP access list 100
    10 permit tcp 172.16.16.0 0.0.0.15 host 172.16.48.63 eq 22
    20 permit tcp 172.16.16.0 0.0.0.15 eq telnet host 172.16.48.63
Extended IP access list 101
    10 permit tcp host 172.16.48.63 eq 22 172.16.16.0 0.0.0.15
    20 permit tcp host 172.16.48.63 172.16.16.0 0.0.0.15 eq telnet
Router1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router1(config)#int fa0/0
Router1(config-if)#ip access-group 100 in
Router1(config-if)#int fa0/1
Router1(config-if)#ip access-group 101 in
Router1(config-if)#
```

A. Devices will not be able to use Telnet or SSH.
B. Devices will be able to use SSH, but not Telnet.
C. Devices will be able to use Telnet, but not SSH.
D. Devices will be able to use Telnet and SSH.

Correct Answer: B
Section: NAT & ACLs
Explanation

Explanation/Reference:
This question is to examine the use of ACL.
According to the information provided in the exhibit, 172.16.16.0 can reach SVR by using SSH.
SVR can reach 172.16.16.0 by using telnet.
So the correct answer is B.

QUESTION 45
What are three advantages of VLANs? (Choose three.)

A. VLANs establish broadcast domains in switched networks.
B. VLANs utilize packet filtering to enhance network security.
C. VLANs provide a method of conserving IP addresses in large networks.
D. VLANs provide a low-latency internetworking alternative to routed networks.
E. VLANs allow access to network services based on department, not physical location.
F. VLANs can greatly simplify adding, moving, or changing hosts on the network.

Correct Answer: AEF
Section: VLAN
Explanation

Explanation/Reference:
VLAN technology is often used in practice, because it can better control layer2 broadcast to improve network security.
This makes network more flexible and scalable. Packet filtering is a function of firewall instead of VLAN.

QUESTION 46
An administrator would like to configure a switch over a virtual terminal connection from locations outside of the local LAN.
Which of the following are required in order for the switch to be configured from a remote location? (Choose two.)

A. The switch must be configured with an IP address, subnet mask, and default gateway.
B. The switch must be connected to a router over a VLAN trunk.

C. The switch must be reachable through a port connected to its management VLAN.
D. The switch console port must be connected to the Ethernet LAN.
E. The switch management VLAN must be created and have a membership of at least one switch port.
F. The switch must be fully configured as an SNMP agent.

Correct Answer: AC
Section: Basic device operation
Explanation

Explanation/Reference:
In order to remote access to a switch from outside of the local LAN (in a different subnet) we have to:

+ Configure an IP address on a VLAN on that switch, this VLAN is known as the management VLAN (it is usually VLAN 1)

+ Specify the default gateway for that switch so that it can send traffic to this gateway

QUESTION 47
Which of the following host addresses are members of networks that can be routed across the public Internet? (Choose three.)

A. 10.172.13.65
B. 172.16.223.125
C. 172.64.12.29
D. 192.168.23.252
E. 198.234.12.95
F. 212.193.48.254

Correct Answer: CEF
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 48
Given a subnet mask of 255.255.255.224, which of the following addresses can be assigned to network hosts? (Choose three.)

A. 15.234.118.63
B. 92.11.178.93
C. 134.178.18.56

D. 192.168.16.87
E. 201.45.116.159
F. 217.63.12.192

Correct Answer: BCD
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 49
Which of the following are benefits of VLANs? (Choose 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 broadcast domains 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.

Correct Answer: BCE
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 50
In order to resolve the LAN connectivity problems, which router IOS commands will you use? (Choose three.)

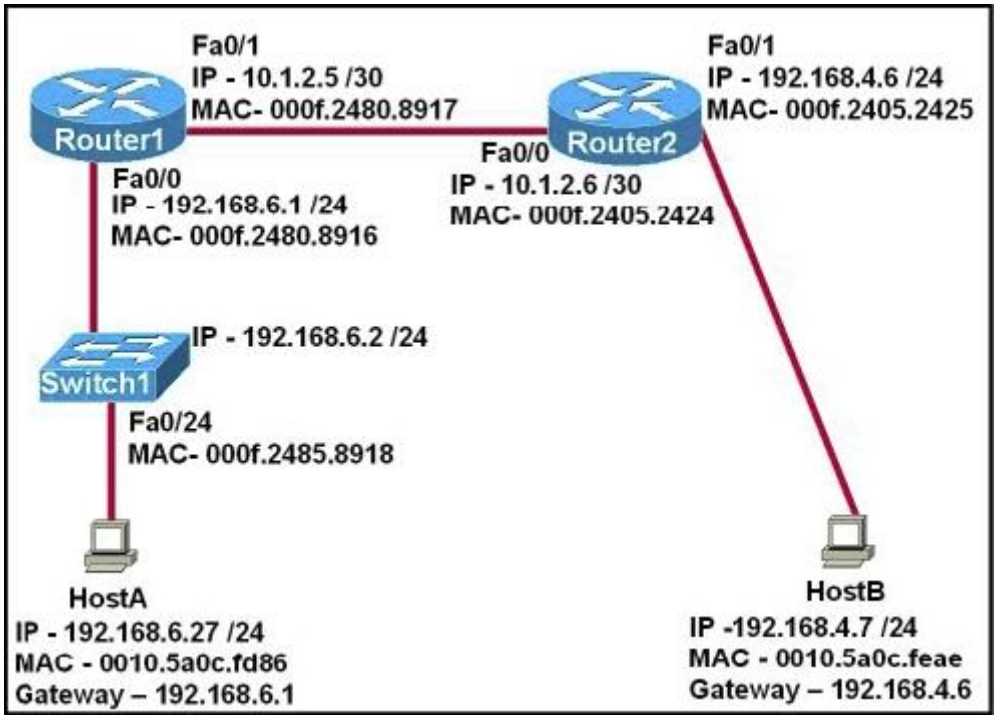
A. ping
B. tracert
C. ipconfig
D. show ip route
E. winipcfg
F. show interfaces

Correct Answer: ADF

Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 51
Exhibit:



Refer to the exhibit. After HostA pings HostB, which entry will be in the ARP cache of HostA to support this transmission?

A.

Interface Address	Physical Address	Type
192.168.4.7	000f.2480.8916	dynamic

B.

Interface Address	Physical Address	Type
192.168.4.7	0010.5a0c.feae	dynamic

C.

Interface Address	Physical Address	Type
192.168.6.1	0010.5a0c.feae	dynamic

D.

Interface Address	Physical Address	Type
192.168.6.1	000f.2480.8916	dynamic

E.

Interface Address	Physical Address	Type
192.168.6.2	0010.5a0c.feae	dynamic

F.

Interface Address	Physical Address	Type
192.168.6.2	000f.2485.8918	dynamic

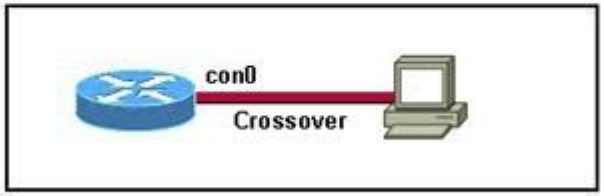
Correct Answer: A
Section: How a network works
Explanation

Explanation/Reference:
When a host needs to reach a device on another subnet, the ARP cache entry will be that of the Ethernet address of the local router (default gateway) for the physical MAC address.
The destination IP address will not change, and will be that of the remote host (HostB).

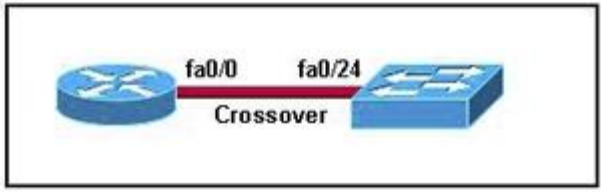
QUESTION 52
Which two topologies are using the correct type of twisted-pair cables? (Choose two.)

A.

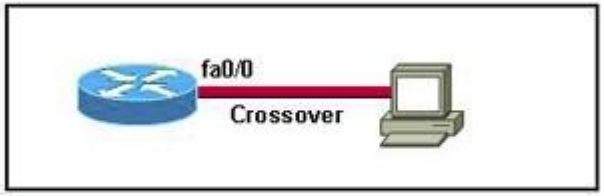
B.



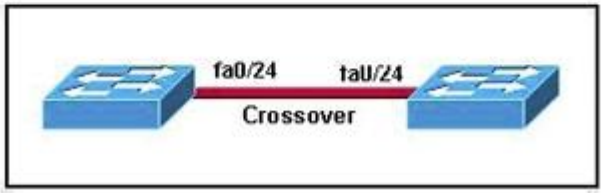
C.



D.



E.



A. Exhibit A
B. Exhibit B
C. Exhibit C
D. Exhibit D

E. Exhibit E

Correct Answer: DE
Section: Basic device operation
Explanation

Explanation/Reference:
Devices of the same layer are connected by crossover cable, while devices of different layers are connected by straight-through cable.
Router ------ Crossover ------- Router
Router ------ Crossover ------- PC
Router ------ straight-through ------- Switch
Switch ------ straight-through ------- PC
Switch ------ Crossover ------- Switch

QUESTION 53
Which of the following are true regarding bridges and switches? (Choose two.)

A. Bridges are faster than switches because they have fewer ports.
B. A switch is a multiport bridge.
C. Bridges and switches learn MAC addresses by examining the source MAC address of each frame received.
D. A bridge will forward a broadcast but a switch will not.
E. Bridges and switches increase the size of a collision domain.

Correct Answer: BC
Section: Switching
Explanation

Explanation/Reference:
Bridge is a Layer2 device, which is designed to create two or more LAN segments. Each segment is an independent collision domain. Bridge is also created to provide more available bandwidth,
Its purpose is to filter the LAN traffic, making local traffic be in the local area, and those directed to other parts of the LAN (sub) be forwarded there.
Each NIC on each device has a unique MAC address.
Bridge will record the MAC address of each port and then make forwarding decisions based on this MAC address table.
Switch is a device of the data link layer, it combines multiple physical LAN segments into a large network.. Similar to bridge, the switch will transfer and flood the communication frames based on the MAC address.
Because the switching process is performed in hardware, the switching speed of the switch is faster than that of a bridge performed by software.
Regarding each switching port as a mini-bridge, then each switching port will work as an independent bridge to provide full medium's bandwidth to each host.

QUESTION 54
What are some of the advantages of using a router to segment the network? (Choose two.)

A. Filtering can occur based on Layer 3 information.
B. Broadcasts are eliminated.
C. Routers generally cost less than switches.
D. Broadcasts are not forwarded across the router.
E. Adding a router to the network decreases latency.

Correct Answer: AD
Section: Routing
Explanation

Explanation/Reference:
The router will never forward the broadcast packet, each interface of the router is a separate broadcast domain.
The router has two primary advantages:
1.By default, the router will never forward broadcasts.

QUESTION 55
Which of the following statements are true regarding bridges and switches? (Choose 3.)

A. Switches are primarily software based while bridges are hardware based.
B. Both bridges and switches forward Layer 2 broadcasts.
C. Bridges are frequently faster than switches.
D. Switches have a higher number of ports than most bridges.
E. Bridges define broadcast domains while switches define collision domains.
F. Both bridges and switches make forwarding decisions based on Layer 2 addresses.

Correct Answer: BDF
Section: Switching
Explanation

Explanation/Reference:
Bridge is a Layer2 device, which is designed to create two or more LAN segments. Each segment is an independent collision domain. Bridge is also created to provide more available bandwidth,
Its purpose is to filter the LAN traffic, making local traffic be in the local area, and those directed to other parts of the LAN (sub) be forwarded there.
Each NIC on each device has a unique MAC address.
Bridge will record the MAC address of each port and then make forwarding decisions based on this MAC address table.
Switch is a device of the data link layer, it combines multiple physical LAN segments into a large network.. Similar to bridge, the switch will transfer and flood the communication frames based on the MAC address.
Because the switching process is performed in hardware, the switching speed of the switch is faster than that of a bridge performed by software.
Regarding each switching port as a mini-bridge, then each switching
port will work as an independent bridge to provide full medium's bandwidth to each host.

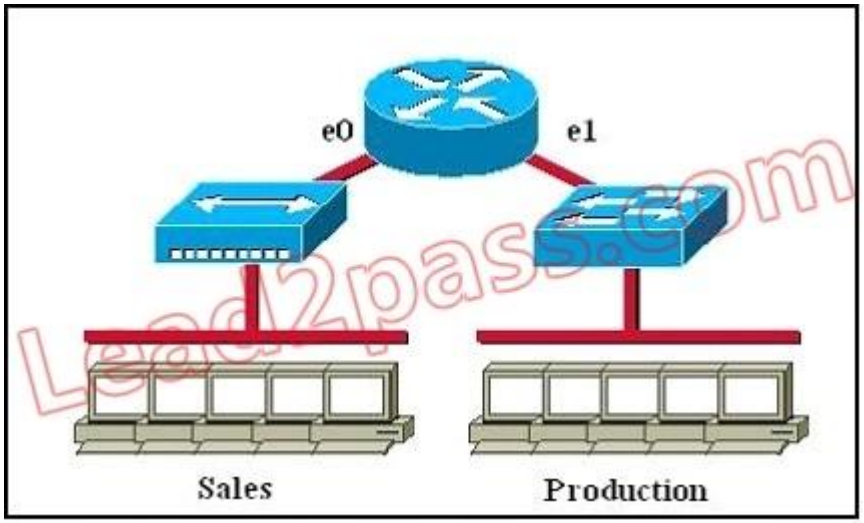
QUESTION 56
Which characteristics are representative of a link-state routing protocol? (Choose three.)

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

Correct Answer: ACD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 57
Which of the following statements describe the network shown in the graphic? (Choose two.)



What are the proper statements?. (Choose two)

A. There are two broadcast domains in the network.
B. There are four broadcast domains in the network.

C. There are six broadcast domains in the network.
D. There are four collision domains in the network.
E. There are five collision domains in the network.
F. There are seven collision domains in the network.

Correct Answer: AF
Section: Switching
Explanation

Explanation/Reference:

QUESTION 58
Use the output from the router shown in the graphic above to determine which of the following are correct. (Choose two.)

```
John#show ip protocol
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 4 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 1, receive any version
    Interface         Send  Recv  Triggered RIP  Key-chain
    Serial0/0         1     1 2
    Serial0/1         1     1 2
  Automatic network summarization is in effect
  Maximum path: 4
  Routing for Networks:
    10.0.0.0
  Routing Information Sources:
    Gateway         Distance      Last Update
    10.168.11.14      120       00:00:22
  Distance: (default is 120)

John#show ip interfaces brief
Interface              IP-Address       OK?  Method Status
FastEthernet0/0         192.168.18.1    YES  manual up
Serial0/0              10.168.11.17     YES  manual up
FastEthernet0/1          unassigned     YES  NVRAM  administratively down
Serial0/1              192.168.11.21    YES  manual up
```

A. Router John uses a link-state routing protocol.
B. Router John will receive routing updates on the Serial0/0 interface.
C. Router John will receive routing updates on the Serial0/1 interface.
D. Router John will send routing updates out the Serial0/0 interface.
E. Router John will send routing updates out the FastEthernet0/0 interface.
F. Router John will send routing updates out the Serial0/1 interface.

Correct Answer: BD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 59
A national retail chain needs to design an IP addressing scheme to support a nationwide network.
The company needs a minimum of 300 sub-networks and a maximum of 50 host addresses per subnet.
Working with only one Class B address, which of the following subnet masks will support an appropriate addressing scheme? (Choose two.)

A. 255.255.255.0
B. 255.255.255.128
C. 255.255.252.0
D. 255.255.255.224
E. 255.255.255.192
F. 255.255.248.0

Correct Answer: BE
Section: IP addressing
Explanation

Explanation/Reference:
Subnetting is used to break the network into smaller more efficient subnets to prevent excessive rates of Ethernet packet collision in a large network. Such subnets can be arranged hierarchically, with the organization's network address space (see also Autonomous System) partitioned into a tree-like structure.
Routers are used to manage traffic and constitute borders between subnets. A routing prefix is the sequence of leading bits of an IP address that precede the portion of the address used as host identifier.
In IPv4 networks, the routing prefix is often expressed as a "subnet mask", which is a bit mask covering the number of bits used in the prefix.
An IPv4 subnet mask is frequently expressed in quad-dotted decimal representation, e.g., 255.255.255.0 is the subnet mask for the 192.168.1.0 network with a 24-bit routing prefix (192.168.1.0/24).

QUESTION 60
Given the address 192.168.20.19/28, which of the following are valid host addresses on this subnet? (Choose two.)

A. 192.168.20.29
B. 192.168.20.16
C. 192.168.20.17
D. 192.168.20.31
E. 192.168.20.0

Correct Answer: AC
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 61
An inbound access list has been configured on a serial interface to deny packet entry for TCP and UDP ports 21, 23 and 25.
What types of packets will be permitted by this ACL? (Choose three.)

A. HTTP
B. FTP
C. POP3
D. Telnet
E. SMTP
F. DNS

Correct Answer: ACF
Section: NAT & ACLs
Explanation

Explanation/Reference:
The most often used port numbers of TCP/UDP are as follows:
The port numbers of TCP:
20 FTP data
21 FTP control
23 Telnet
25 SMTP
53 DNS
80 WWW

110 POP3
The port numbers of UDP
53DNS
69 TFTP
161 SNMP
NotE. DNS uses TCP to perform Zone Transfers and UDP to query name . The ACL created on the router denied the traffic from the ports 21,23,25, thus allowing these three types of traffic such as DNS, POP3, HTTP to cross.

QUESTION 62
As a network technician, do you know which are valid modes for a switch port used as a VLAN trunk? (Choose three.)

A. transparent
B. auto
C. on
D. desirable
E. blocking
F. forwarding

Correct Answer: BCD
Section: VLAN
Explanation

Explanation/Reference:
Both the auto and on modes can be automatically switched to the desirable mode based on the topology.
A trunk port can be configured as one of the following 5 different modes: on, off, desirable, auto, or nonegotiate.

QUESTION 63
OSPF routing uses the concept of areas. What are the characteristics of OSPF areas? (Choose Three.)

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.

Correct Answer: BCE
Section: Routing
Explanation

Explanation/Reference:
Answer A is wrong because of the "requires"
Answer B is tricky but is correct
Definition of OSPF areas: An OSPF network may be structured, or subdivided, into routing areas to simplify administration and optimize traffic and resource utilization.
Areas are identified by 32-bit numbers, expressed either simply in decimal, or often in octet-based dot-decimal notation, familiar from IPv4 address notation.
Answer C is correct.
Answer D is NOT correct.
Answer E is correct
Answer F is NOT correct.

See discussion following Cisco Learning discussion.

https://learningnetwork.cisco.com/message/90832

QUESTION 64
What information can be used by a router running a link-state protocol 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

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:

QUESTION 65
Which items are correct about 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.

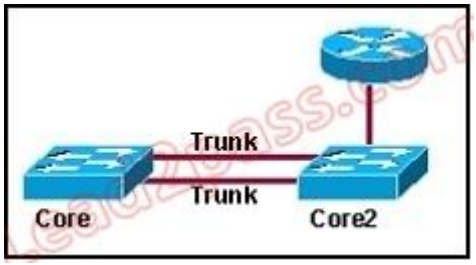
Correct Answer: ACE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 66
The switches shown in the diagram. Core and Core2, are both Catalyst 2950s. The addressing scheme for each company site is as follows:

Router Ethernet port: 1st usable address
CorE. second usable address
Core2: third usable address

For this network, which of the following commands must be configured on Core2 to allow it to be managed remotely from any subnet on the network? (Choose three.)



A. Core2(config)# interface f0/0
   Core2(config-if)# ip address 192.168.1.10 255.255.255.248
B. Core2(config)# interface vlan 1
   Core2(config-if)# ip address 192.168.1.11 255.255.255.248
C. Core2(config)# line con 0
   Core2(config-line)# password cisco
D. Core2(config)# line vty 0 4
   Core2(config-line)# password cisco
E. Core2(config)# ip default-gateway 192.168.1.9
F. Core2(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.8

Correct Answer: BDE
Section: IP addressing

Explanation

Explanation/Reference:

QUESTION 67
An administrator is unsuccessful in adding VLAN 50 to a switch.
While troubleshooting the problem, the administrator views the output of the show vtp status command, which is displayed in the graphic.
What commands must be issued on this switch to add VLAN 50 to the database? (Choose two.)

```
Switch# show vtp status

VTP Version                     : 2
Configuration Revision          : 7
Maximum VLANs supported local   : 68
Number of existing VLANs        : 8
VTP Operating Mode              : Client
VTP Domain Name                 : corp
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x22 0xF3 0x1A
Configuration last modified by 172.18.22.15 at 5-28-03 11:53:20
```


A. Switch(config-if)# switchport access vlan 50
B. Switch(vlan)#vtp mode server
C. Switch(config)# config-revision 20
D. Switch(config)# vlan 50 name Tech
E. Switch(vlan)#vlan50
F. Switch(vlan)# switchport trunk vlan 50

Correct Answer: BE
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 68
Which of the following IP addresses fall into the CIDR block of 115.64.4.0/22? (Choose three.)

A. 115.64.8.32
B. 115.64.7.64
C. 115.64.6.255
D. 115.64.3.255
E. 115.64.5.128
F. 115.64.12.128

Correct Answer: BCE
Section: IP addressing
Explanation

Explanation/Reference:

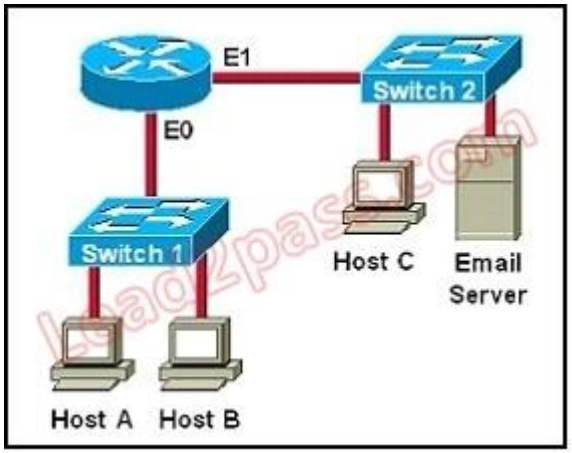
QUESTION 69
Which of the following are types of flow control? (Choose three.)

A. buffering
B. cut-through
C. windowing
D. congestion avoidance
E. load balancing

Correct Answer: ACD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 70
Which destination addresses will be used by Host A to send data to Host C? (Choose two.)

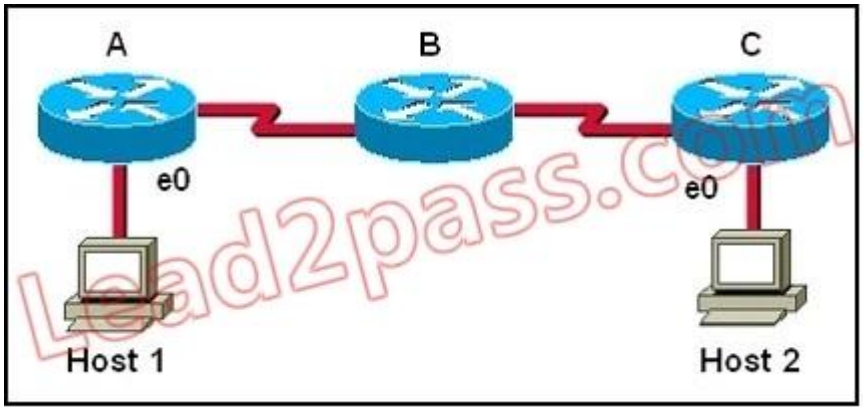


A. the IP address of Switch 1
B. the MAC address of Switch 1
C. the IP address of Host C
D. the MAC address of Host C
E. the IP address of the router's E0 interface
F. the MAC address of the router's E0 interface

Correct Answer: CF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 71
Host 1 is trying to communicate with Host 2. The e0 interface on Router C is down. Which of the following are true? (Choose two.)



A. Router C will send a Destination Unreachable message type.
B. Router C will send a Source Quench message type.
C. Router C will use ICMP to inform Host 1, Router A, and Router B that Host 2 cannot be reached.
D. Router C will send a Router Selection message type.
E. Router C will use ICMP to inform Host 1 that Host 2 cannot be reached.
F. Router C will use ICMP to inform Router B that Host 2 cannot be reached.

Correct Answer: DE
Section: Routing
Explanation

Explanation/Reference:
Host 1 is trying to communicate with Host 2. Its packets travel from routerA to routerB and router C. Router C (the last router) then broadcast an ARP frame onto the network looking for the MAC address of Host 2. If Host 2 can answer then router C can forward the frame. But e0 interface is down so no answer from Host 2 will be received so router C will send a Destination Unreachable message back to the originator. This message also informs that the middle network is still working correctly. Also notice that the Destination Unreachable message is an ICMP message

QUESTION 72
To configure the VLAN trunking protocol to communicate VLAN information between two switches, what two requirements must be met? (Choose two.)

A. Each end of the trunk line must be set to IEEE 802.1 E encapsulation.
B. The VTP management domain name of both switches must be set the same.
C. All ports on both the switches must be set as access ports.
D. One of the two switches must be configured as a VTP server.

E. A rollover cable is required to connect the two switches together.
F. A router must be used to forward VTP traffic between VLANs.

Correct Answer: BD
Section: VTP
Explanation

Explanation/Reference:
VLAN Trunking Protocol (VTP) is a Cisco proprietary Layer 2 messaging protocol that manages the addition, deletion, and renaming of VLANs on a network-wide basis.
Virtual Local Area Network (VLAN) Trunk Protocol (VTP) reduces administration in a switched network. When you configure a new VLAN on one VTP server,
the VLAN is distributed through all switches in the domain. This reduces the need to configure the same VLAN everywhere. To do this VTP carries VLAN information to all the switches in a VTP domain.
VTP advertisements can be sent over ISL, 802.1q, IEEE 802.10 and LANE trunks. VTP traffic is sent over the management VLAN (VLAN1), so all VLAN trunks must be configured to pass VLAN1.
VTP is available on most of the Cisco Catalyst Family products.

VTP operates in one of three modes:
Server - In this VTP mode you can create, remove, and modify VLANs. You can also set other configuration options like the VTP version and also turn on/off VTP pruning for the entire VTP domain.
VTP servers advertise their VLAN configuration to other switches in the same VTP domain and synchronize their VLAN configuration with other switches based on messages received over trunk links.
VTP server is the default mode. The VLANs information are stored on NVRAM and they are not lost after a reboot.
Client - VTP clients behave the same way as VTP servers, but you cannot create, change, or delete VLANs on the local device. In VTP client mode, VLAN configurations are not saved in NVRAM.

QUESTION 73
Which of the following describe the process identifier that is used to run OSPF on a router? (Choose two.)

A. It is locally significant.
B. It is globally significant.
C. It is needed to identify a unique instance of an OSPF database.
D. It is an optional parameter required only if multiple OSPF processes are running on the router.
E. All routers in the same OSPF area must have the same process ID if they are to exchange routing information.

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:

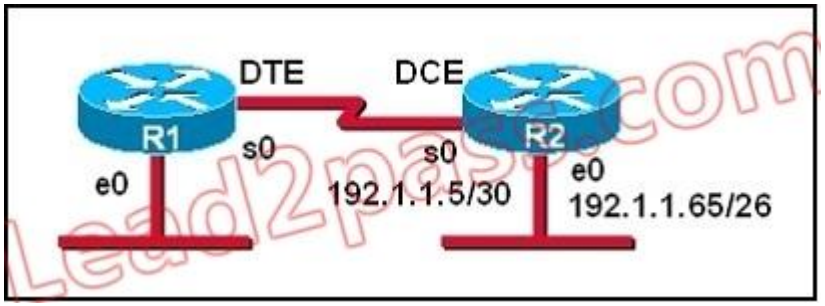
QUESTION 74
What functions do routers perform in a network? (Choose two.)

A. packet switching
B. access layer security
C. path selection
D. VLAN membership assignment
E. bridging between LAN segments
F. microsegmentation of broadcast domains

Correct Answer: AC
Section: Routing
Explanation

Explanation/Reference:
(1) Intercept datagrams sent to remote network segments between networks, playing a translated role.
(2) Select the most reasonable route to guide communications. In order to achieve this function, the router will check the routing table based on certain routing communication protocol, and the routing table lists all the nodes contained in the entire internet , the path conditions between nodes and transmission costs associated with them. If a specific node has more than one path, then select the optimal path based on pre-determined specifications. Because a variety of network segments and their mutual connection situations may change, the routing information needs to be updated in time, which is completed by timing update or updating according to changes determined by the routing information protocol used. Each router in the network dynamically updates its routing table according to this rule to maintain effective routing information.
(3) When forwarding datagrams, in order to facilitate transferring datagrams between networks, routers will divide large data packets into appropriate sized data packets according to pre- determined specifications, and those appropriate sized data packets will be turned into their original form when reaching the destination.
(4) Multi-protocol routers can connect and use network segments of different communication protocols, they can be used as communication connecting platforms of network segments of different communication protocols.

QUESTION 75
Which series of commands will configure router R1 for LAN-to-LAN communication with router R2?
The enterprise network address is 192.1.1.0/24 and the routing protocol in use is RIP. (Choose three.)



A. R1(config)# interface ethernet 0
R1(config-if)# ip address 192.1.1.129 255.255.255.192
R1(config-if)# no shutdown

B. R1(config)# interface ethernet 0
R1(config-if)# ip address 192.1.1.97 255.255.255.192
R1(config-if)# no shutdown

C. R1(config)# interface serial 0
R1(config-if)# ip address 192.1.1.4 255.255.255.252
R1(config-if)# clock rate 56000

D. R1(config)# interface serial 0
R1(config-if)# ip address 192.1.1.6 255.255.255.252
R1(config-if)# no shutdown

E. R1(config)# router rip
R1(config-router)# network 192.1.1.4
R1(config-router)# network 192.1.1.128

F. R1(config)# router rip
R1(config-router)# version 2
R1(config-router)# network 192.1.1.0

Correct Answer: ADF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 76
A network administrator wants to ensure that only the server can connect to port Fa0/1 on a Catalyst switch.
The server is plugged into the switch Fa0/1 port and the network administrator is about to bring the server online.
What can the administrator do to ensure that only the MAC address of the server is allowed by switch port Fa0/1? (Choose two.)

A. Configure port Fa0/1 to accept connections only from the static IP address of the server.
B. Employ a proprietary connector type on Fa0/1 that is incompatible with other host connectors.
C. Configure the MAC address of the server as a static entry associated with port Fa0/1.
D. Bind the IP address of the server to its MAC address on the switch to prevent other hosts from spoofing the server IP address.
E. Configure port security on Fa0/1 to reject traffic with a source MAC address other than that of the server.
F. Configure an access list on the switch to deny server traffic from entering any port other than Fa0/1.

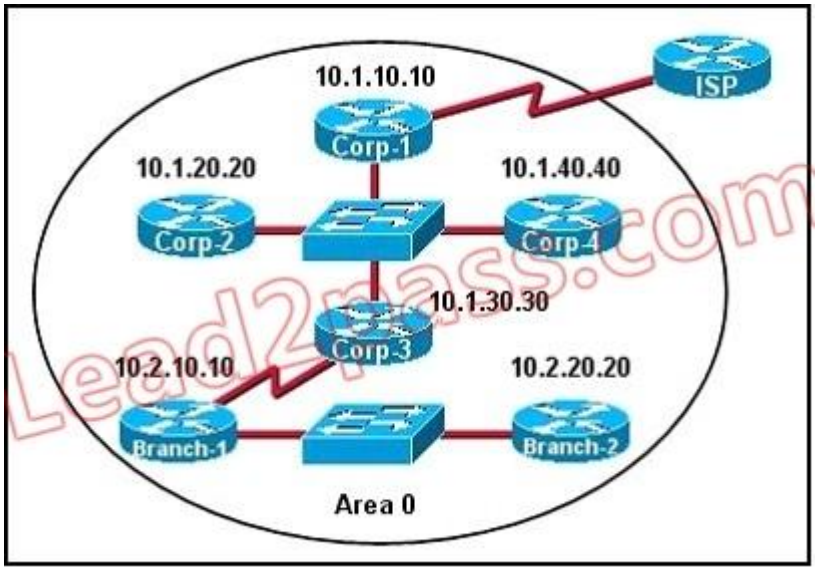
Correct Answer: CE
Section: Layer 2 Security
Explanation

Explanation/Reference:
We can"configure the MAC address of the server as a static entry associated with port Fa0/1″ with this command:

Switch(config-if)#switchport port-security mac-address sticky 0000.00AA.AAAA.AAAA
and "configure port security on Fa0/1 to reject traffic with a source MAC address other than that of the server" with these commands:

Switch(config-if)#switchport port-security maximum 1 (only allow 1 MAC address and that is the static MAC address)
Also we often define what will the switch do if the security is violated:
Switch(config-if)#switchport port-security violation shutdown

QUESTION 77
The internetwork infrastructure of company XYZ consists of a single OSPF area as shown in the graphic.
There is concern that a lack of router resources is impeding internetwork performance. As part of examining the router resources, the OSPF DRs need to be known.
All the router OSPF priorities are at the default and the router IDs are shown with each router. Which routers are likely to have been elected as DR? (Choose two.)



A. Corp-1
B. Corp-2
C. Corp-3
D. Corp-4
E. Branch-1
F. Branch-2

Correct Answer: DF
Section: Routing
Explanation

Explanation/Reference:
There are 2 segments on the topology above which are separated by Corp-3 router. Each segment will have a DR so we have 2 DRs.
To select which router will become DR they will compare their router-IDs. The router with highest (best) router-ID will become DR. The router-ID is chosen in the order below:
+ The highest IP address assigned to a loopback (logical) interface. + If a loopback interface is not defined, the highest IP address of all active router's physical interfaces will be chosen.
In this question, the IP addresses of loopback interfaces are not mentioned so we will consider IP addresses of all active router's physical interfaces.
Router Corp-4 (10.1.40.40) & Branch-2 (10.2.20.20) have highest "active" IP addresses so they will become DRs.

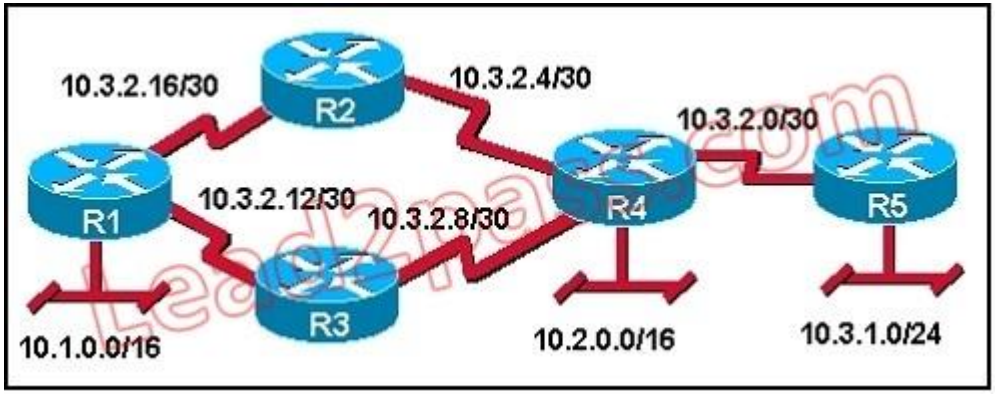
QUESTION 78
At which layers of the OSI model do WANs operate? (Choose two.)

A. application layer
B. session layer
C. transport layer
D. network layer
E. datalink layer
F. physical layer

Correct Answer: EF
Section: How a network works
Explanation

Explanation/Reference:
Frame Relay is a high-performance WAN protocol that operates at the physical and data link layers of the OSI reference model.

QUESTION 79
Which routing protocols can be used within the enterprise network shown in the diagram? (Choose three.)

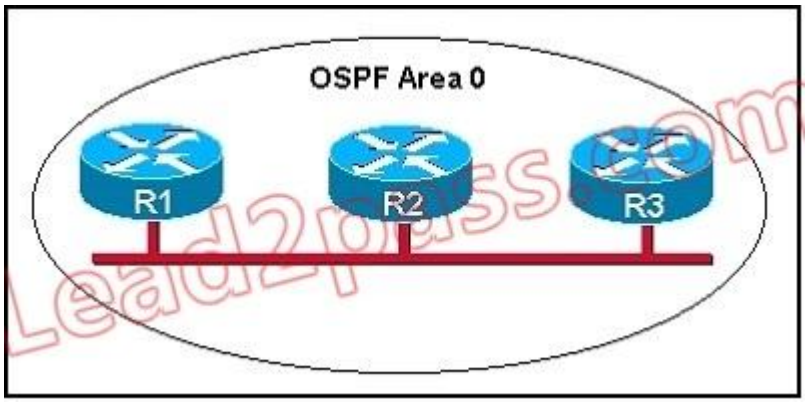


A. RIP v1
B. RIPv2
C. IGRP
D. OSPF
E. BGP
F. EIGRP

Correct Answer: BDF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 80
Refer to the graphic.
R1 is unable to establish an OSPF neighbor relationship with R3.
What are possible reasons for this problem? (Choose two.)



A. All of the routers need to be configured for backbone Area 1.
B. R1 and R2 are the DR and BDR, so OSPF will not establish neighbor adjacency with R3.
C. A static route has been configured from R1 to R3 and prevents the neighbor adjacency from being established.
D. The hello and dead interval timers are not set to the same values on R1 and R3.
E. EIGRP is also configured on these routers with a lower administrative distance.
F. R1 and R3 are configured in different areas.

Correct Answer: DF
Section: Routing
Explanation

Explanation/Reference:
This question is to examine the conditions for OSPF to create neighborhood.
So as to make the two routers become neighbors, each router must be matched with the following items:

1. The area ID and its types;
2. Hello and failure time interval timer;
3. OSPF Password (Optional);

QUESTION 81
Which statements are true about EIGRP successor routes? (Choose two.)

A. A successor route is used by EIGRP to forward traffic to a destination.
B. Successor routes are saved in the topology table to be used if the primary route fails.
C. Successor routes are flagged as "active" in the routing table.
D. A successor route may be backed up by a feasible successor route.
E. Successor routes are stored in the neighbor table following the discovery process.

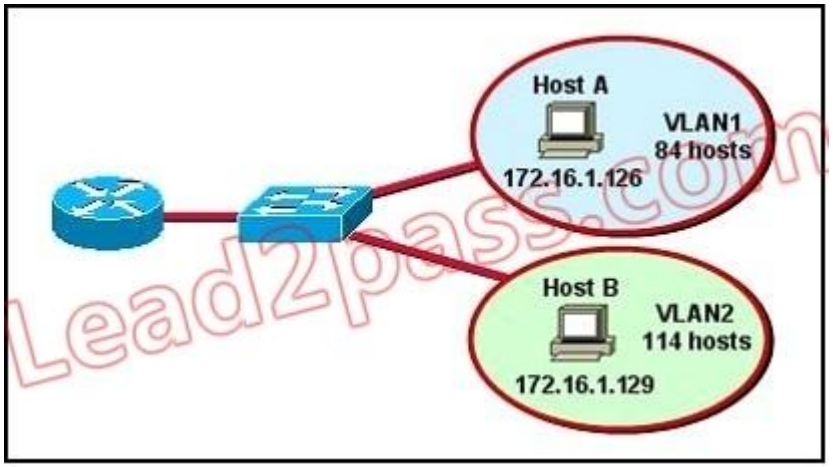
Correct Answer: AD
Section: Routing
Explanation

Explanation/Reference:
The DUAL finite state machine embodies the decision process for all route computations.
It tracks all routes advertised by all neighbors. The distance information, known as a metric, is used by DUAL to select efficient loop free paths.
DUAL selects routes to be inserted into a routing table based on feasible successors.
A successor is a neighboring router used for packet forwarding that has a least cost path to a destination that is guaranteed not to be part of a routing loop.
When there are no feasible successors but there are neighbors advertising the destination, a recomputation must occur.
This is the process where a new successor is determined. The amount of time it takes to recompute the route affects the convergence time.

Even though the recomputation is not processor-intensive, it is advantageous to avoid recomputation if it is not necessary.
When a topology change occurs, DUAL will test for feasible successors. If there are feasible successors, it will use any it finds in order to avoid any unnecessary recomputation.
Feasible successors are defined in more detail later in this document.

Feasible Successors
A destination entry is moved from the topology table to the routing table when there is a feasible successor.
All minimum cost paths to the destination form a set. From this set, the neighbors that have an advertised metric less than the current routing table metric are considered feasible successors.
Feasible successors are viewed by a router as neighbors that are downstream with respect to the destination. These neighbors and the associated metrics are placed in the forwarding table.

QUESTION 82
Refer to the diagram. All hosts have connectivity with one another.
Which statements describe the addressing scheme that is in use in the network? (Choose three.)

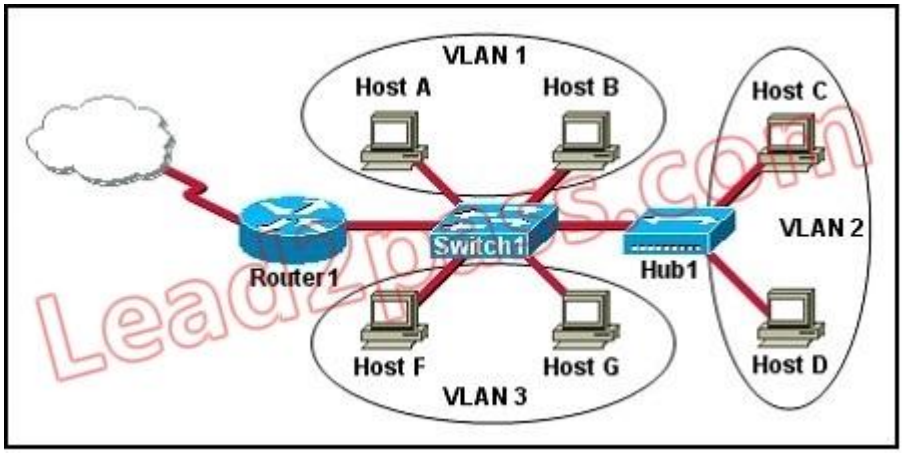


A. The subnet mask in use is 255.255.255.192.
B. The subnet mask in use is 255.255.255.128.
C. The IP address 172.16.1.25 can be assigned to hosts in VLAN1
D. The IP address 172.16.1.205 can be assigned to hosts in VLAN1
E. The LAN interface of the router is configured with one IP address.
F. The LAN interface of the router is configured with multiple IP addresses.

Correct Answer: BCF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 83
Refer to the diagram.
Which three statements describe the router port configuration and the switch port configuration as shown in the topology? (Choose three.)



A. The Router1 WAN port is configured as a trunking port.
B. The Router1 port connected to Switch1 is configured using subinterfaces.
C. The Router1 port connected to Switch1 is configured as 10 Mbps.
D. The Switch1 port connected to Router1 is configured as a trunking port.
E. The Switch1 port connected to Host B is configured as an access port.
F. The Switch1 port connected to Hub1 is configured as full duplex.

Correct Answer: BDE
Section: Routing
Explanation

Explanation/Reference:
There are two types of links in switched network:
Access link or access port belongs to a single VLAN and frames will be forwarded only to this VLAN. Access link often provides connection between switches,
between switches and PCs or other devices. In the above figure, the port connecting Switch1to Host B should be configured as access port.
Trunk link or trunk port is by default a member of all the VLANs that exist on the switch and carry traffic for all those VLANs between the switches, between switches and routers or specific servers. In this question, the port connecting Switch1 to Router1 should be configured as the trunk port.
The main difference between trunk link and access link is that switch will send some VLAN information out through trunk link instead of access link.

QUESTION 84
Which routing protocols will support the following IP addressing scheme? (Choose three.)

Network 1 - 192.168.10.0 /26
Network 2 - 192.168.10.64 /27
Network 3 - 192.168.10.96 /27

Network 4 - 192.168.10.128 /30
Network 5 - 192.168.10.132 /30

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

Correct Answer: BDE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 85
Refer to the partial command output shown.
Which two statements are correct regarding the router hardware? (Choose two.)

```
System image file is "flash:c2600-do3s-mz.120-5.T1"

cisco 2621 (MPC860) processor (revision 0x600) with 53248K/12288K
bytes of memory

Processor board ID JAD05280307 (3536592999)
M860 processor: part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
2 FastEthernet/IEEE 802.3 interface(s)
2 Serial(sync/async) network interface(s)
2 Low-speed serial(sync/async) network interface(s)
16 terminal line(s)

32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/write)
```


A. Total RAM size is 32 KB.
B. Total RAM size is 16384 KB (16 MB).
C. Total RAM size is 65536 KB (64 MB).
D. Flash size is 32 KB.

E. Flash size is 16384 KB (16 MB).
F. Flash size is 65536 KB (64 MB).

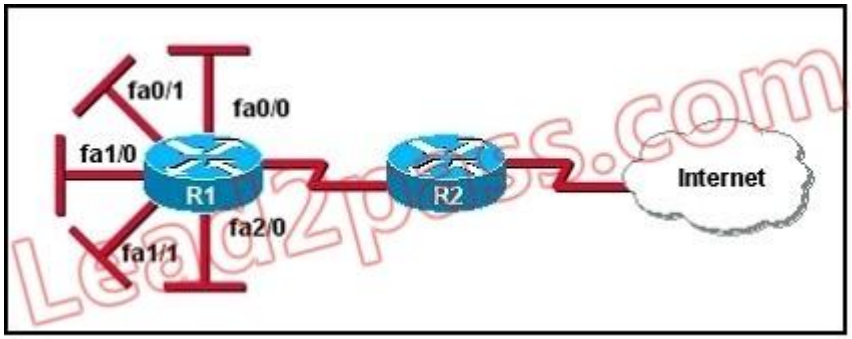
Correct Answer: CE
Section: Basic device operation
Explanation

Explanation/Reference:
The line “Cisco 2621 (MPC860) processor (revision 0×600) with **53248K/12288K** bytes of memory” tells how much RAM in your router. The first parameter (53248) specifies how much Dynamic RAM (DRAM) in your router while the second parameter (12288K) indicates how much DRAM is being used for Packet memory (used by incoming and outgoing packets) in your router. Therefore you have to add both numbers to find the amount of DRAM available on your router -> C is correct.

Note: Cisco 4000, 4500, 4700, and 7500 routers have separate DRAM and Packet memory, so you only need to look at the first number to find out the DRAM in that router.

The flash size is straightforward from the line “16384K bytes of processor board system flash (Read/Write)” -> E is correct.

QUESTION 86
The Ethernet networks connected to router R1 in the graphic have been summarized for router R2 as 192.1.144.0/20.
Which of the following packet destination addresses will R2 forward to R1, according to this summary? (Choose two.)



A. 192.1.159.2
B. 192.1.160.11
C. 192.1.138.41
D. 192.1.151.254
E. 192.1.143.145

F. 192.1.1.144

Correct Answer: AD
Section: IP addressing
Explanation

Explanation/Reference:
This question is about route summary. Example of route summary calculation.
The routing table stores the following networks:

172.16.12.0/24
172.16.13.0/24
172.16.14.0/24
172.16.15.0/24

Routing protocols summarize or aggregate routes based on shared network numbers within the network. To calculate the summarized route of the router, it is necessary to determine how many bits on the left of those addresses are the same. The steps are shown below:
Step onE. Convert addresses to binary format and align them.
Step two: Find out the identical last bit of all addresses.
Step threE. Calculate how many bits are the same. The summarized route is an IP address with a slash, which will be helpful.

172.16.12.0/24= 172.16.000011 00.00000000
172.16.13.0/24= 172.16.000011 01.00000000
172.16.14.0/24= 172.16.000011 10.00000000
172.16.15.0/24= 172.16.000011 11.00000000
172.16.15.255/24= 172.16.000011 11.11111111

The first 22 bits of IP addresses 172.16.12.0---172.16.15.255 are identical, so the best summarized route is 172.16.12.0/22.
Using route summary can reduce the routing items on the summarized router to decrease the memory occupied and network traffic generated by routing protocol.

Route summary implementation:

A. The bits on the left of multiple addresses must be identical.
B. Routing protocol should select route according to the 32-bit IP address and the prefix length of the maximum 32 bit address.
C. Routing update must contain 32-bit IP address and the prefix length (subnet mask)

QUESTION 87
The show interfaces serial 0/0 command resulted in the following output.
Which three are possible reasons for this interface status? (Choose three.)

```
Router# show interfaces serial 0/0
Serial0/0 is up, line protocol is down
  Hardware is HD64570
  Internet address is 192.168.100.1/24
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive set (10 sec)
```


What are possible causes for this interface status? (Choose three.)

A. The interface is shut down.
B. No keep-alive messages are received.
C. The clock rate is not set.
D. No loopback address is set.
E. No cable is attached to the interface.
F. There is a mismatch in the encapsulation type.

Correct Answer: BCF
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
Based on the information provided in the exhibit, we know that Serial0/0 is up, line protocol is down, usually there are three states:

1. serial0/0 up, line protocol is up The interface is up and the link protocol is up.
2. serial0/0 down, line protocol is down The interface is down and there is something wrong with the physical layer .

QUESTION 88
Which of the following describe private IP addresses? (Choose two.)

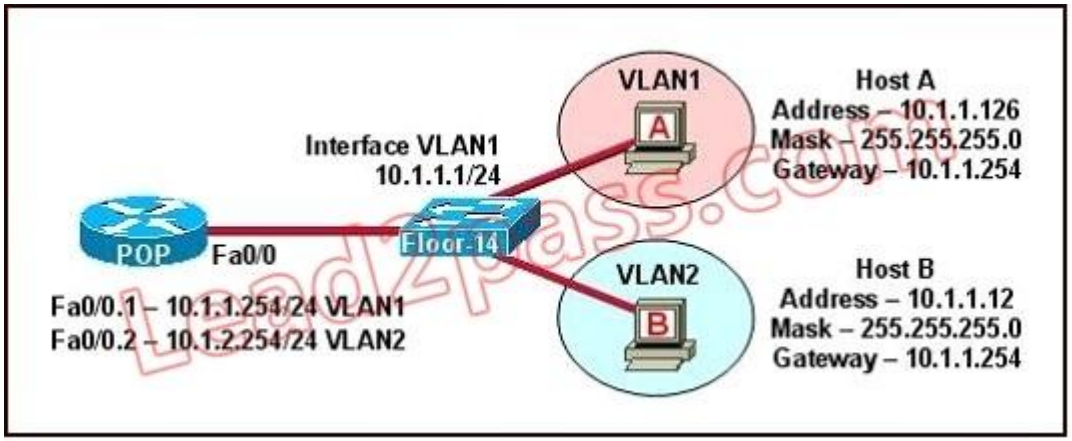
A. addresses chosen by a company to communicate with the Internet
B. addresses that cannot be routed through the public Internet
C. addresses that can be routed through the public Internet
D. a scheme to conserve public addresses

E. addresses licensed to enterprises or ISPs by an Internet registry organization

Correct Answer: BD
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 89
Refer to the exhibit.



The network shown in the diagram is experiencing connectivity problems. Which of the following will correct the problems? (Choose two.)

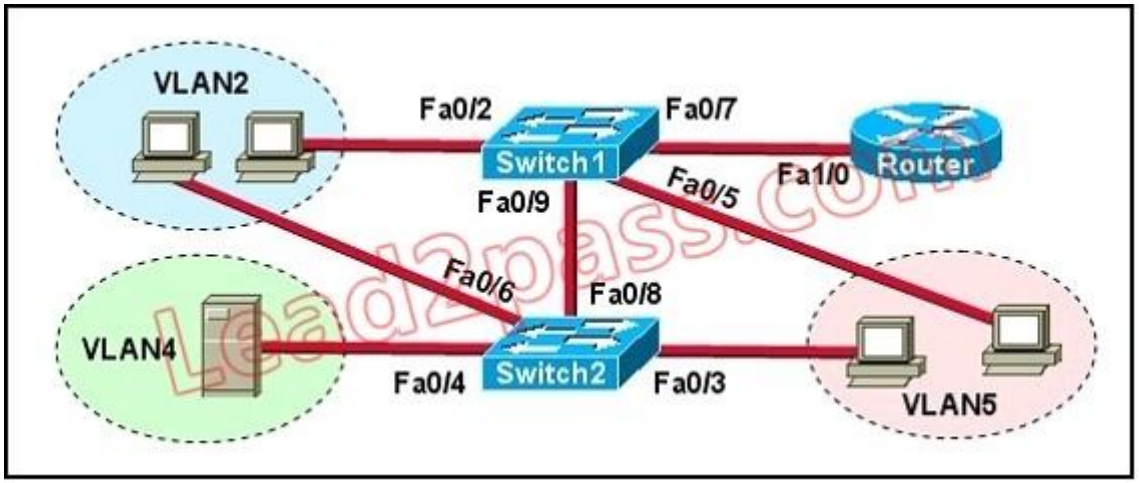
A. Configure the gateway on Host A as 10.1.1.1.
B. Configure the gateway on Host B as 10.1.2.254.
C. Configure the IP address of Host A as 10.1.2.2.
D. Configure the IP address of Host B as 10.1.2.2.
E. Configure the masks on both hosts to be 255.255.255.224.
F. Configure the masks on both hosts to be 255.255.255.240.

Correct Answer: BD
Section: Routing
Explanation

Explanation/Reference:

The switch 1 is configured with two VLANs:
VLAN1 and VLAN2.
The IP information of member Host A in VLAN1 is as follows:
Address : 10.1.1.126
Mask : 255.255.255.0
Gateway : 10.1.1.254
The IP information of member Host B in VLAN2 is as follows:
Address : 10.1.1.12
Mask : 255.255.255.0
Gateway : 10.1.1.254
The configuration of sub-interface on router 2 is as follows:
Fa0/0.1 -- 10.1.1.254/24 VLAN1
Fa0/0.2 -- 10.1.2.254/24 VLAN2
It is obvious that the configurations of the gateways of members in VLAN2 and the associated network segments are wrong.
The layer3 addressing information of Host B should be modified as follows:
Address : 10.1.2.X
Mask : 255.255.255.0

QUESTION 90
A network associate is trying to understand the operation of the FLD Corporation by studying the network in the exhibit.
The associate knows that the server in VLAN 4 provides the necessary resources to support the user hosts in the other VLANs.
The associate needs to determine which interfaces are access ports. Which interfaces are access ports? (Choose three.)



A. Switch1 - Fa 0/2
B. Switch1 - Fa 0/9
C. Switch2 - Fa 0/3

D. Switch2 - Fa 0/4
E. Switch2 - Fa 0/8
F. Router - Fa 1/0

Correct Answer: ACD
Section: Switching
Explanation

Explanation/Reference:

Exam D

QUESTION 1
What are two results of entering the

```
Switch(config)# vtp mode client
```

command on a Catalyst switch? (Choose two.)

A. The switch will ignore VTP summary advertisements.
B. The switch will forward VTP summary advertisements.
C. The switch will process VTP summary advertisements.
D. The switch will originate VTP summary advertisements.
E. The switch will create, modify and delete VLANs for the entire VTP domain.

Correct Answer: BC
Section: VTP
Explanation

Explanation/Reference:
Server Mode Once VTP is configured on a Cisco switch, the default mode used is Server Mode. In any given VTP management domain, at least one switch must be in Server Mode.
When in Server Mode, a switch can be used to add, delete, and modify VLANs, and this information will be passed to all other switches in the VTP management domain.
Client Mode When a switch is configured to use VTP Client Mode, it is simply the recipient of any VLANs added, deleted, or modified by a switch in Server Mode within the same management domain.
A switch in VTP client mode cannot make any changes to VLAN information.
Transparent Mode A switch in VTP Transparent Mode will pass VTP updates received by switches in Server Mode to other switches in the VTP management domain, but will not actually process the contents of these messages.
When individual VLANs are added, deleted, or modified on a switch running in transparent mode, the changes are local to that particular switch only, and are not passed to other switches in the VTP management domain.

QUESTION 2
A network administrator issues the ping 192.168.2.5 command and successfully tests connectivity to a host that has been newly connected to the network.
Which protocols were used during the test? (Choose two.)

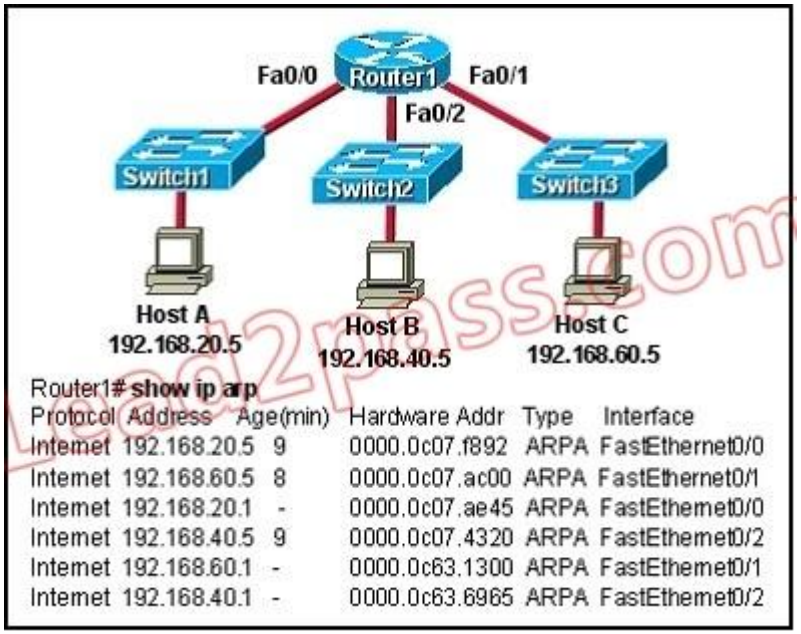
A. ARP
B. CDP
C. DHCP
D. DNS

E. ICMP

Correct Answer: AE
Section: IP Services
Explanation

Explanation/Reference:
In this question we are not sure the host 192.168.2.5 is in or outside the local network. But in both cases the ARP protocol are used to get the MAC address:
+ If host 192.168.2.5 is inside the local network, our device will broadcast an ARP Request to ask the MAC address of the host 192.168.2.5 (something like “If your IP is 192.168.2.5, please send me your MAC address”).
+ If host 192.168.2.5 is outside the local network, our device will broadcast an ARP Request to ask the MAC address of the local port (the port in the same subnet with our device) of the default gateway. Notice that the IP of the default gateway has been already configured in our device.
-> In both cases, our device must broadcast an ARP Request -> A is correct.
After getting the ARP of the destination device, our device will use ICMP protocol to send the “ping” -> E is correct.
Note: The question states “the host has been newly connected to the network” which means our device hasn’t had the MAC address of this host in its ARP table -> it needs to send ARP Request.
There is one situation which makes answer A incorrect: the newly connected host is outside the network but our device has already learned the MAC address of the default gateway -> in this case no ARP Request will be sent. So I assume the question wants to imply the newly connected host is in the local network.

QUESTION 3
Refer to the exhibit.
Host A is to send data to Host B. How will Router1 handle the data frame received from Host A? (Choose three.)



A. Router1 will strip off the source MAC address and replace it with the MAC address on the forwarding FastEthernet interface.
B. Router1 will strip off the source IP address and replace it with the IP address on the forwarding FastEthernet interface.
C. Router1 will strip off the destination MAC address and replace it with the MAC address of Host B.
D. Router1 will strip off the destination IP address and replace it with the IP address of Host B.
E. Router1 will forward the data frame out interface FastEthernet0/1.
F. Router1 will forward the data frame out interface FastEthernet0/2.

Correct Answer: ACF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 4
Refer to the exhibit. What will Router1 do when it receives the data frame shown? (Choose three.)

Router1# **show ip arp**

Protocol	Address	Age(min)	Hardware Adddr	Type	Interface
Internet	192.168.20.5	9	0000.0c07.f892	ARPA	FastEthernet0/0
Internet	192.168.60.5	8	0000.0c07.ac00	ARPA	FastEthernet0/1
Internet	192.168.20.1	-	0000.0c63.ae45	ARPA	FastEthernet0/0
Internet	192.168.40.5	9	0000.0c07.4320	ARPA	FastEthernet0/2
Internet	192.168.60.1	-	0000.0c63.1300	ARPA	FastEthernet0/1
Internet	192.168.40.1	-	0000.0c36.6965	ARPA	FastEthernet0/2

Data Frame:

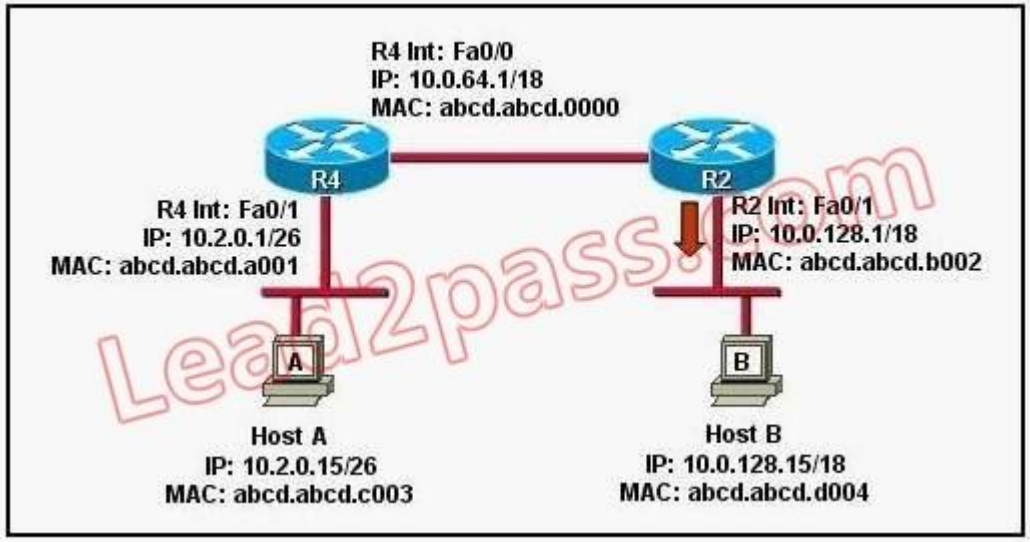
Source MAC	Source IP	Destination MAC	Destination IP
0000.0c07.f892	192.168.20.5	0000.0c63.ae45	192.168.40.5

A. Router1 will strip off the source MAC address and replace it with the MAC address 0000.0c36.6965.
B. Router1 will strip off the source IP address and replace it with the IP address 192.168.40.1.
C. Router1 will strip off the destination MAC address and replace it with the MAC address 0000.0c07.4320.
D. Router1 will strip off the destination IP address and replace it with the IP address of 192.168.40.1.
E. Router1 will forward the data packet out interface FastEthernet0/1.
F. Router1 will forward the data packet out interface FastEthernet0/2.

Correct Answer: ACF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 5
Refer to the exhibit. Host A pings Host B. What source MAC address and source IP address are contained in the frame as the frame leaves R2 destined for host B?



A. abcd.abcd.a001
B. abcd.abcd.b002
C. abcd.abcd.c003
D. 10.2.0.15
E. 10.0.64.1
F. 10.0.128.15

Correct Answer: BD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 6
Refer to the exhibit. A network associate has configured OSPF with the command:

City(config-router)# network 192.168.12.64 0.0.0.63 area 0

```
City#show ip interface brief

Interface              IP-Address      OK?  Method   Status   Protocol
FastEthernet0/0        192.168.12.48   YES  manual   up       up
FastEthernet0/1        192.168.12.65   YES  manual   up       up
Serial0/0              192.168.12.121  YES  manual   up       up
Serial0/1              unassigned      YES  unset    up       up
Serial0/1.102          192.168.12.125  YES  manual   up       up
Serial0/1.103          192.168.12.129  YES  manual   up       up
Serial0/1.104          192.168.12.133  YES  manual   up       up
City#
```


After completing the configuration, the associate discovers that not all the interfaces are participating in OSPF.
Which three of the interfaces shown in the exhibit will participate in OSPF according to this configuration statement? (Choose three.)

A. FastEthernet0/0
B. FastEthernet0 /1
C. Serial0/0
D. Serial0/1.102
E. Serial0/1.103
F. Serial0/1.104

Correct Answer: BCD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 7
A Catalyst 2950 needs to be reconfigured. What steps will ensure that the old configuration is erased? (Choose three.)

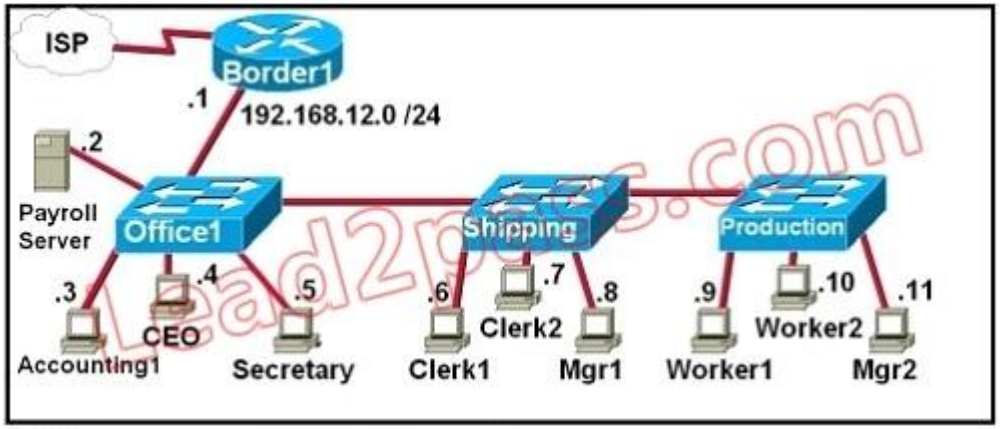
A. Erase flash.
B. Restart the switch.
C. Delete the VLAN database.
D. Erase the running configuration.
E. Erase the startup configuration.

F. Modify the configuration register.

Correct Answer: BCE
Section: Basic device operation
Explanation

Explanation/Reference:

QUESTION 8
Refer to the exhibit. The FMJ manufacturing company is concerned about unauthorized access to the Payroll Server. The Accounting1, CEO, Mgr1, and Mgr2 workstations should be the only computers with access to the Payroll Server. What two technologies should be implemented to help prevent unauthorized access to the server? (Choose two.)

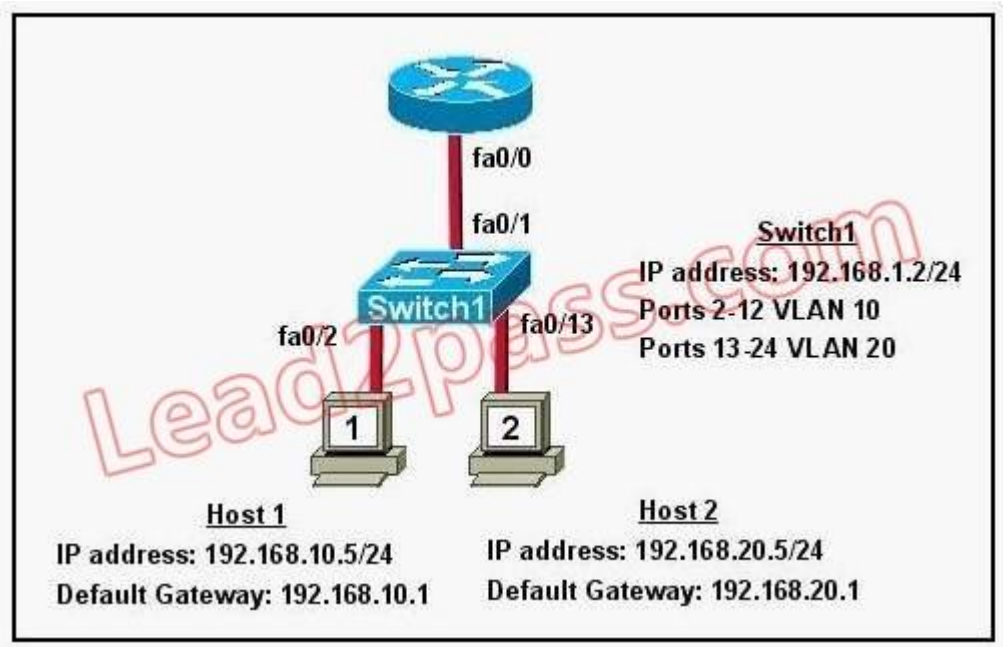


A. access lists
B. encrypted router passwords
C. STP
D. VLANs
E. VTP
F. wireless LANs

Correct Answer: AD
Section: Layer 2 Security
Explanation

Explanation/Reference:

QUESTION 9
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

Correct Answer: BE
Section: Routing
Explanation

Explanation/Reference:

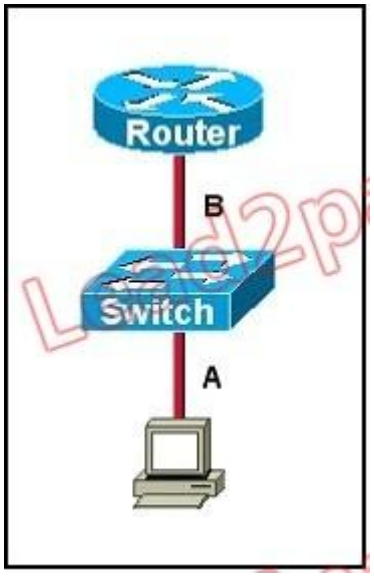
QUESTION 10
Which three Layer 2 encapsulation types would be used on a WAN rather than a LAN? (Choose three.)

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

Correct Answer: ADF
Section: WAN
Explanation

Explanation/Reference:
On each WAN link, data is encapsulated into frame before being transmitted over the WAN link.
In order to implement the accurate protocol, it is required to configure the correct type of layer2 encapsulation.
The selection of the protocol depends on the WAN technology and the communication devices being used.

QUESTION 11
Refer to the exhibit. The two connected ports on the switch are not turning orange or green.
What would be the most effective steps to troubleshoot this physical layer problem? (Choose three.)



A. Ensure that the Ethernet encapsulations match on the interconnected router and switch ports.
B. Ensure that cables A and B are straight-through cables.
C. Ensure cable A is plugged into a trunk port.
D. Ensure the switch has power.
E. Reboot all of the devices.
F. Reseat all cables.

Correct Answer: BDF
Section: Troubleshoot Switching
Explanation

Explanation/Reference:
The ports on the switch are not up indicating it is a layer 1 (physical) problem so we should check cable type, power and how they are plugged in.

QUESTION 12
The following output was shown on router R:

```
R 10.10.10.8 [120/2] via 10.10.10.6, 00:00:25, Serial0/1
```

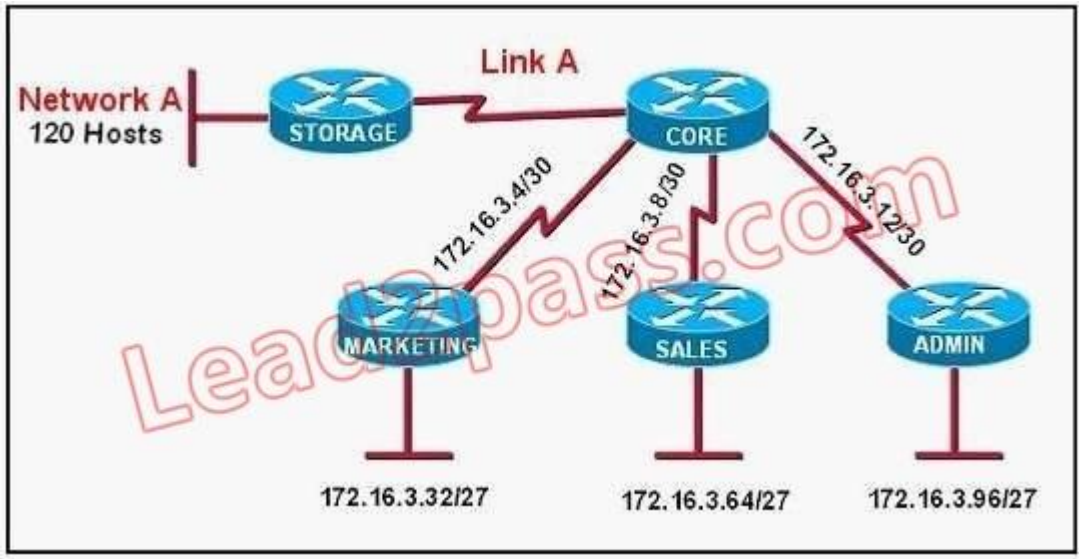
Based on the information shown above, what can be determined from the line of show ip route output shown in the exhibit? (Choose two)

A. The next routing update can be expected in 35 seconds.
B. The IP address 10.10.10.6 is configured on S0/1.
C. The IP address 10.10.10.8 is configured on S0/1.
D. This route is using the default administrative distance.
E. The 10.10.10.8 network is two hops away from this router.

Correct Answer: DE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 13
Refer to the exhibit.
All of the routers in the network are configured with the ip subnet-zero command.
Which network addresses should be used for Link A and Network A? (Choose two.)



A. Network A - 172.16.3.48/26
B. Network A - 172.16.3.128/25

C. Network A - 172.16.3.192/26
D. Link A - 172.16.3.0/30
E. Link A - 172.16.3.40/30
F. Link A - 172.16.3.112/30

Correct Answer: BD
Section: IP addressing
Explanation

Explanation/Reference:
Network A needs 120 hosts < 128 = 2^7 -> Need a subnet mask of 7 bit 0s -> "/25".
Because the ip subnet-zero command is used, network 172.16.3.0/30 can be used.
Answer E "Link A – 172.16.3.40/30" is not correct because this subnet belongs to MARKETING subnet (172.16.3.32/27).
Answer F "Link A – 172.16.3.112/30" is not correct because this subnet belongs to ADMIN subnet (172.16.3.96/27).

QUESTION 14
Which two subnetworks would be included in the summarized address of 172.31.80.0 /20? (Choose two.)

A. 172.31.17.4/30
B. 172.31.51.16/30
C. 172.31.64.0/18
D. 172.31.80.0 /22
E. 172.31.92.0/22
F. 172.31.192.0/18

Correct Answer: DE
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 15
The network administrator has discovered that the power supply has failed on a switch in the company LAN and that the switch has stopped functioning. It has been replaced with a Cisco Catalyst 2950 series switch. What must be done to ensure that this new switch becomes the root bridge on the network?

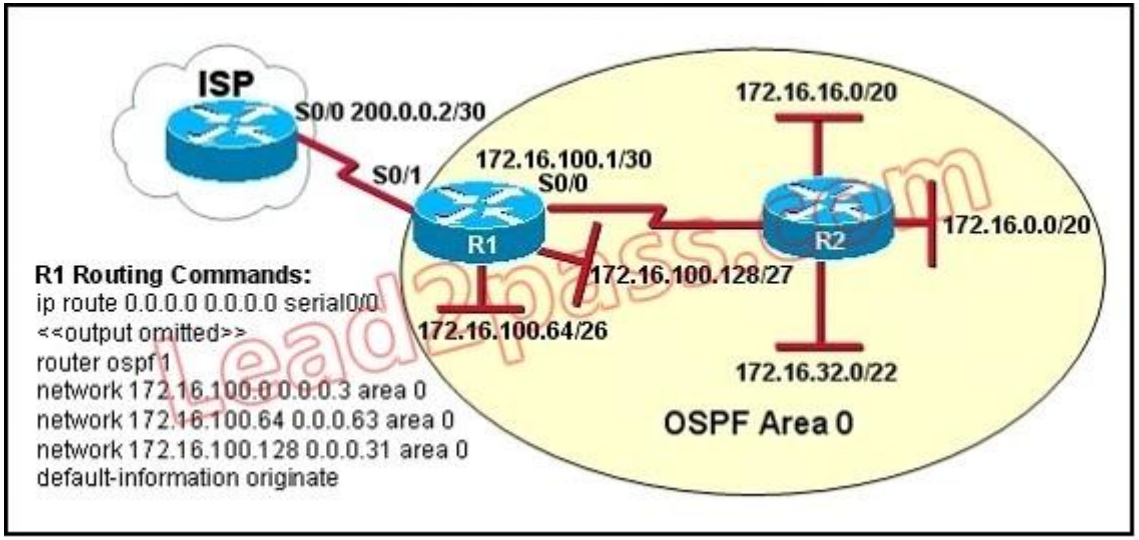
A. Lower the bridge priority number.
B. Change the MAC address of the switch.
C. Increase the VTP revision number for the domain.

D. Lower the root path cost on the switch ports.
E. Assign the switch an IP address with the lowest value.

Correct Answer: A
Section: Switching
Explanation

Explanation/Reference:

QUESTION 16
Refer to the exhibit.
Assume that all of the router interfaces are operational and configured correctly.
How will router R2 be affected by the configuration of R1 that is shown in the exhibit?



A. Router R2 will not form a neighbor relationship with R1.
B. Router R2 will obtain a full routing table, including a default route, from R1.
C. R2 will obtain OSPF updates from R1, but will not obtain a default route from R1.
D. R2 will not have a route for the directly connected serial network, but all other directly connected networks will be present, as well as the two Ethernet networks connected to R1.

Correct Answer: B
Section: Routing

Explanation

Explanation/Reference:

QUESTION 17
Which three IP addresses can be assigned to hosts if the subnet mask is /27 and subnet zero is usable? (Choose three.)

A. 10.15.32.17
B. 17.15.66.128
C. 66.55.128.1
D. 135.1.64.34
E. 129.33.192.192
F. 192.168.5.63

Correct Answer: ACD
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 18
Refer to the exhibit.
A packet with a source IP address of 192.168.2.4 and a destination IP address of 10.1.1.4 arrives at the HokesB router. What action does the router take?

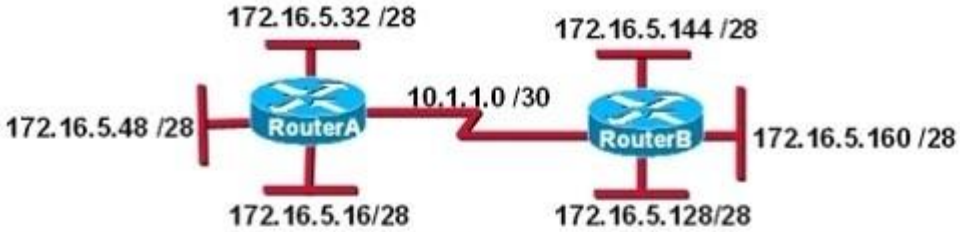
```
HokesB# show ip route
  < output omitted >
Gateway of last resort is not set
   192.168.2.0/28 is subnetted, 6 subnets
D  192.168.2.64 [90/20514560] via 192.168.0.6, 01:22:10, Serial0/1
D  192.168.2.80 [90/20514560] via 192.168.0.6, 01:22:10, Serial0/1
D  192.168.2.32 [90/20514560] via 192.168.9.2, 01:22:10, Serial0/0
D  192.168.2.48 [90/20514560] via 192.168.9.2, 01:22:10, Serial0/0
D  192.168.2.0 [90/30720] via 192.168.1.10, 01:22:10, FastEthernet0/0
D  192.168.2.6 [90/156160] via 192.168.1.10, 01:22:11, FastEthernet0/0
   192.168.9.0/30 is subnetted, 1 subnets
C   192.168.9.0 is directly connected, Serial0/0
   192.168.0.0/30 is subnetted, 1 subnets
C   192.168.0.4 is directly connected, Serial0/1
   192.168.1.0/30 is subnetted, 1 subnets
C   192.168.1.8 is directly connected, FastEthernet0/0
HokesB#
```

A. forwards the received packet out the Serial0/0 interface
B. forwards a packet containing an EIGRP advertisement out the Serial0/1 interface
C. forwards a packet containing an ICMP message out the FastEthernet0/0 interface
D. forwards a packet containing an ARP request out the FastEthernet0/1 interface

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 19
Refer to the exhibit.
From RouterA, a network administrator is able to ping the serial interface of RouterB but unable to ping any of the subnets attached to RouterB.
Based on the partial outputs in the exhibit, what could be the problem?




```
RouterA# show ip protocols
Routing Protocol is "eigrp 100"
<output omitted>
Routing for Networks:
   10.0.0.0
   172.16.0.0
  Routing Information Sources:
   Gateway         Distance      Last Update
   (this router)      90          00:13:50
   10.1.1.2           90          00:13:50
  Distance: internal 90 external 170
RouterA#
```

```
RouterB# show ip protocols
Routing Protocol is "eigrp 100"
<output omitted>
Routing for Networks:
   10.0.0.0
   172.16.0.0
  Routing Information Sources:
   Gateway         Distance      Last Update
   (this router)      90          00:06:30
   10.1.1.1           90          00:06:30
  Distance: internal 90 external 170
RouterB#
```

```
RouterB# show ip route
 <output omitted>
Gateway of last resort is not set

172.16.0.0/16 is variably subnetted, 4 subnets, 2 masks
C      172.16.5.160/28 is directly connected, FastEhternet0/0
C      172.16.5.144/28 is directly connected, FastEhternet0/1
C      172.16.5.128/28 is directly connected, FastEhternet1/0
D      172.16.0.0/16 is a summary, 00:00:03, Null0
    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
D      10.0.0.0/8 is a summary, 00:00:04, Null0
C      10.1.1.0/30 is directly connected, Serial0/0
RouterB#
```


A. EIGRP does not support VLSM.
B. The EIGRP network statements are incorrectly configured.
C. The IP addressing on the serial interface of RouterA is incorrect.
D. The routing protocol has summarized on the classful boundary.
E. EIGRP has been configured with an invalid autonomous system number.

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 20
What are three characteristics of the OSPF routing protocol? (Choose three.)

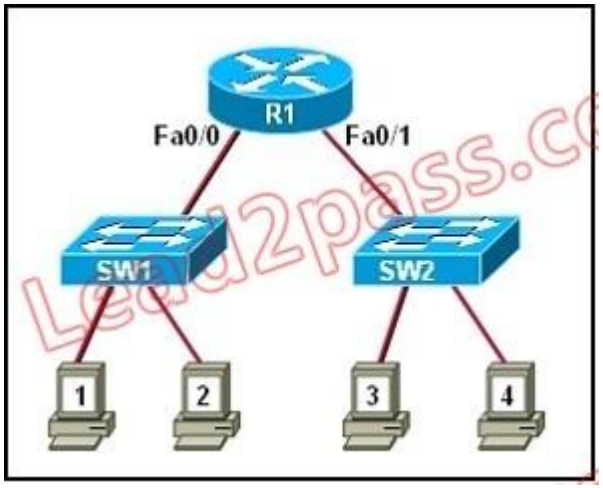
A. It converges quickly.
B. OSPF is a classful routing protocol.
C. It uses cost to determine the best route.
D. It uses the DUAL algorithm to determine the best route.
E. OSPF routers send the complete routing table to all directly attached routers.
F. OSPF routers discover neighbors before exchanging routing information.

Correct Answer: ACF
Section: Routing
Explanation

Explanation/Reference:

OSPF builds routing tables based solely on the destination IP address found in IP packets. It was designed to support variable-length subnet masking (VLSM, CIDR). OSPF detects changes in the topology, such as link failures, very quickly and converges on a new loop-free routing structure within seconds. For this, each OSPF router collects link-state information to construct the entire network topology of so-called areas from which it computes the shortest path tree for each route using a method based on Dijkstra's algorithm. The link-state information is maintained on each router as a link-state database (LSDB) which is a tree-image of the network topology. Identical copies of the LSDB are periodically updated through flooding on all routers in each OSPF-aware area (region of the network included in an OSPF area type - see "Area types" below). By convention, area 0 represents the core or "backbone" region of an OSPF-enabled network, and other OSPF area numbers may be designated to serve other regions of an enterprise (large, business) network - however every additional OSPF area must have a direct or virtual connection to the backbone OSPF area. The backbone area has the identifier 0.0.0.0. Inter-area routing goes via the backbone.

QUESTION 21
Refer to the exhibit.
SW1 and SW2 have default configurations. What will happen if host 1 sends a broadcast?



A. Hosts 2, 3, and 4 will receive the broadcast.
B. Hosts 1, 2, 3, and 4 will receive the broadcast.
C. Host 2 and the Fa0/0 interface of R1 will receive the broadcast.
D. Hosts 1, 2 and the Fa0/0 interface of R1 will receive the broadcast.
E. Hosts 1, 2, 3, 4 and interface Fa0/0 of R1 will receive the broadcast.
F. Hosts 2, 3, 4, and interfaces Fa0/0 and Fa0/1 of R1 will receive the broadcast.

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:
Routers break up broadcast domains. All broadcast are isolated within SW1 hosts.

QUESTION 22
A router has learned three possible routes that could be used to reach a destination network. One route is from EIGRP and has a composite metric of 20514560.
Another route is from OSPF with a metric of 782. The last is from RIPv2 and has a metric of 4. Which route or routes will the router install in the routing table?

A. the OSPF route
B. the EIGRP route
C. the RIPv2 route
D. all three routes

E. the OSPF and RIPv2 routes

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 23
For what two purposes does the Ethernet protocol use physical addresses? (Choose two.)

A. to uniquely identify devices at Layer 2
B. to allow communication with devices on a different network
C. to differentiate a Layer 2 frame from a Layer 3 packet
D. to establish a priority system to determine which device gets to transmit first
E. to allow communication between different devices on the same network
F. to allow detection of a remote device when its physical address is unknown

Correct Answer: AE
Section: How a network works
Explanation

Explanation/Reference:
In computing, a physical address, also real address, or binary address, is the memory address that is electronically (in the form of binary number) presented on the computer address
bus circuitry in order to enable the data bus to access a particular storage cell of main memory. In a computer with virtual memory, the term physical address is used mostly to
differentiate from a virtual address. In particular, in computers utilizing memory management unit (MMU) to translate memory addresses, the virtual and physical address refer to
address before and after MMU translation, respectively.

QUESTION 24
As a frame leaves a Layer 3 device, the Layer 2 encapsulation information is changed from what it was when it entered the device. For what two reasons can this happen? (Choose two.)

A. The data is moving from 10BASE-TXto 100BASE-TX.
B. The WAN encapsulation type has changed.
C. The data format has changed from analog to digital.
D. The source and destination hosts are in the same subnet.

E. The source and destination MAC addresses have changed.

Correct Answer: BE
Section: How a network works
Explanation

Explanation/Reference:
B: As answer itself states WAN encapsulation changes which directly relates to layer 2 like ethernet,hdlc, ppp, etc

E: mac address changes at every segment or every hop. so does layer 2 info will.

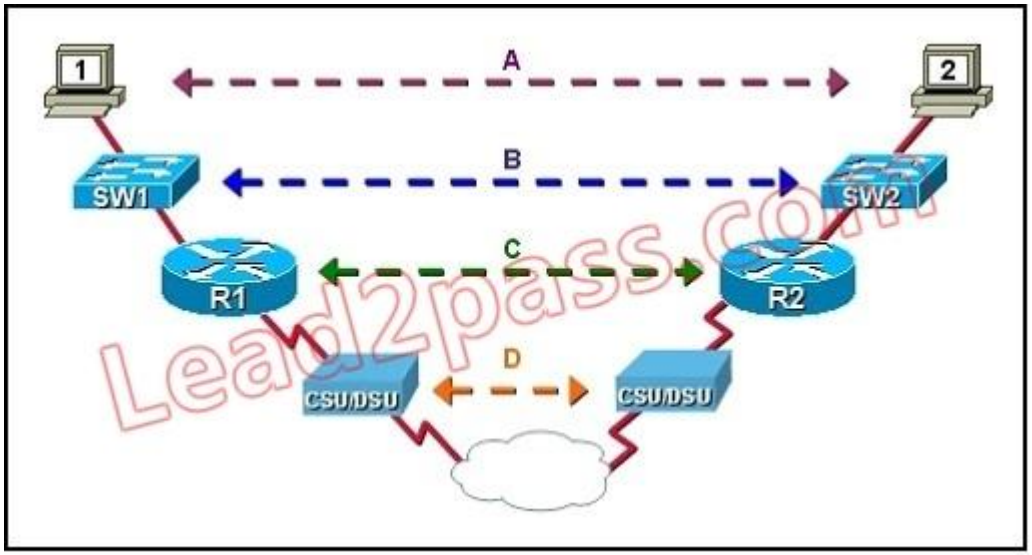
QUESTION 25
Which two statements are true regarding EIGRP? (Choose two.)

A. Passive routes are in the process of being calculated by DUAL
B. EIGRP supports VLSM, route summarization, and routing update authentication.
C. EIGRP exchanges full routing table information with neighboring routers with every update.
D. If the feasible successor has a higher advertised distance than the successor route, it becomes the primary route.
E. A query process is used to discover a replacement for a failed route if a feasible successor is not identified from the current routing information.

Correct Answer: BE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 26
Refer to the exhibit.
In the communication between host 1 and host 2 over the point-to-point WAN, which protocol or technology is represented by dashed line A?



A. IP
B. T1
C. ppp
D. IEEE 802.3

Correct Answer: A
Section: How a network works
Explanation

Explanation/Reference:
The devices communicate as followed below:

(A) 1<----------IP ----------> 2
(B) SW1<---------- IEEE 802.3 ----------> Sw2
(C) R1 <--- PPP ---> R2
(D) CSU/DSU <--- T1 ---> CSU/DSU

QUESTION 27
Refer to the exhibit.
The switch in the graphic has a default configuration and the MAC table is fully populated. In addition, this network is operating properly.
The graphic represents selected header information in a frame leaving host A. What can be concluded from this information?

Destination	Source	Destination	Source
FFFF.FFFF.FFFF	000a.8a47.e612	192.168.14.1	192.168.14.2

A. The MAC address of host A is FFFF.FFFF.FFFF.
B. The router will forward the packet in this frame to the Internet.
C. The switch will only forward this frame to the attached router interface.
D. All devices in this LAN except host A will pass the packet to Layer 3.

Correct Answer: D
Section: How a network works
Explanation

Explanation/Reference:
This frame is leaving host A so host A is the source of this frame. In this frame, the MAC destination is FFFF.FFFF.FFFF which is a broadcast address so Sw1 will flood this frame out all its ports except the port it received the frame -> Hosts B, C, D and the interface connected to Sw1 on R1 will receive this frame. When receiving this frame, they will pass the packet to Layer 3 (because they consider broadcast address “everyone, including me”). At Layer 3, the Destination IP will be checked and only the host (or the interface on the router) with correct IP will respond to Host A while others keep silence -> D is correct.
Just for your information, maybe you can ask “this is a broadcast message so why router R1 doesn’t drop it?”. Suppose this is an ARP Request message. In fact, R1 drops that packet but it also learns that it is an ARP Request so R1 looks up its routing table to find a route to that destination. If it can find one, it will send an ARP Reply back for host A”.

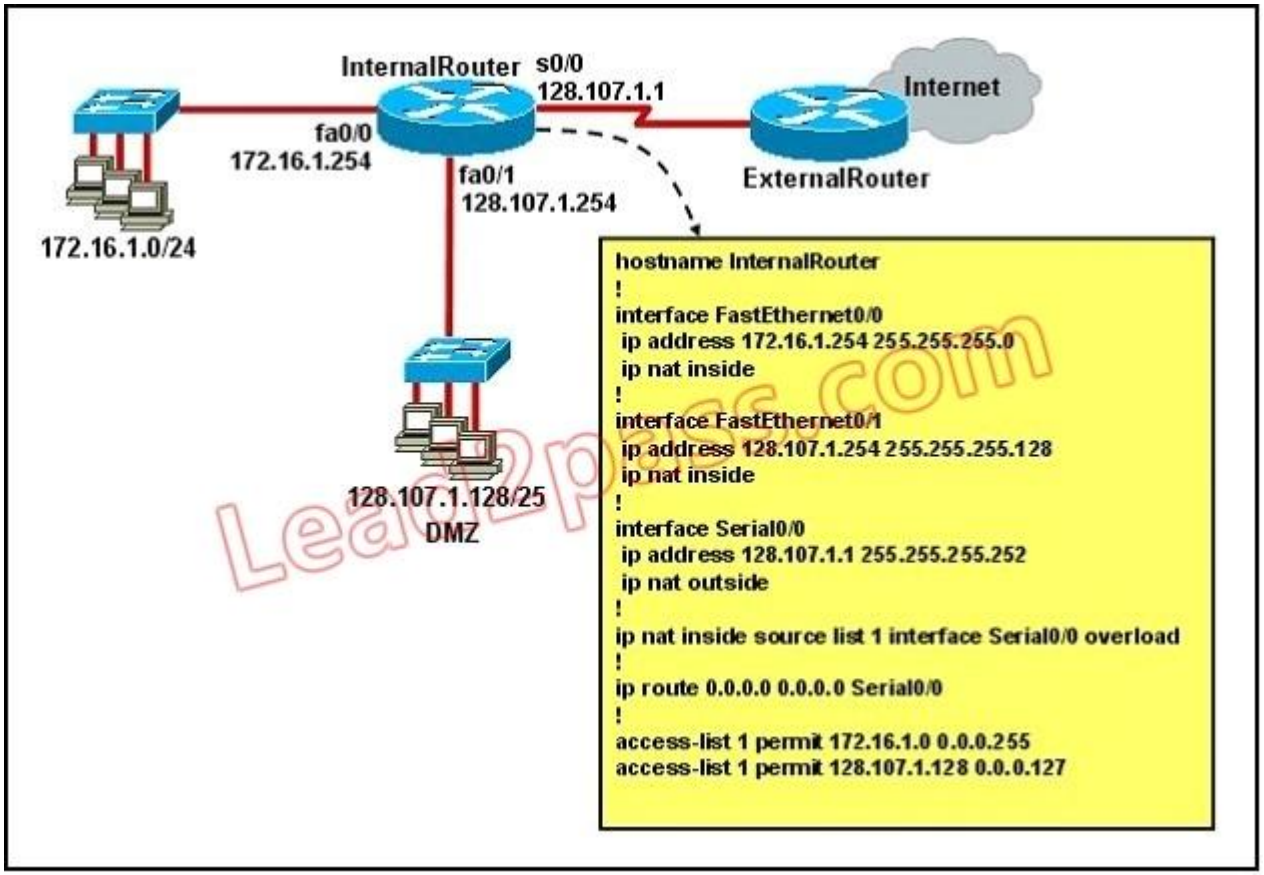
QUESTION 28
What is an appropriate use of a default route?

A. to provide routing to a local web server
B. to provide routing from an ISP to a stub network
C. to provide routing that will override the configured dynamic routing protocol
D. to provide routing to a destination that is not specified in the routing table and which is outside the local network

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 29
Refer to the exhibit.
A junior network engineer has prepared the exhibited configuration file.
What two statements are true of the planned configuration for interface fa0/1? (Choose two.)



A. The two FastEthernet interfaces will require NAT configured on two outside serial interfaces.
B. Address translation on fa0/1 is not required for DMZ Devices to access the Internet.
C. The fa0/1 IP address overlaps with the space used by s0/0.
D. The fa0/1 IP address is invalid for the IP subnet on which it resides.
E. Internet hosts may not initiate connections to DMZ Devices through the configuration that is shown.

Correct Answer: BE
Section: NAT & ACLs
Explanation

Explanation/Reference:
The address configured on DMZ device is 128.107.1.128/225 which belongs to the public address. NAT is not required for Public address DMZ to

directly access the Internet.
Both inside FastEthernet interfaces can use only one outside interface to go to the Internet -> A is not correct.

DMZ devices use IP addresses in the range of 128.107.1.128/25 which are public IP addresses so they don't need address translation to access the Internet -> B is correct.

The fa0/1 interface's IP address is 128.107.1.254 255.255.255.128 (range from 128.107.1.128 to 128.107.1.255) while the IP address of s0/0 is 128.107.1.1 255.255.255.252 (ranges from 128.107.1.0 to 128.107.1.4) so they are not overlapped with each other -> C is not correct.

DMZ devices are in the range of 128.107.1.128/25 (from 128.107.1.128 to 128.107.1.255) and fa0/1 IP address (128.107.1.254) is a valid IP address on this subnet -> D is not correct.

DMZ devices (and other internal hosts) are using dynamic PAT, which is a type of dynamic NAT. With dynamic NAT, translations do not exist in the NAT table until the router receives traffic that requires translation. In other words, if DMZ devices communicate with outside hosts first, dynamic translation works fine. But if outside hosts communicate with DMZ devices first, no translation is created in NAT table and the packets will be dropped. This is the reason why "Internet hosts may not initiate connections to DMZ Devices through the configuration that is shown" -> E is correct.

QUESTION 30
Refer to the exhibit.
Two routers have just been configured by a new technician.
All interfaces are up. However, the routers are not sharing their routing tables.
What is the problem?

```
Router2# debug ip rip
RIP protocol debugging is on
Router2#RIP: sending  v1 update to 255.255.255.255 via Serial0/0 (192.168.2.2)
RIP: build update entries
   network 192.168.3.0 metric 1
RIP: sending  v1 update to 255.255.255.255 via FastEthernet0/0 (192.168.3.1)
RIP: build update entries
   network 192.168.2.0 metric 1
RIP: ignored v2 packet from 192.168.2.1 (illegal version)

Router2#
```


A. Split horizon is preventing Router2 from receiving routing information from Router1.
B. Router1 is configured for RIP version 2, and Router2 is configured for RIP version 1.
C. Router1 has an ACL that is blocking RIP version 2.
D. There is a physical connectivity problem between Router1 and Router2.
E. Router1 is using authentication and Router2 is not.

Correct Answer: B

Section: Routing
Explanation

Explanation/Reference:
As we can see from the output, Router2 is sending v1 update and ignoring v2 update from neighbor so we can conclude Router2 is running RIPv1. Its neighbor, Router1 (ip address of 192.168.2.1), is running RIPv2.
Notice that router running RIPv2 can “understand” RIPv1 update but router running RIPv1 cannot understand RIPv2 update.

QUESTION 31
A medium-sized company has a Class C IP address. It has two Cisco routers and one non-Cisco router. All three routers are using RIP version 1. The company network is using the block of 198.133.219.0/24. The company has decided it would be a good idea to split the network into three smaller subnets and create the option of conserving addresses with VLSM. What is the best course of action if the company wants to have 40 hosts in each of the three subnets?

A. Convert all the routers to EIGRP and use 198.133.219.32/27,198.133.219.64/27, and 198.133.219.92/27 as the new subnetworks.
B. Maintain the use of RIP version 1 and use 198.133.219.32/27,198.133.219.64/27, and 198.133.219.92/27 as the new subnetworks.
C. Convert all the routers to EIGRP and use 198.133.219.64/26,198.133.219.128/26, and 198.133.219.192/26 as the new subnetworks.
D. Convert all the routers to RIP version 2 and use 198.133.219.64/26, 198.133.219.128/26, and 198.133.219.192/26 as the new subnetworks.
E. Convert all the routers to OSPF and use 198.133.219.16/28,198.133.219.32/28, and 198.133.219.48/28 as the new subnetworks.
F. Convert all the routers to static routes and use 198.133.219.16/28,198.133.219.32/28, and 198.133.219.48/28 as the new subnetworks.

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:
This company implemented the routing protocol RIP version 1 at the start, but RIP version2 is the best choice for it due to small-scale, first, it needs less configuration when modifying,
which will least affect the network; second, RIP version2 supports classless routing, fully satisfying the requirements.

QUESTION 32
Refer to the exhibit. Why has this switch not been elected the root bridge for VLAN1?

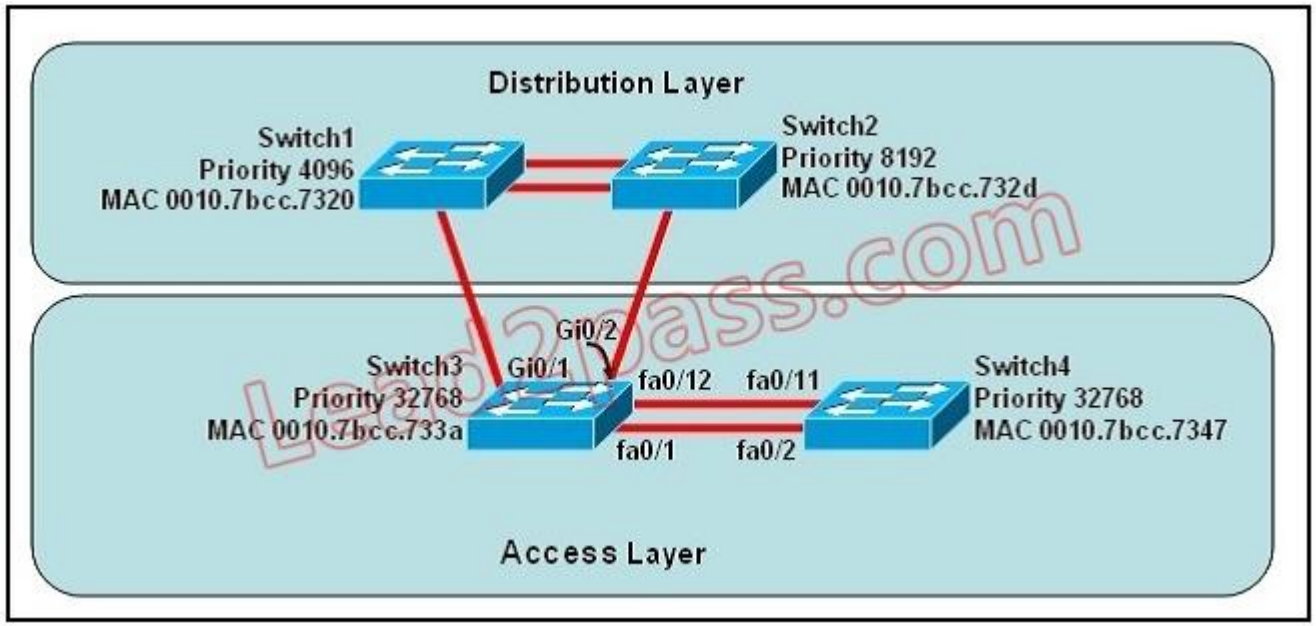
```
Switch# show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    20481
             Address     0008.217a.5800
             Cost        38
             Port        1 (FastEthernet0/1)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0008.205e.6600
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 300


Interface          Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1              Root FWD 19        128.1    P2p
Fa0/4              Desg FWD 38        128.1    P2p
Fa0/11             Altn BLK 57        128.1    P2p
Fa0/13             Desg FWD 38        128.1    P2p
```


A. It has more than one interface that is connected to the root network segment.
B. It is running RSTP while the elected root bridge is running 802.1 d spanning tree.
C. It has a higher MAC address than the elected root bridge.
D. It has a higher bridge ID than the elected root bridge.

Correct Answer: D
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 33
Refer to the exhibit. At the end of an RSTP election process, which access layer switch port will assume the discarding role?



A. Switch3, port fa0/1
B. Switch3, port fa0/12
C. Switch4, port fa0/11
D. Switch4, port fa0/2
E. Switch3, port Gi0/1
F. Switch3, port Gi0/2

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:
In this question, we only care about the Access Layer switches (Switch3 & 4).
Switch 3 has a lower bridge ID than Switch 4 (because the MAC of Switch3 is smaller than that of Switch4) so both ports of Switch3 will be in forwarding state.
The alternative port will surely belong to Switch4.

Switch4 will need to block one of its ports to avoid a bridging loop between the two switches.
But how does Switch4 select its blocked port? Well, the answer is based on the BPDUs it receives from Switch3.
A BPDU is superior than another if it has:

1. A lower Root Bridge ID
2. A lower path cost to the Root
3. A lower Sending Bridge ID
4. A lower Sending Port ID

These four parameters are examined in order. In this specific case, all the BPDUs sent by Switch3 have the same Root Bridge ID, the same path cost to the Root and the same Sending Bridge ID.
The only parameter left to select the best one is the Sending Port ID (Port ID = port priority + port index). In this case the port priorities are equal because they use the default value,
so Switch4 will compare port index values, which are unique to each port on the switch, and because Fa0/12 is inferior to Fa0/1, Switch4 will select the port connected with Fa0/1 (of Switch3)
as its root port and block the other port -> Port fa0/11 of Switch4 will be blocked (discarding role).

If you are still not sure about this question, please read my RSTP tutorial.
http://www.9tut.com/rapid-spanning-tree-protocol-rstp-tutorial

QUESTION 34
Refer to the exhibit.
How many paths can the EIGRP routing process use to forward packets from HQ_Router to a neighbor router?

```
HQ_Router# show ip protocols
Routing Protocol is "eigrp 109"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0
  EIGRP maximum hopcount 100
  EIGRP maximum metric variance 3
  Redistributing: eigrp 109
  EIGRP NSF-aware route hold timer is 240s
  Automatic network summarization is not in effect
  Maximum path: 4
  Routing for Networks:
    20.10.10.0/24
    172.30.10.0/24
    192.168.1.0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.1.1           90      00:13:12
    172.16.10.2           90      01:13:06
  Distance: internal 90 external 170

HQ_Router#
```

A. two equal-cost paths
B. two unequal-cost paths
C. three equal-cost paths
D. three unequal-cost paths
E. four equal-cost paths
F. four unequal-cost paths

Correct Answer: F
Section: Routing
Explanation

Explanation/Reference:

QUESTION 35

Select the action that results from executing these commands.

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.

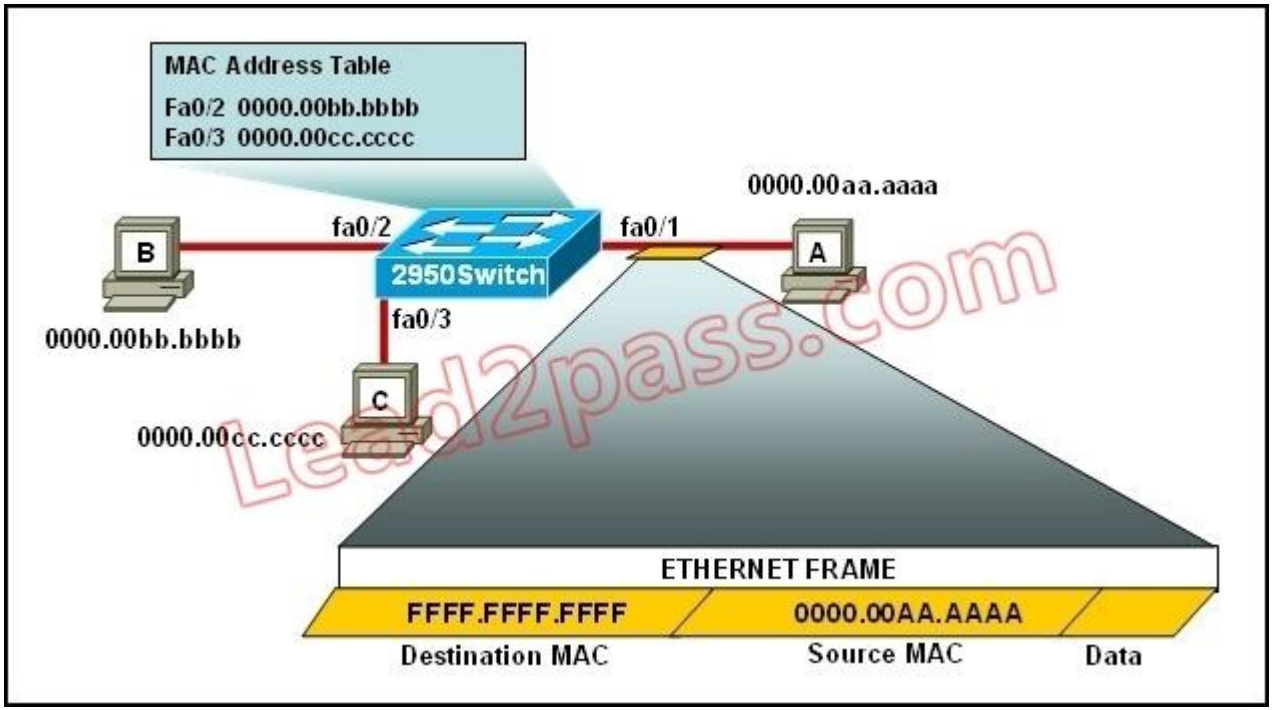
Correct Answer: B
Section: Layer 2 Security
Explanation

Explanation/Reference:
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 36
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

Correct Answer: BD
Section: Layer 2 Security
Explanation

Explanation/Reference:
(1)The first command **2950Switch(config-if)#switchport port-security** is to enable the port-security in a switch port.

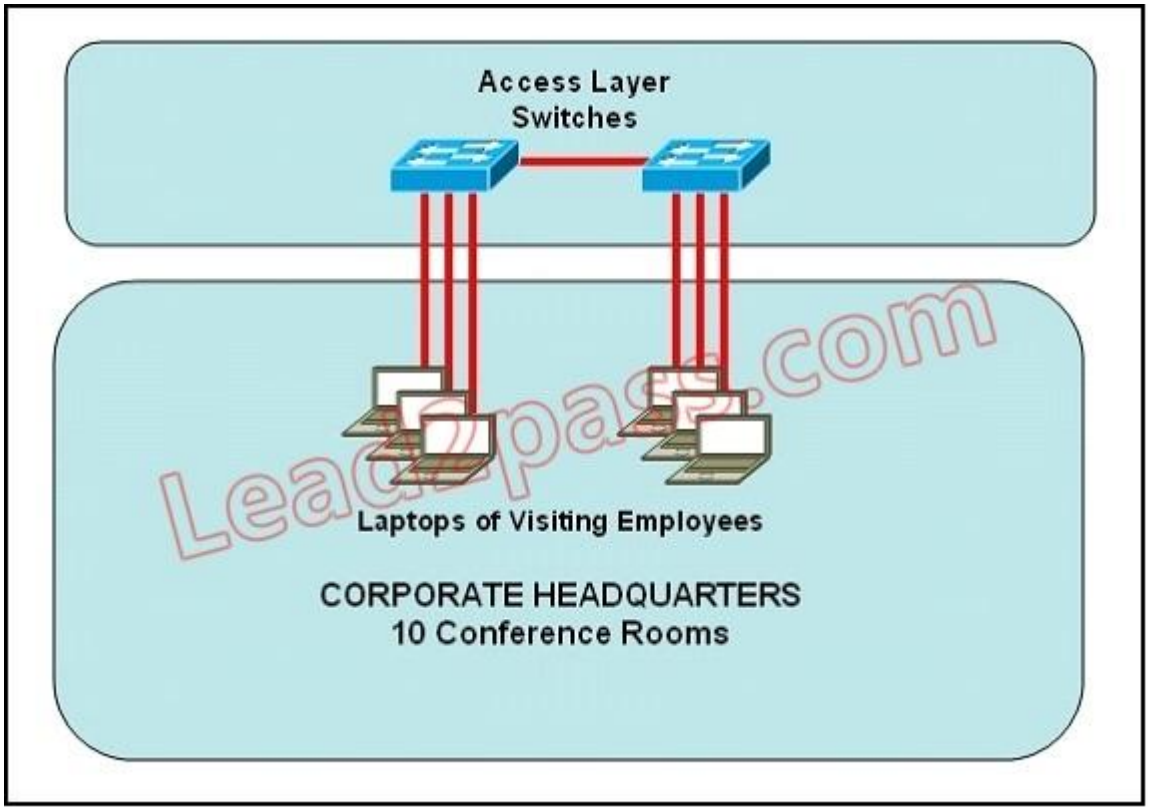
(2)In the second command **2950Switch(config-if)#switchport port-security mac-address sticky**, we need to know the full syntax of this command is ***switchport port-security mac-address sticky [MAC]***. The STICKY keyword is used to make the MAC address appear in the running configuration and you can save it for later use. If you do not specify any MAC addresses after the STICKY keyword, the switch will dynamically learn the attached MAC Address and place it into your running-configuration. In this case, the switch will dynamically learn the MAC address 0000.00aa.aaaa of host A and add this MAC address to the running configuration.

(3)In the last command 2950Switch(config-if)#switchport port-security maximum 1 you limited the number of secure MAC addresses to one and dynamically assigned it (because no MAC address is mentioned, the switch will get the MAC address of the attached MAC address to interface fa0/1), the workstation attached to that port is assured the full bandwidth of the port.Therefore only host A will be allowed to transmit frames on fa0/1 -> **B is correct**.

After you have set the maximum number of secure MAC addresses for interface fa0/1, the secure addresses are included in the “Secure MAC Address” table (this table is similar to the Mac Address Table but you can only view it with the show port-security address command). So in this question, although you don’t see the MAC address of host A listed in the MAC Address Table but frames with a destination of 0000.00aa.aaaa will be forwarded out of fa0/1 interface -> **D is correct.**

QUESTION 37

Refer to the exhibit. Some 2950 series switches are connected to the conference area of the corporate headquarters network.
The switches provide two to three jacks per conference room to host laptop connections for employees who visit the headquarters office.
When large groups of employees come from other locations, the network administrator often finds that hubs have been connected to wall jacks in the conference area although the ports on the access layer switches were not intended to support multiple workstations.
What action could the network administrator take to prevent access by multiple laptops through a single switch port and still leave the switch functional for its intended use?



A. Configure static entries in the switch MAC address table to include the range of addresses used by visiting employees.
B. Configure an ACL to allow only a single MAC address to connect to the switch at one time.
C. Use the mac-address-table 1 global configuration command to limit each port to one source MAC address.
D. Implement Port Security on all interfaces and use the port-security maximum 1 command to limit port access to a single MAC address.
E. Implement Port Security on all interfaces and use the port-security mac-address sticky command to limit access to a single MAC address.
F. Implement Port Security at global configuration mode and use the port-security maximum 1 command to allow each switch only one attached hub.

Correct Answer: D
Section: Layer 2 Security
Explanation

Explanation/Reference:
The Port Security filters frames based on its MAC so it can effectively prevent people connecting to the switch via hubs.

QUESTION 38
Running both IPv4 and IPv6 on a router simultaneously is known as what?

A. 4to6 routing
B. 6to4 routing
C. binary routing
D. dual-stack routing
E. NextGen routing

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:

What Is It?
Dual stack means that devices are able to run IPv4 and IPv6 in parallel. It allows hosts to simultaneously reach IPv4 and IPv6 content, so it offers a very flexible coexistence strategy.

QUESTION 39
What are three IPv6 transition mechanisms? (Choose three.)

A. 6to4 tunneling
B. VPN tunneling
C. GRE tunneling
D. ISATAP tunneling
E. PPP tunneling
F. Teredo tunneling

Correct Answer: ADF
Section: IPv6
Explanation

Explanation/Reference:
Below is a summary of IPv6 transition technologies:

6 to 4 tunneling: This mechanism allows IPv6 sites to communicate with each other over the IPv4 network without explicit tunnel setup. The main advantage of this technology is that it requires no end-node reconfiguration and minimal router

configuration but it is not intended as a permanent solution.

ISATAP tunneling (Intra-Site Automatic Tunnel Addressing Protocol): is a mechanism for transmitting IPv6 packets over IPv4 network. The word “automatic” means that once an ISATAP server/router has been set up, only the clients must be configured to connect to it.

Teredo tunneling: This mechanism tunnels IPv6 datagrams within IPv4 UDP datagrams, allowing private IPv4 address and IPv4 NAT traversal to be used.

QUESTION 40
Identify the four valid IPv6 addresses. (Choose four.)

A. 2000::
B. 2002:c0a8:101::42
C. 2003: deaD. beef:4dad:23:46:bB. 101
D. ::192:168:0:1
E. 2001:3452:4952:2837::
F. ::

Correct Answer: ABCE
Section: IPv6
Explanation

Explanation/Reference:

A. 2000::
B. 2002:c0a8:101::42
C. 2003:dead:beef:4dad:23:46:bb:101
D. ::192:168:0:1
E. 2001:3452:4952:2837::
F. ::

A. Is an valid address, but very confusing to people, and while you CAN use it, you likely shouldn't. Also, depends on the mask!
B. Is a good address, but part of the reserved ISATAP range. So you may cause problems at least in the administrator's brains! Technically it's just a number and can be used just fine. Magic tunneling requires other commands to invoke the voodoo magic (which can also be used with ANY address scheme, they just reserve 2002::/16 to make things easier)
C. Is a good address
D. While likely possible to configure, this method of IPv4-Compatible Addressing has been deprecated and SHOULD NOT be used
E. Again, valid, but likely to be very confusing to people.
F. You'll SEE this in sniffers as Keith mentions, but cannot configure it as an address

I'd pick A, B, C and E.

QUESTION 41
Refer to the following protocols, which one can create a secure terminal connection to a remote network device?

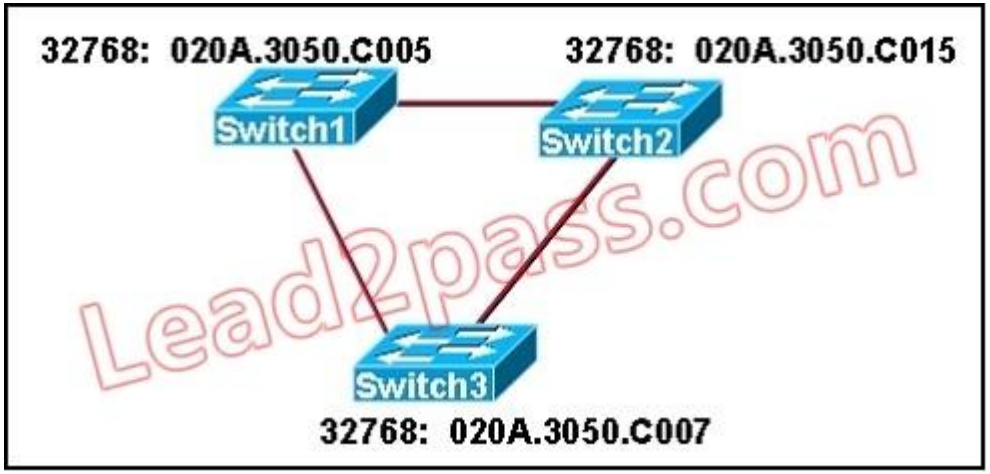
A. ARP
B. SSH
C. Telnet
D. wep
E. SNMPv1
F. SNMPv2

Correct Answer: B
Section: IP Services
Explanation

Explanation/Reference:
SSH is the protocol that secure the connection between the terminal and the remote device

QUESTION 42

Refer to the exhibit.
A network administrator wants Switch3 to be the root bridge. What could be done to ensure Switch3 will be the root?



A. Configure the IP address on Switch3 to be higher than the IP addresses of Switch1 and Switch2.
B. Configure the priority value on Switch3 to be higher than the priority values of Switch 1 and Switch2.
C. Configure the BID on Switch3 to be lower than the BIDs of Switch1 and Switch2.
D. Configure the MAC address on Switch3 to be higher than the Switch1 and Switch2 MAC addresses.
E. Configure a loopback interface on Switch3 with an IP address lower than any IP address on Switch1 and Switch2.

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 43
What is the maximum data rate specified for IEEE 802.11b WLANs?

A. 10Mbps
B. 11Mbps
C. 54Mbps
D. 100Mbps

Correct Answer: B
Section: WLAN
Explanation

Explanation/Reference:

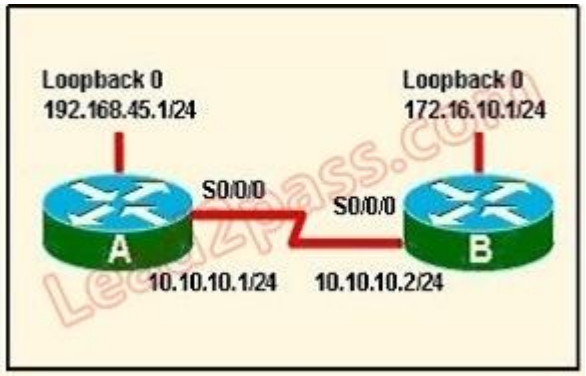
QUESTION 44
How does using the service password-encryption command on a router provide additional security?

A. by encrypting all passwords passing through the router
B. by encrypting passwords in the plain text configuration file
C. by requiring entry of encrypted passwords for access to the device
D. by configuring an MD5 encrypted key to be used by routing protocols to validate routing exchanges
E. by automatically suggesting encrypted passwords for use in configuring the router

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
By using this command, all the (current and future) passwords are encrypted. This command is primarily useful for keeping unauthorized individuals from viewing your password in your configuration file.

QUESTION 45
Refer to the exhibit.
When running OSPF, What would cause router A not to form an adjacency with router B?

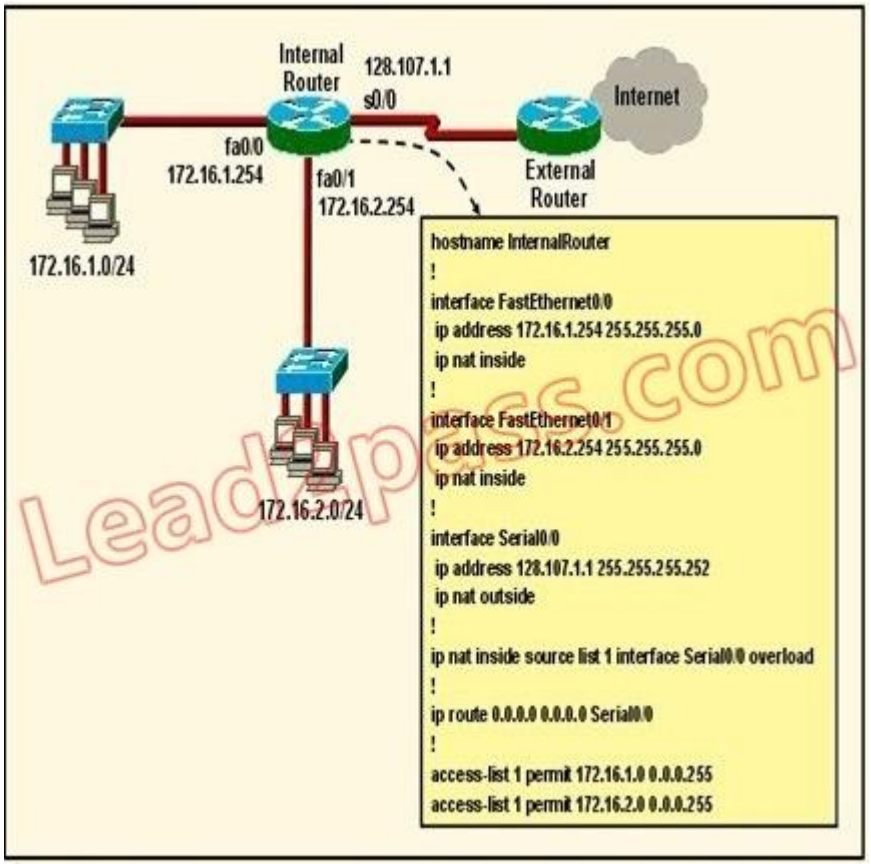


A. The loopback addresses are on different subnets.
B. The values of the dead timers on the routers are different.
C. Route summarization is enabled on both routers.
D. The process identifier on router A is different than the process identifier on router B.

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
To form an adjacency (become neighbor), router A & B must have the same Hello interval, Dead interval and AREA number.

QUESTION 46
Refer to the exhibit. What statement is true of the configuration for this network?



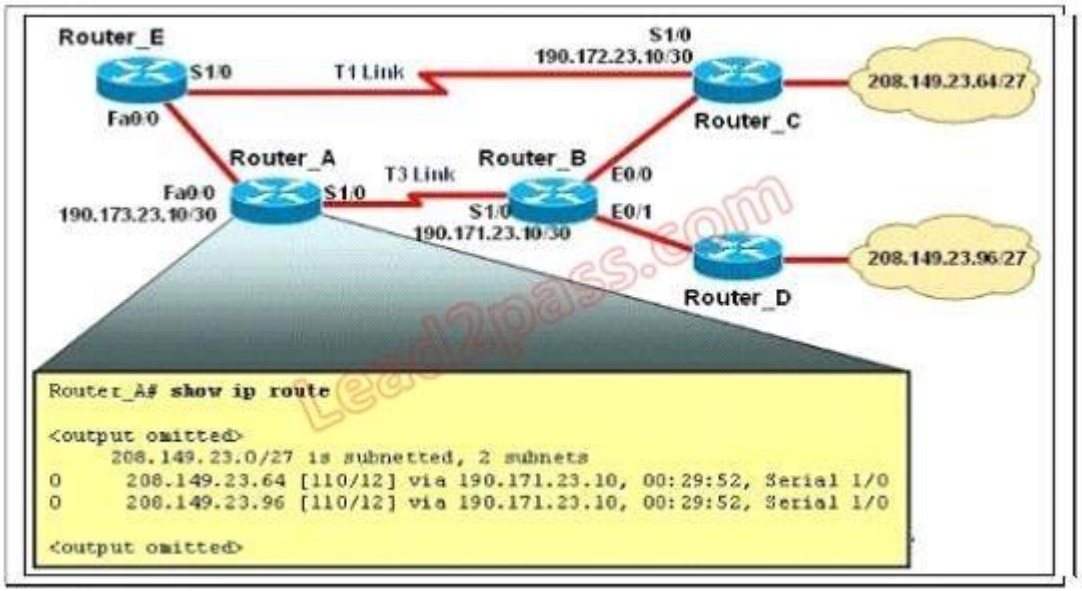
Based on the information shown above, Which of the following correctly describe the configuration for this network?

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 FastEthemet0/1, 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 number1.
D. External Router must be configured with static routers to networks 172.16.2.0/24.

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 47
Refer to the exhibit. The network is converged.
After link-state advertisements are received from Router_A, what information will Router_E contain in its routing table for the subnets 208.149.23.64 and 208.149.23.96?

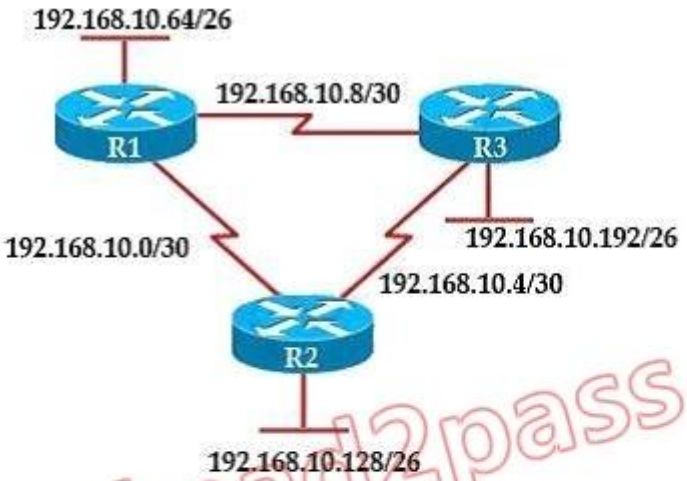


A. 208.149.23.64[110/13] via 190.173.23.10,00:00:07, FastEthemet0/0
208.149.23.96[110/13] via 190.173.23.10,00:00:16, FastEthemet0/0
B. 208.149.23.64[110/1] via 190.172.23.10,00:00:07, Serial1/0
208.149.23.96[110/3] via 190.173.23.10,00:00:16, FastEthemet0/0
C. 208.149.23.64[110/13] via 190.173.23.10,00:00:07, Serial1/0
208.149.23.96[110/13] via 190.173.23.10,00:00:16, Serial1/0
208.149.23.96[110/13] via 190.173.23.10,00:00:16, FastEthemet0/0
D. 208.149.23.64[110/3] via 190.172.23.10,00:00:07, Serial1/0
208.149.23.96[110/3] via 190.173.23.10,00:00:16, Serial1/0

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:
Router_E learns two subnets subnets 208.149.23.64 and 208.149.23.96 via Router_A through FastEthernet interface. The interface cost is calculated with the formula 108 / Bandwidth.
For FastEthernet it is 108 / 100 Mbps = 108 / 100,000,000 = 1. Therefore the cost is 12 (learned from Router_A) + 1 = 13 for both subnets -> B is not correct.
The cost through T1 link is much higher than through T3 link (T1 cost = 108 / 1.544 Mbps = 64; T3 cost = 108 / 45 Mbps = 2) so surely OSPF will choose the path through T3 link -> Router_E
will choose the path from Router_A through FastEthernet0/0, not Serial1/0 -> C & D are not correct.
In fact, we can quickly eliminate answers B, C and D because they contain at least one subnet learned from Serial1/0 -> they are surely incorrect.

QUESTION 48
Refer to exhibit. The company uses EIGRP as the routing protocol.
What path will packets take from a host on 192.168.10.192/26 network to a host on the LAN attached to router R1?




```
R3# show ip route
Gateway of last resort is not set
192 168.10.0/24 is variably subnetted, 6 subnets, 2 masks
D 192.168. 10.64/26 [90/2195456] via 192.168.10.9, 00:03:31, Serial0/0
D 192.168.10.0/30 [90/2681856] via 192.168.10.9, 00:03:31, Serial0/0
C 192.168.10.4/30 is directly connected, Serial 0/1
C 192.168.10.8/30 is directly connected, Serial 0/0
C 192.168.10.192/26 is directly connected, FastEthernet0/0
D 192.168.10.128/26 [90/2195456] via 192.168.10.5,00:03 31, Serial 0/1
```

A. The path of the packets will be R3 to R2 to R1.
B. The path of the packets will be R3 to R1 to R2.
C. The path of the packets will be both R3 to R2 to R1 AND R3 to R.
D. The path of the packets will be R3 to R1.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 49
Refer to the exhibit.
Switch port FastEthernet 0/24 on ALSwitch1 will be used to create an IEEE 802.1Q-compliant trunk to another switch.
Based on the output shown, what is the reason the truck does not form, even though the proper cabling has been attached?

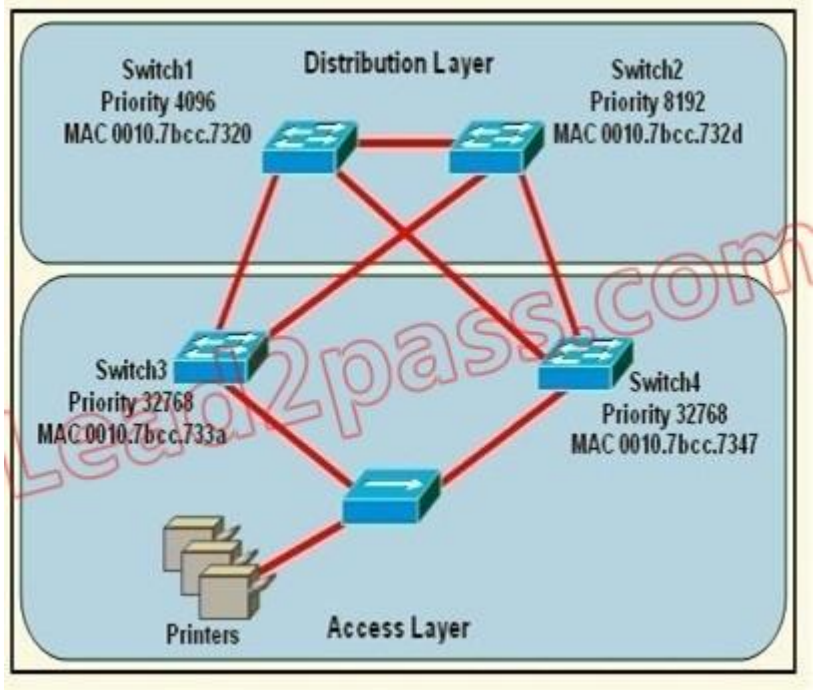
```
ALSwitch1# show running-config
«output omitted»
interface FastEthernet0/24 no ip address
«output omitted»
ALSwitch1# show interfaces FastEthernet0/24 switchport
Name: Fa0/24
Switchport: Enable
Administrative Mode: static access
Operation Mode: static access
Administrative Trunking Encapsulation: dot1q
Operation Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Operation private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL

Protected: false

Voice VLAN: none (Inactive)
Aplliance trust: none
```

A. VLANs have not been created yet.
B. An IP address must be configured for the port.
C. The port is currently configured for access mode.
D. The correct encapsulation type has not been configured.
E. The no shutdown command has not been entered for the port.

Correct Answer: C
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 50
Refer to the exhibit.
Which switch provides the spanning-tree designated port role for the network segment that services the printers?



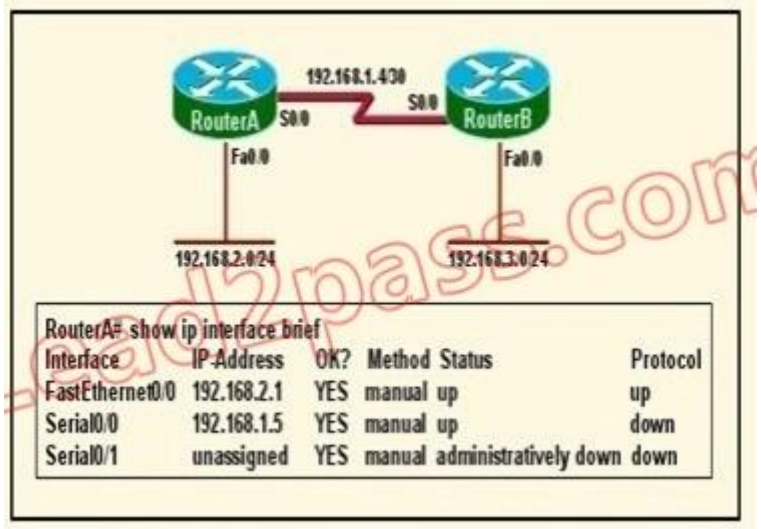
A. Switch1
B. SWitch2
C. Switch3
D. Switch4

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:
Printers are connected by hubs. Decide the switch that provides the spanning-tree designated port role between Switch3 and Switch4.

They have the same priority 32768. Compare their MAC addresses. Switch3 with a smaller MAC address will provide a designated port for printers.

QUESTION 51
An administrator issues the command ping 127.0.0.1 from the command line prompt on a PC. If a reply is received, what does this confirm?

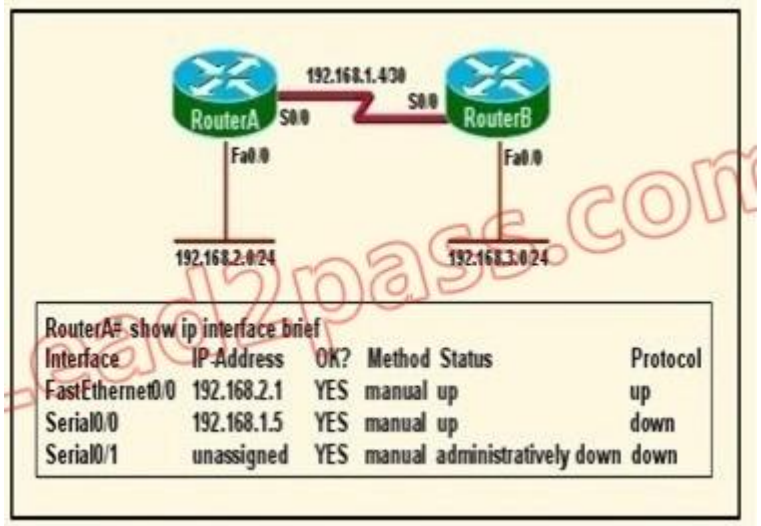


A. The PC has connectivity with a local host.
B. The PC has connectivity with a Layer 3 device.
C. The PC has a default gateway correctly configured
D. The PC has connectivity up to Layer 5 of the OSI model.
E. The PC has the TCP/IP protocol stack correctly installed.

Correct Answer: E
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 52
Refer to the exhibit.
Hosts in network 192.168.2.0 are unable to reach hosts in network 192.168.3.0.
Based on the output from RouterA, what are two possible reasons for the failure?(Choose two)



A. The cable that is connected to S0/0 on RouterA is faulty.
B. Interface S0/0 on RouterB is administratively down.
C. Interface S0/0 on RouterA is configured with an incorrect subnet mask.
D. The IP address that is configured on S0/0 of RouterB is not in the correct subnet.
E. Interface S0/0 on RouterA is not receiving a clock signal from the CSU/DSU.
F. The encapsulation that is configured on S0/0 of RouterB does not match the encapsulation that is configured on S0/0 of RouterA.

Correct Answer: EF
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 53
What is the default routing update period for RIPv2?

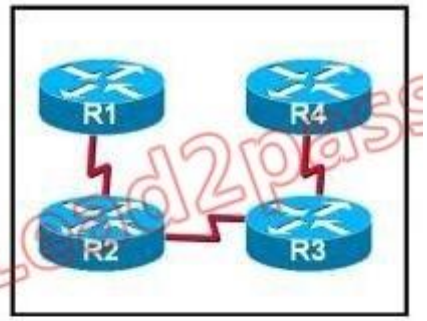
A. 15 seconds
B. 30 Seconds
C. 180 Seconds
D. 240 Seconds

Correct Answer: B
Section: Routing
Explanation

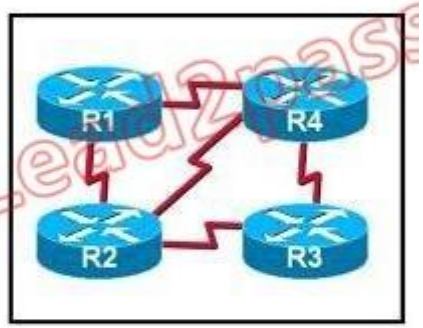
Explanation/Reference:
The fact that RIP only records one route for each destination requires RIP to actively maintain the integrity of the routing tables, which can be achieved by asking all active RIP routers to broadcast contents of routing table to adjacent RIP routers in a fixed time interval.
All received updated information automatically replaces the information included in the routing table. RIP maintains routing table depending on three timers.
Update timer.
Routing-timeout timer.
Routing-refresh timer.
Update timer can be used to update initialized routing table on a node. Each RIP node only uses one update timer. On the contrary, both routing-timeout timer and routing-refresh timer are that each router maintains one.
RIP router triggers update every 30 seconds. Update timer is used to record the amount of time. Once the time is up, RIP node will produce a series of datagrams including its own routing table.

QUESTION 54
A network administrator is designing a new corporate internetwork.
The corporation is concerned about downtime due to link failure and also about link costs.
Which topology will provide some redundancy to increase reliability for all sites but will cost less than a fully redundant topology?

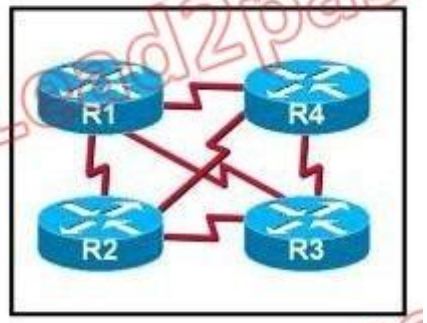
A.



B.



C.



D.

A. Exhibit A
B. Exhibit B
C. Exhibit C
D. Exhibit D

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 55
Which type of attack is characterized by flood of packet that are requesting a TCP connection to a server?

A. denial of service
B. brute force
C. reconnaissance
D. Trojan horse

Correct Answer: A
Section: Layer 3 Security
Explanation

Explanation/Reference:

Denial of service (DoS) and distributed denial of service (DDoS) attacks These are bad—pretty tough to get rid of too! But even hackers don't respect other hackers that execute them because, though nasty, they're really easy to accomplish. (This means that some 10-year-old could actually bring you to your knees, and that is just wrong!) Basically, a service is made unavailable by overwhelming the system that normally provides it. And there are several different flavors:

TCP SYN flood Begins when a client initiates a seemingly run-of-the-mill TCP connection and sends a SYN message to a server. The server predictably responds by sending a SYN-ACK message back to the client machine, which then establishes the connection by returning an ACK message. Sounds fine, but it's actually during this process—when the connection is only halfway open—that the victim machine is literally flooded with a deluge of half-open connections and pretty much becomes paralyzed.

QUESTION 56
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 (tm) 7200 Software (C7200-J-M), Experimental Version 11.3(19970915:164752)
[hampton-nitro-baseline 249]
Copyright (c) 1986-1997 by cisco Systems, Inc.
Compiled Wed 08-Oct-97 06:39 by hampton
Image text-base: 0x60008900, data-base: 0x60B98000

ROM: System Bootstrap, Version 11.1(11855) [beta 2], INTERIM SOFTWARE
BOOTFLASH: 7200 Software (C7200-BOOT-M), Version 11.1(472), RELEASE SOFTWARE (fc1)

Router1 uptime is 23 hours, 33 minutes
System restarted by abort at PC 0x6022322C at 10:50:55 PDT Tue Oct 21 1997
System image file is "tftp://172.16.1.129/hampton/nitro/c7200-j-mz"

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

<output omitted>

Configuration register is 0x2102
```

A. Router1 has specific boot system commands that instruct it to load IOS from 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 a image from TFTP for management purposes.

Correct Answer: AC
Section: Basic device operation
Explanation

Explanation/Reference:
When powered on, the router first checks its hardware via Power-On Self Test (POST). Then it checks the configuration register to identify where to load the IOS image from. In the output above we learn that the Configuration register value is 0×2102 so the router will try to boot the system image from Flash memory first.
But we also see a line “System image file is “tftp://112.16.1.129/hampton/nitro/c7200-j-mz”. Please notice that this line tells us the image file that the device last started. In this case it is from a TFTP server. Therefore we can deduce that the router could not load the IOS image from the flash and the IOS image has been loaded from TFTP server.
Note:
If the startup-config file is missing or does not specify a location, it will check the following locations for the IOS image:
+ Flash (the default location)
+ TFTP server
+ ROM (used if no other source is found) mode or the setup dialogue.

QUESTION 57
What is the purpose using the traceroute command?

A. to map all the devices on a network
B. to display the current TCP/IP configuration values
C. to see how a device MAC address is mapped to its IP address
D. to see the path a packet will take when traveling to a specified destination
E. to display the MTU values for each router in a specified network path from source to a 160 destination.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 58
Refer to the exhibit.
Given the output from the show ip eigrp topology command, which router is the feasible successor?

```
router#show ip eigrp topology 10.0.0.5 255.255.255.255
IP-EIGRP topology entry for 10.0.0.5/32  State is Passive, Query
origin flag is 1, 1 Successor(s), FD is 41152000
```

A.

```
10.1.0.1 (Serial0), from 10.1.0.1, Send flag is 0x0
      Composite metric is (46152000/41640000), Route is Internal
      Vector metric:
        Minimum bandwidth is 64 Kbit
        Total delay is 45000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 2
```

B.

```
10.0.0.2 (Serial0.1), from 10.0.0.2, Send flag is 0x0
      Composite metric is (53973248/128256), Route is Internal
      Vector metric:
        Minimum bandwidth is 48 Kbit
        Total delay is 25000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 1
```


C.

```
10.1.0.3 (Serial0), from 10.1.0.3, Send flag is 0x0
      Composite metric is (46866176/46354176), Route is Internal
      Vector metric:
        Minimum bandwidth is 56 Kbit
        Total delay is 45000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 2
```

A. Exhibit A
B. Exhibit B
C. Exhibit C
D. Exhibit D

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
The AD of the feasible successor must be smaller than the FD of successor. From the output provided in the exhibit, we know that the FD of successor is 41152000.
In the option A, the AD is 41640000
In the option B , the AD is 128256
In the option C, the AD is 46354176
In the option D, the AD is 46251776.
Through comparison, we know that only the AD in option B is smaller than FD, so B can be used as feasible successor.

Successor: A successor for a particular destination is a next hop router that satisfies these two conditions:

it provides the least distance to that destination
it is guaranteed not to be a part of some routing loop The first condition can be satisfied by comparing metrics from all neighboring routers that advertise that particular destination, increasing the metrics by the cost of the link to that respective neighbor, and selecting the neighbor that yields the least total distance. The second condition can be satisfied by testing a so-called Feasibility Condition for every neighbor advertising that destination. There can be multiple successors for a destination, depending on the actual topology.

The successors for a destination are recorded in the topology table and afterwards they are used to populate the routing table as next-hops for that destination. Feasible successor: A feasible successor for a particular destination is a next hop router that satisfies this condition:

it is guaranteed not to be a part of some routing loop This condition is also verified by testing the Feasibility Condition. Thus, every successor is also a feasible successor. However, in most references about EIGRP the term "feasible successor" is used to denote only those routers which provide a loop-free path but which are not successors (i.e. they do not provide the least distance). From this point of view, for a reachable destination there is always at least one successor, however, there might not be any feasible successors.

A feasible successor provides a working route to the same destination, although with a higher distance. At any time, a router can send a packet to a destination marked "Passive" through any of its successors or feasible successors without alerting them in the first place, and this packet will be

163

delivered properly. Feasible successors are also recorded in the topology table. AD : Advertised Distance (AD) is the distance to a particular destination as reported by a router to its neighbors. This distance is sometimes also called a Reported Distance and is equal to the current lowest total distance through a successor.

FD. A Feasible Distance (FD) is the lowest known distance from a router to a particular destination since the last time the route went from Active to Passive state. It can be expressed in other words as a historically lowest known distance to a particular destination. While a route remains in Passive state, the FD is updated only if the actual distance to the destination decreases, otherwise it stays at its present value. On the other hand, if a router needs to enter Active state for that destination, the FD will be updated with a new value after the router transitions back from Active to Passive state. This is the only case when the FD can be increased. The transition from Active to Passive state in effect marks the start of a new history for that route.

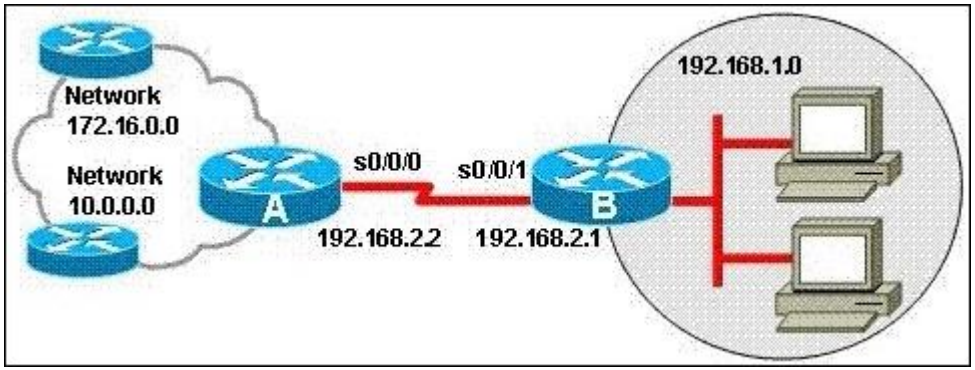
QUESTION 59
The output of the show frame-relay pvc command shows "PVC STATUS=INACTIVE". What does this mean?

A. The PVC is configured correctly and is operating normally, but no data packets have been detected for more than five minutes.
B. The PVC is configured correctly, is operating normally, and is no longer actively seeking the address the remote route.
C. The PVC is configured correctly, is operating normally, and is waiting for interesting to trigger a call to the remote router.
D. The PVC is configured correctly on the local switch, but there is a problem on the remote end of the PVC.
E. The PVC is not configured on the switch.

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 60
Refer to the exhibit.
Which command will create a default route on Router B to reach all networks beyond Router A?



A. ip route 0.0.0.0 0.0.0.0 192.168.2.2
B. ip route 192.168.1.0 255.255.255.0 192.168.2.1

C. ip route 192.168.1.0 255.255.255.0 s0/0/0
D. ip route 10.0.0.0 255.255.255.0 s0/0/0
E. ip route 0.0.0.0 255.255.255.0 192.168.2.2

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 61
Which of the following IP addresses can be assigned to host devices? (Choose two)

A. 205.7.8.32/27
B. 191.168.10.2/23
C. 127.0.0.1
D. 224.0.0.10
E. 203.123.45.47/28
F. 10.10.0.0/13

Correct Answer: BF
Section: IP addressing
Explanation

Explanation/Reference:
We can't assign the Broadcast address, Network ID, Loopback, Multicast address on host.

A is incorrect because it is a Network ID of /27 subnet
B is correct and can be assigned to host
C is incorrect because it is loopback address
D is incorrect because it is multicast address
E is incorrect because it is broadcast address of 202.123.45.32/28 subnet
F is correct because IP address from 10.10.0/13 can be assigned to host

QUESTION 62
What is a valid reason for a switch to deny port access to new devices when port security is enabled?

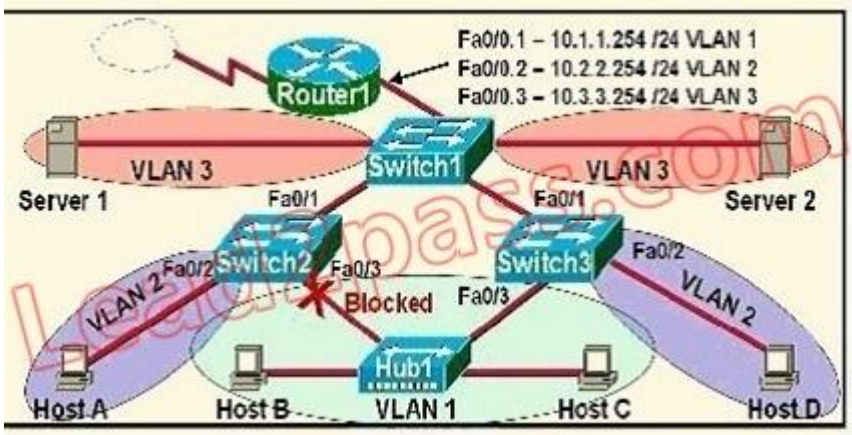
A. The denied MAC addresses have already been learned or configured on another secure interface in the same VLAN.
B. The denied MAC addresses are statically configured on the port.

C. The minimum MAC threshold has been reached.
D. The absolute aging times for the denied MAC addresses have expired.

Correct Answer: A
Section: Layer 2 Security
Explanation

Explanation/Reference:
When you are using port security, this is local to the switch.
If that MAC address is learned on another port "on the same switch", it will not be allowed in another port on that same switch.

QUESTION 63
Which statement is correct about the internetwork shown in the diagram?



A. Switch 2 is the root bridge.
B. Spanning Tree is not running.
C. Host D and Server 1 are in the same network.
D. No collisions can occur in traffic between Host B and Host C.
E. If Fa0/0 is down on Router1, Host A cannot access Server1.
F. If Fa0/1 is down on Switch3, Host C cannot access Server 2.

Correct Answer: E
Section: Routing
Explanation

Explanation/Reference:

QUESTION 64
Which statement is correct regarding the operation of DHCP?

A. A DHCP client uses a ping to detect address conficts.
B. A DHCP server uses a gratuitous ARP to detect DHCP clients.
C. A DHCP client uses a gratuitous ARP to detect a DHCP server.
D. If an address conflict is detected, the address is removed from the pool and an administrator must resolve the conflict.
E. If an address conflict is detected, the address is removed from the pool for an amount of time configurable by the administrator.
F. If an address conflict is detected, the address is removed from the pool and will not be reused until the server is rebooted.

Correct Answer: D
Section: IP Services
Explanation

Explanation/Reference:
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.

Reference:
http://www.cisco.com/en/US/docs/ios/12_1/iproute/configuration/guide/1cddhcp.html.

QUESTION 65
Refer to the diagram. What is the largest configuration file that can be stored on this router?

```
DD# show version
Cisco IOS Software, 1841 Software (C1841-IPBASE-M), Version 12.4(1a),
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Fri 27-May-05 12:32 by hqluong

ROM: System Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE (fc1)

N-East uptime is 5 days, 49 minutes
System returned to ROM by reload at 15:17:00 UTC Thu Jun 8 2006
System image file is "flash:c1841-ipbase-mz.124-1a.bin"

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0932W21Y
2 FastEthernet interfaces
2 Low-speed serial(sync/async) interfaces
DRAM configuration is 64 bits wide with parity disabled.
191K bytes of NVRAM.
31360K bytes of ATA CompactFlash (Read/Write)

Configuration register is 0x2102

DD#
```


A. 191K bytes
B. 16384K bytes
C. 31369K bytes
D. 114688K bytes

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
Non-volatile RAM (NVRAM) holds the router's startup configuration file. NVRAM contents are not lost when the router is powered down or reloaded.
In the diagram there are 191K of NVRAM available

QUESTION 66
Users have been complaining that their Frame Relay connection to the corporate site is very slow.
The network administrator suspects that the link is overloaded.
Based on the partial output of the

Router#show frame relay pvc

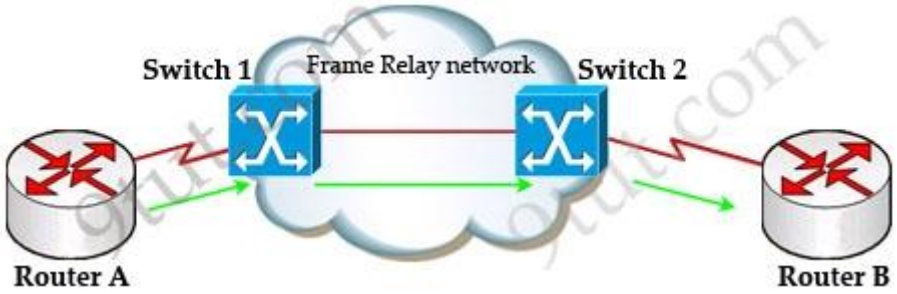
command shown in the graphic,
which output value indicates to the local router that traffic sent to the corporate site is experiencing congestion?

```
PVC Statistics for interface Serial0 (Frame Relay DTE)

          Active   Inactive   Deleted   Static
 Local      1        0         0         0
 Switched   0        0         0         0
 Unused     0        0         0         0

DLCI = 100, DLCI USAGE = LOCAL, PVC STATUS = ACTIVE, INTERFACE =
Serial0

  input pkts 1300        output pkts 1270        in bytes 22121000
  out bytes 21802000       dropped pkts 4          in FECN pkts 147
  in BECN pkts 192        out FECN pkts 259        out BECN pkts 214
  in DE pkts 0          out DE pkts 0
  out bcast pkts 107       out bcast bytes 19722
  pvc create time 00:25:50, last time pvc status changed 00:25:40
```


A. DLCI=100
B. last time PVC status changed 00:25:40
C. in BECN packets 192
D. in FECN packets 147
E. in DF packets 0

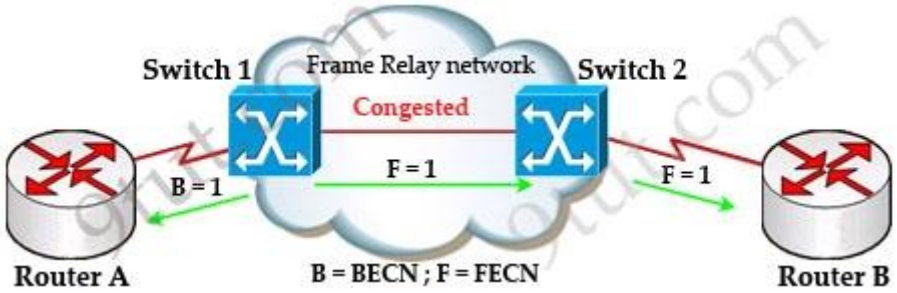
Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
First we should grasp the concept of BECN & FECN through an example:



Suppose Router A wants to send data to Router B through a Frame Relay network.
If the network is congested, Switch 1 (a DCE device) will set the FECN bit value of that frame to 1, indicating that frame experienced congestion in the path from source to destination.
This frame is forwarded to Switch 2 and to Router B (with the FECN bit = 1).

Switch 1 knows that the network is congesting so it also sends frames back to Router A with BECN bit set to 1 to inform that path through the network is congested.



In general, BECN is used on frames traveling away from the congested area to warn source devices that congestion has occurred on that path while FECN is used to alert receiving devices if the frame experiences congestion.
BECN also informs the transmitting devices to slow down the traffic a bit until the network returns to normal state.
The question asks “which output value indicates to the local router that traffic sent to the corporate site is experiencing congestion” which means it asks about the returned parameter which indicates congestion -> BECN.

QUESTION 67
A network interface port has collision detection and carrier sensing enabled on a shared twisted pair network.
From this statement, what is known about the network interface port?

A. This is a 10Mb/s switch port.
B. This is a 100Mb/s switch port.
C. This is an Ethernet port operating at half duplex.

D. This is an Ethernet port operating at full duplex.
E. This is a port on a network interface card in a PC.

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:
Half-duplex data transmission means that data can be transmitted in both directions on a signal carrier, but not at the same time which is why the network interface has CSMA/CD enabled.

QUESTION 68
A network administrator needs to allow only one Telnet connection to a router.
For anyone viewing the configuration and issuing the show run command, the password for Telnet access should be encrypted.
Which set of commands will accomplish this task?

A. service password-encryption
access-list1 permit 192.168.1.0.0.0.0.255
line vty0 4
login
password cisco
accessclass 1
B. enable password secret
line vty0
login
password cisco
C. service password-encryption
line vty0
login
password cisco
D. service password-encryption
line vty0 4
login
password cisco

Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:
All service password-encryption encrypted passwords

Line vty 0 is set at the same time there can be only one manager can even come in.
According to the meaning, the answer c is correct.

QUESTION 69
Refer to the exhibit. What is the meaning of the output MTU 1500 bytes?

```
Router#  show interfaces ethernet 0
Ethernet0 is up, line protocol is up
  Hardware is QUICC Ethernet, address is 00c0.ab73.dead (bia 0010.7bcc.7321)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
<output omitted>
Router#
```


A. The maximum number of bytes that can traverse this interface per second is 1500.
B. The minimum segment size that can traverse this interface is 1500 bytes.
C. The maximum segment size that can traverse this interface is 1500 bytes.
D. The minimum packet size that can traverse this interface is 1500 bytes.
E. The maximum packet size that can traverse this interface is 1500 bytes.
F. The maximum frame size that can traverse this interface is 1500 bytes.

Correct Answer: E
Section: How a network works
Explanation

Explanation/Reference:
The Maximum Transmission Unit (MTU) defines the maximum Layer 3 packet (in bytes) that the layer can pass onwards.

QUESTION 70
Refer to the exhibit.
A network administrator configures a new router and enters the copy starup- 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?

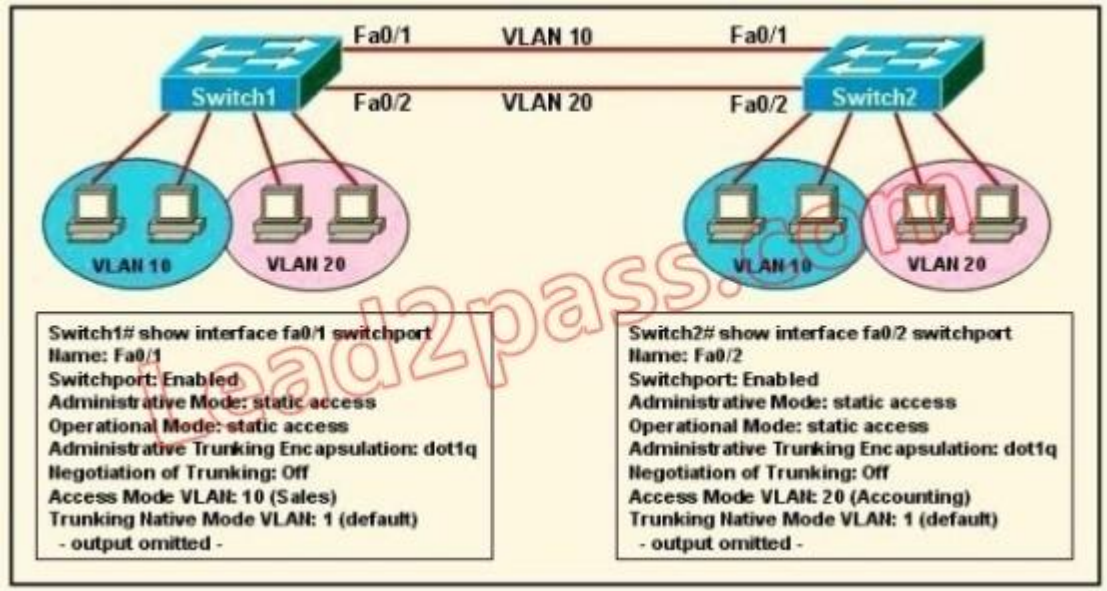
```
--- System Configuration Dialog ---

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/no]: 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.

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
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.

QUESTION 71
Refer to the exhibit. An organization connects two locations, supporting two VLANs, through two switches as shown.
Inter-VLAN communication is not required. The network is working properly and there is full connectivity.
The organization needs to add additional VLANs, so it has been decided to implement VTP.
Both switches are configured as VTP servers in the same VTP domain. VLANs added to Switch1 are not learned by Switch2.
Based on this information and the partial configurations in the exhibit, what is the problem?



A. Switch2 should be configured as a VTP client.
B. VTP is Cisco proprietary and requires a different trunking encapsulation.
C. A router is required to route VTP advertisements between the switches.
D. STP has blocked one of the links between the switches, limiting connectivity.
E. The links between the switches are access links.

Correct Answer: E
Section: Troubleshoot Switching
Explanation

Explanation/Reference:
A trunk link is a special connection; the key difference between an ordinary connection (access port) and a trunk port is that although an Access port is only in one VLAN at a time,
a trunk port has the job of carrying traffic for all VLANs from one switch to another. Any time you connect a switch to another switch and want to make sure that all VLANs will be
carried across the switches, you want to make it a trunk. To carry on the data frames for all VLANs, you need to create the Trunk link on switch port as well as you need to select the encapsulation type.
Switchport mode trunk
Switchport trunk encapsulation dot1q or isl
In the above topology the switches are connected on access ports. Making them trunk ports should solve this issue.

QUESTION 72
The administrator is unable to establish connectivity between two Cisco routers.
Upon reviewing the command output of both routers, what is the most likely cause of the problem?

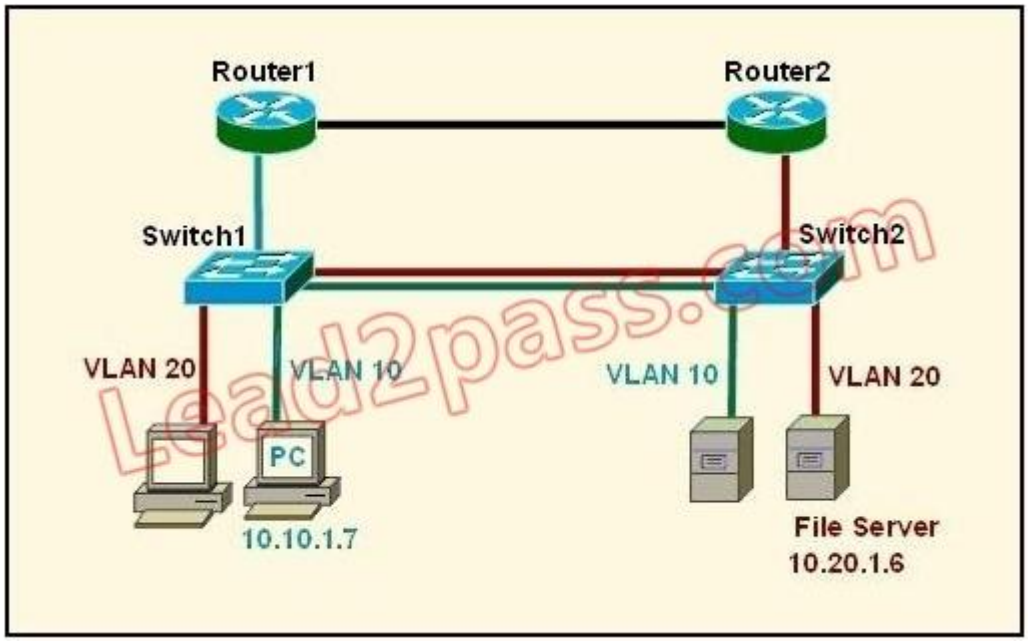
RtrA# show running-config	RtrB# show running-config
<some output text omitted>	<some output text omitted>
enable password cisco	enable password cisco1
!	
hostname RtrA	hostname RtrB
username RtrB password cisco	username RtrA password cisco1
!	!
interface serial 0/0	interface serial 0/0
ip address 10.0.8.1 255.255.248.0	ip address 10.0.15.2 255.255.248.0
encapsulation ppp	encapsulation ppp
ppp authentication chap	ppp authentication chap

A. Authentication needs to be changed to PAP for both routers.
B. Serial ip addresses of routers are not on the same subnet.
C. Username/password is incorrectly configured.
D. Router names are incorrectly configured.

Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:
passwords don't match: problem one side is cisco, and the other side is cisco1, there will be problems in the chap authentication

QUESTION 73
Refer to the exhibit.
The network manager is evaluating the efficiency of the current network design. RIPv2 is enabled on all Layer 3 devices in the network.
What network devices participate in passing traffic from the PC at 10.10.1.7 to the File Server at 10.20.1.6 in the order that they will forward traffic from source to destination?



A. Switch1, Switch2
B. Switch 1, Router1, Switch1, Switch2
C. Switch1, Router1, Router2, Switch2
D. Switch1, Switch2, Router2, Switch2

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 74
Acknowledgements, sequencing, and flow control are characteristics of which OSI layer?

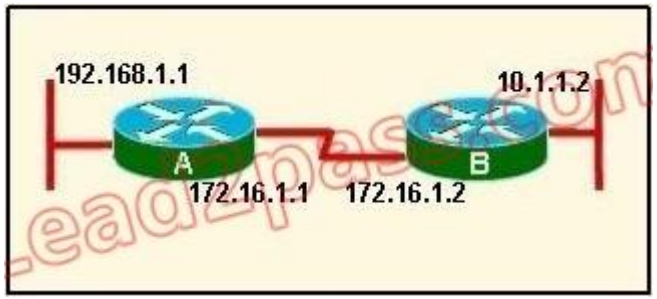
A. Layer2
B. Layer3
C. Layer4
D. Layers

E. Layet6
F. Layer7

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:
A reliable Transport layer connection uses acknowledgements to make sure all data is transmitted and received reliably. A reliable connection is defined by a vitrual circuit that uses acknowledgements, sequencing, and flow control, which are characteristics of the Transport layer(layer4).

QUESTION 75
Refer to the exhibit.
Router A has interfaces with addresses 192.168.1.1 and 172.16.1.1.
Router B,which is connected to router A over a serial link, has interfaces with address 172.16.1.2 and 10.1.1.2.



Which sequence of commands will configure RIPv2 on router B?

A. B(config)# router rip
B(config-router)#version 2
B(config-router)# network 172.16.0.0
B(config-router)# network 10.0.0.0
B(config-router)# end
B. B(config)# router rip 2
B(config-router)# network 172.16.0.0
B(config-router)# network 10.0.0.0
B(config-router)# end
C. B(config)# router rip
B(config-router)#version 2
B(config-router)# network 172.16.0.0
B(config-router)#network 192.168.1.0

B(config-router)#end

D. B(config)# router rip version 2
B(config-router)# network 172.16.0.0
B(config-router)# network 10.0.0.0
B(config-router)#end

Correct Answer: A
Section: Routing
Explanation

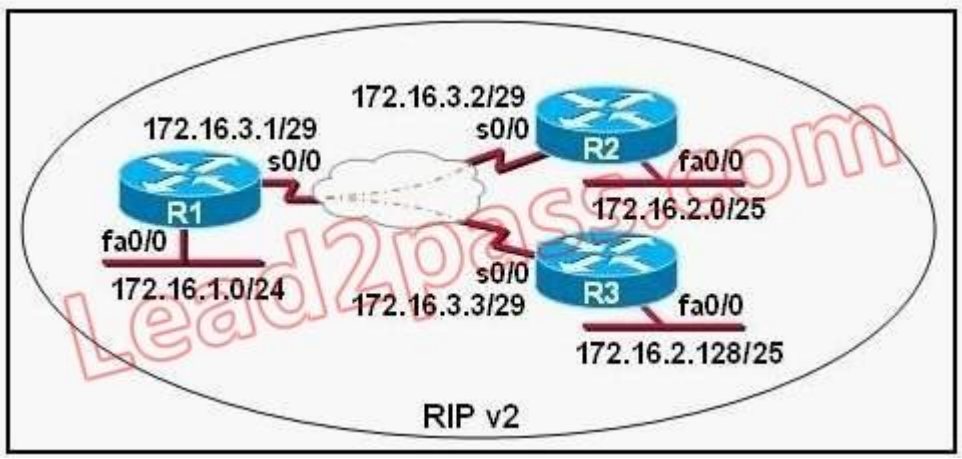
Explanation/Reference:
The Routing Information Protocol (RIP) is a relatively old, but still commonly used, interior gateway protocol (IGP) created for use in small, homogeneous networks. It is a classical distance-vector routing protocol. RIP is documented in RFC 1058.
RIP uses broadcast User Datagram Protocol (UDP) data packets to exchange routing information. The Cisco IOS software sends routing information updates every 30 seconds; this process is termed advertising. If a router does not receive an update from another router for 180 seconds or more, it marks the routes served by the non-updating router as being unusable. If there is still no update after 240 seconds, the router removes all routing table entries for the non-updating router.
The metric that RIP uses to rate the value of different routes is hop count. The hop count is the number of routers that can be traversed in a route. A directly connected network has a metric of zero; an unreachable network has a metric of 16. This small range of metrics makes RIP an unsuitable routing protocol for large networks.
If the router has a default network path, RIP advertises a route that links the router to the pseudonetwork 0.0.0.0. The network 0.0.0.0 does not exist; RIP treats 0.0.0.0 as a network to implement the default routing feature. The Cisco IOS software will advertise the default network if a default was learned by RIP, or if the router has a gateway of last resort and RIP is configured with a default metric.
RIP sends updates to the interfaces in the specified networks. If an interface's network is not specified, it will not be advertised in any RIP update.
Cisco's implementation of RIP Version 2 supports plain text and MD5 authentication, route summarization, classless interdomain routing (CIDR), and variable-length subnet masks (VLSMs).

Enable RIP
To enable RIP, use the following commands, starting in global configuration mode:
Step Command Purpose
1 router rip Enable a RIP routing process,which places you in router configuration mode.
2 network Associate a network with a RIP routing process.
network-number

Because RIP is normally a broadcast protocol, in order for RIP routing updates to reach nonbroadcast networks, you must configure the Cisco IOS software to permit this exchange of routing information. To do so, use the following command in router configuration mode:
Command Purpose neighbor ip-address Define a neighboring router with which to exchange routing information.

By default, the software receives RIP Version 1 and Version 2 packets, but sends only Version 1 packets. You can configure the software to receive and send only Version 1 packets. Alternatively, you can configure the software to receive and send only Version 2 packets. To do so, use the following command in router configuration mode:
Command Purpose

QUESTION 76
Refer to the exhibit. S0/0 on R1 is configured as a multipoint interface to communicate with R2 and R3 in this hub-and-spoke Frame Relay topology. While testing this configuration, a technician notes that pings are successful from hosts on the 172.16.1.0/24 network to hosts on both the 172.16.2.0/25 and 172.16.2.128/25 networks.
However, pings between hosts on the 172.16.2.0/25 and 172.16.2.128/25 networks are not successful. What could explain this connectivity problem?



A. The RIP v2 dynamic routing protocol cannot be used across a Frame Relay network.
B. The ip subnet-zero command has been issued on the R1 router.
C. Split horizon is preventing R2 from learning about the R3 networks and R3 from learning about the R2 networks.
D. The 172.16.3.0/29 network used on the Frame Relay links is creating a discontiguous network between the R2 and R3 router subnetworks.
E. The 172.16.2.0/25 and 172.16.2.128/25 networks are overlapping networks that can be seen by R1, but not between R2 and R3.

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:
Under normal circumstances, the router that is connected to the broadcast IP network and uses the distance vector routing protocol will use split horizon mechanism to avoid routing loop.
Split horizon is a technology to avoid routing loop and speed up the routing convergence. The router may receive the routing information sent by itself which is useless, split horizon will not
advertise the routing update information back received from the terminal , while it will advertise those routes that will not be cleared because of the endless counting.
It can be simply interpreted that the route learnt by a router from one interface will not be sent through the same interface . For the non-broadcast network (such as Frame -Relay and High Speed Switched Data Services),
the effect of split horizon is not ideal. So, we can use the following commands to disable or enable split horizon.

ip split-horizon to enable split horizon

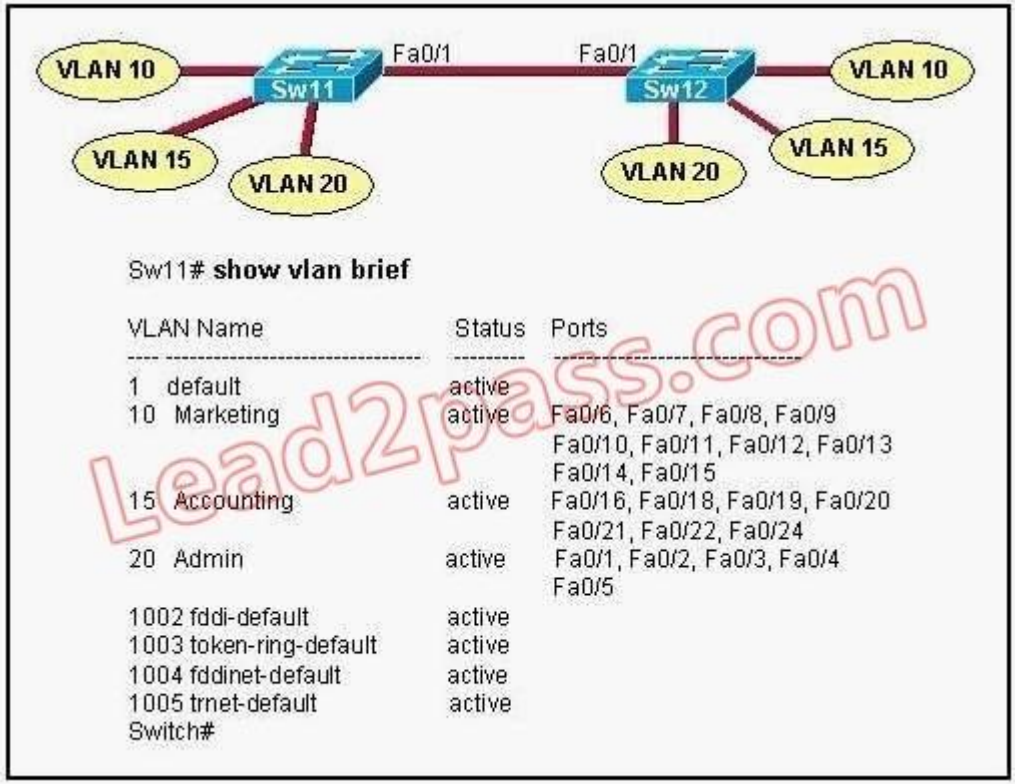
QUESTION 77
A network administrator is verifying the configuration of a newly installed host by establishing an FTP connection to a remote server.
What is the highest layer of the protocol stack that the network administrator is using for this operation?

A. application
B. presentation
C. session
D. transport
E. internet
F. data link

Correct Answer: A
Section: IP Services
Explanation

Explanation/Reference:
FTP belongs to Application layer and it is also the highest layer of the OSI model

QUESTION 78
Refer to the topology and router output shown in the exhibit. A technician is troubleshooting host connectivity issues on the switches.
The hosts in VLANs 10 and 15 on Sw11 are unable to communicate with hosts in the same VLANs on Sw12. Hosts in the Admin VLAN are able to communicate.
The port-to-VLAN assignments are identical on the two switches. What could be the problem?



A. The Fa0/1 port is not operational on one of the switches.
B. The link connecting the switches has not been configured as a trunk.
C. At least one port needs to be configured in VLAN 1 for VLANs 10 and 15 to be able to communicate.
D. Port FastEthernet 0/1 needs to be configured as an access link on both switches.
E. A router is required for hosts on SW11 in VLANs 10 and 15 to communicate with hosts in the same VLAN on Sw1 2.

Correct Answer: B
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 79

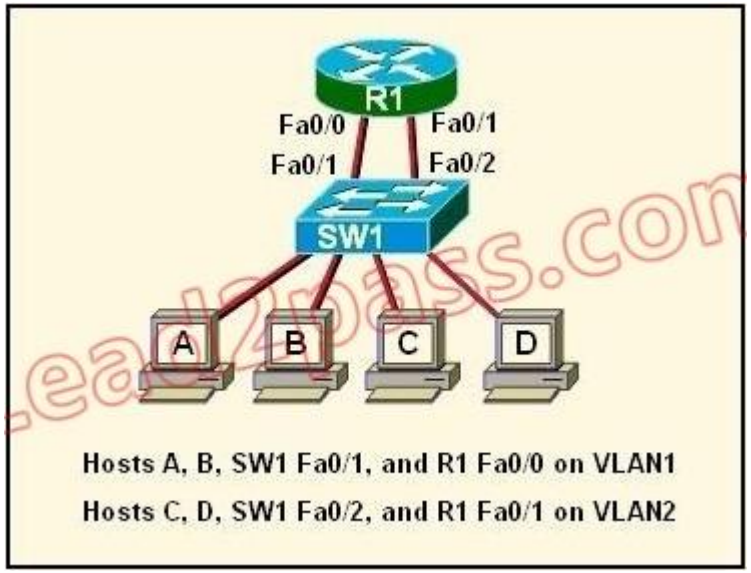
You have finished physically installing an access point on the ceiling at your office.
At a minimum, which parameter must be configured on the access point in order to allow a wireless client to operate on it?

A. AES
B. PSK
C. SSID
D. tkip
E. wep

Correct Answer: C
Section: WLAN
Explanation

Explanation/Reference:

QUESTION 80
Refer to the exhibit. A network administrator needs to add a new VLAN, named VLAN3, to the network shown.
Unfortunately, there is not another FastEthernet interface on R1 to connect to the new VLAN3.
Which approach is the most cost effective solution for this problem?



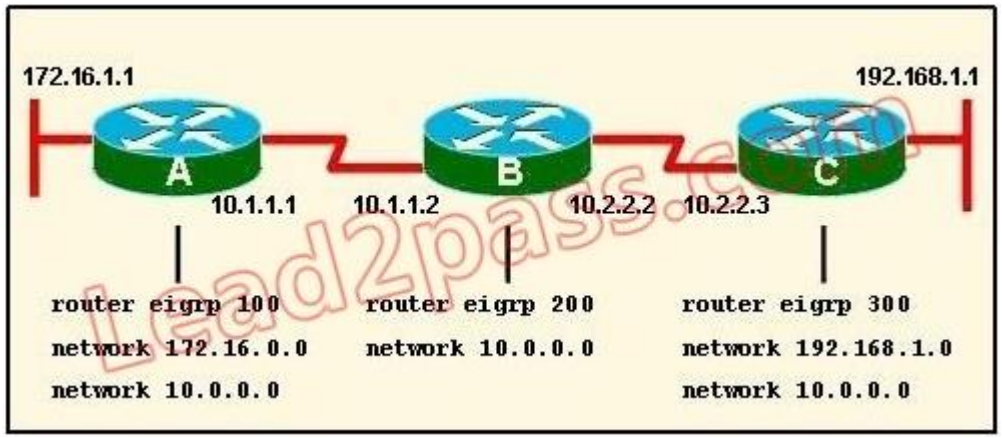
A. Purchase a new FastEthernet module and install it on R1.

B. Replace R1 with a new router that has at least three FastEthernet interfaces.
C. Configure a second switch to support VLAN3 with a VLAN trunk between SW1 and the new switch.
D. Configure a single VLAN trunk between R1 and SW1 and configure a subinterface on the R1 interface for each VLAN.
E. Connect another router to a serial interface of R1. Use a FastEthernet interface on the new router for VLAN3.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 81
Refer to the exhibit.
When running EIGRP, what is required for RouterA to exchange routing updates with RouterC?



A. As numbers must be changed to match on all the routers
B. Loopback interfaces must be configured so a DR is elected
C. The no auto-summary command is needed on Router A and Router C
D. Router B needs to have two network statements, one for each connected network

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:
This question is to examine the understanding of the interaction between EIGRP routers.
The following information must be matched so as to create neighborhood.
EIGRP routers to establish, must match the following information:
1. AS Number;
2. K value.

QUESTION 82
Refer to the exhibit.
The two exhibit devices are the only Cisco devices on the network. The serial network between the two devices has a mask of 255.255.255.252.
Given the output that is shown, what three statements are true of these devices? (Choose three.)

A. The Manchester serial address is 10.1.1.1.
B. The Manchester serial address is 10.1.1.2.
C. The London router is a Cisco 2610.
D. The Manchester router is a Cisco 2610.
E. The CDP information was received on port Serial0/0 of the Manchester router.
F. The CDP information was sent by port Serial0/0 of the London router.

Correct Answer: ACE
Section: Basic device operation

Explanation

Explanation/Reference:
From the output, we learn that the IP address of the neighbor router is 10.1.1.2 and the question stated that the subnet mask of the network between two router is 255.255.255.252. Therefore there are only 2 available hosts in this network (2(2) – 2 = 2). So we can deduce the ip address (of the serial interface) of

Manchester router is 10.1.1.1 -> A is correct

The platform of the neighbor router is cisco 2610, as shown in the output -> C is correct

Maybe the most difficult choice of this question is the answer E or F. Please notice that "**Interface**" refers to the local port on the local router, in this case it is the port of Manchester router, and "Port ID (outgoing port)" refers to the port on the neighbor router -> E is correct.

QUESTION 83
How is an EUI-64 format interface ID created from a 48-bit MAC address?

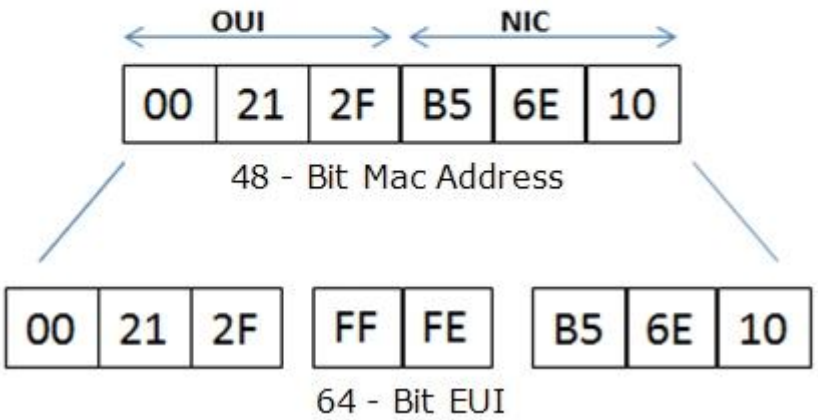
A. by appending 0xFF to the MAC address
B. by prefixing the MAC address with 0xFFEE
C. by prefixing the MAC address with 0xFF and appending 0xFF to it
D. by inserting 0xFFFE between the upper three bytes and the lower three bytes of the MAC address
E. by prefixing the MAC address with 0xF and inserting 0xFafter each of its first three bytes

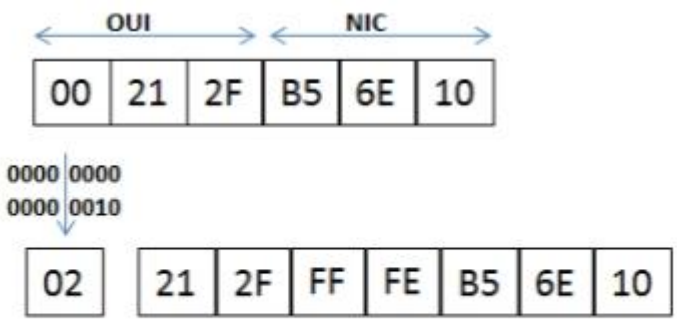
Correct Answer: D
Section: How a network works
Explanation

Explanation/Reference:

Extended Unique Identifier (EUI), as per RFC2373, allows a host to assign itesIf a unique 64-Bit IP Version 6 interface identifier (EUI-64). This feature is a key benefit over IPv4 as it eliminates the need of manual configuration or DHCP as in the world of IPv4. The IPv6 EUI-64 format address is obtained through the 48-bit MAC address. The Mac address is first separated into two 24-bits, with one being OUI (Organizationally Unique Identifier) and the other being NIC specific. The 16-bit 0xFFFE is then inserted between these two 24-bits to for the 64-bit EUI address. IEEE has chosen FFFE as a reserved value which can only appear in EUI-64 generated from the an EUI-48 MAC address.

Here is an example showing how a the Mac Address is used to generate EUI.





Once the above is done, we have a fully functional EUI-64 format address.

QUESTION 84
Refer to the exhibit.
After a RIP route is marked invalid on Router_1, how much time will elapse before that route is removed from the routing table?

```
Router_1# show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 8 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  <output omitted>

Router_1#
```


A. 30 seconds
B. 60 seconds
C. 90 seconds
D. 180 seconds
E. 240 seconds

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 85
Refer to the exhibit.
A network associate has configured the internetwork that is shown in the exhibit, but has failed to configure routing properly.
Which configuration will allow the hosts on the Branch LAN to access resources on the HQ LAN with the least impact on router processing and WAN bandwidth?

A. HQ(config)# router rip
HQ(config-router)# network 192.168.2.0
HQ(config-router)# network 172.16.0.0
Branch(config)# router rip
Branch (config-router)# network 192.168.1.0
Branch (config-router)# network 192.168.2.0

B. HQ(config)# router eigrp 56
HQ(config-router)# network 192.168.2.4
HQ(config-router)# network 172.16.25.0
Branch(config)# router eigrp 56
Branch (config-router)# network 192.168.1.0
Branch (config-router)# network 192.168.2.4

C. HQ(config)# router ospf 1
HQ(config-router)# network 192.168.2.4 0.0.0.3 area 0
HQ(config-router)# network 172.16.25.0 0.0.0.255 area 0
Branch(config)# router ospf 1
Branch (config-router)# network 192.168.1.0 0.0.0.255 area 0
Branch (config-router)# network 192.168.2.4 0.0.0.3 area 0

D. HQ(config)# ip route 192.168.1.0 255.255.255.0 192.168.2.5
Branch(config)# ip route 172.16.25.0 255.255.255.0 192.168.2.6

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
Static routes can be used to allow Branch LAN to access resources on the HQ LAN with the least impact on router processing and WAN bandwidth. Compared with dynamic routes, static routes have the following advantages:
1. Control
2. Easy configuration
3. Less WAN bandwidth

QUESTION 86
Which additional configuration step is necessary in order to connect to an access point that has SSID broadcasting disabled?

A. Set the SSID value in the client software to public.
B. Configure open authentication on the AP and the client.
C. Set the SSID value on the client to the SSID configured on the AP.
D. Configure MAC address filtering to permit the client to connect to the AP.

Correct Answer: C
Section: WLAN
Explanation

Explanation/Reference:

QUESTION 87
What is one reason that WPA encryption is preferred over WEP?

A. A WPA key is longer and requires more special characters than the WEP key.
B. The access point and the client are manually configured with different WPA key values.
C. WPA key values remain the same until the client configuration is changed.
D. The values of WPA keys can change dynamically while the system is used.

Correct Answer: D
Section: WLAN
Explanation

Explanation/Reference:
WEP is security mechanism that encrypts grouping information between Access Point and Client in "RC4" mode. Password is easily cracked.
The encryption key that WEP uses includes the 40 bits (104 bits) general key that both receiver and sender predefined, and the 24 bits encryption key (IV key) that sender defined for each group.
However, in order to tell communication object the IV key, IV key is embedded in the grouping information directly and sent out without encryption.
If wiretapping, collecting some certain IV key grouping information and then analyze, even secret general key will be worked out.

QUESTION 88
A network administrator is troubleshooting an EIGRP problem on a router and needs to confirm the IP addresses of the devices with which the router has established adjacency.
The retransmit interval and the queue counts for the adjacent routers also need to be checked.
What command will display the required information?

A. Router# show ip eigrp adjacency
B. Router# show ip eigrp topology
C. Router#show ip eigrp interfaces
D. Router# show ip eigrp neighbors

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

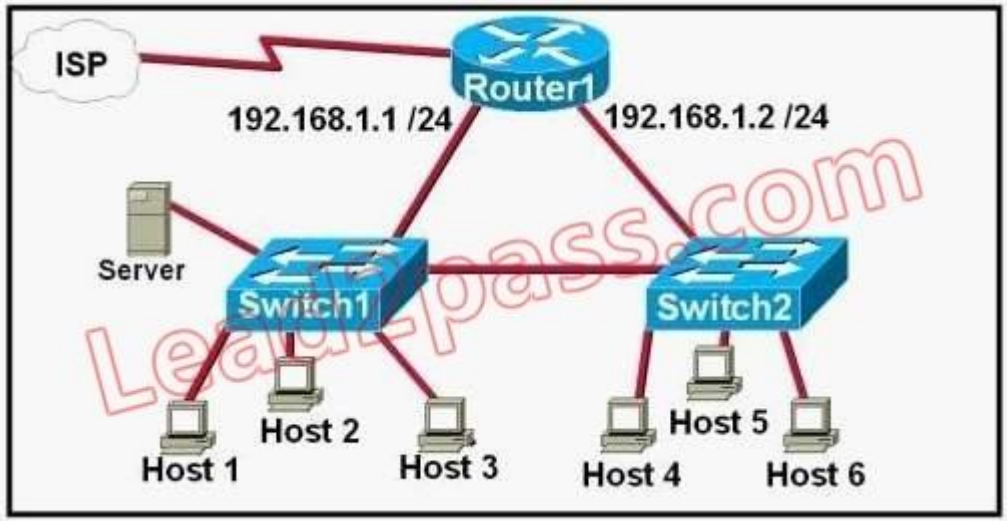
QUESTION 89
All WAN links inside the ABC University network use PPP with CHAP for authentication security.
Which command will display the CHAP authentication process as it occurs between two routers in the network?

A. show CHAP authentication
B. show interface serial0
C. debug PPP authentication
D. debug CHAP authentication
E. show ppp authentication chap

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:

QUESTION 90
Refer to the exhibit.
A network technician is asked to design a small network with redundancy.
The exhibit represents this design, with all hosts configured in the same VLAN.
What conclusions can be made about this design?



A. This design will function as intended.
B. Spanning-tree will need to be used.
C. The router will not accept the addressing scheme.
D. The connection between switches should be a trunk.
E. The router interfaces must be encapsulated with the 802.1Q protocol

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

Exam E

QUESTION 1
What can a network administrator utilize by using PPP Layer 2 encapsulation? (choose three)

A. quality of service
B. compression
C. authentication
D. VLAN support
E. multilink support
F. Quality of service

Correct Answer: BCE
Section: WAN
Explanation

Explanation/Reference:
Compared to HDLC ,PPP has more features.
Similar to HDLC, PPP defines a type of frame and how to communicate between PPP devices including the multiplexed networks and the data link layer protocols cross the same link.
However, PPP has more characteristics as follows:
Perform the dynamic configuration of the link.
Allow for authentication.
Compress packet header.
Test the quality of the link.
Complete detecting and troubleshooting.
Allow for combining many PPP physical links into a single logical link.
PPP has 3 main components.
1.frame format
2.LCP(Link Control Protocol)

QUESTION 2
Refer to the exhibit.
A router boots to the prompt shown in the exhibit. What does this signify .and how should the network administrator respond?

```
rommon 1>
```

A. This prompt signifies that the configuration file was not found in NVRAM. The network administrator should follow the prompts to enter a basic

configuration.

B. This prompt signifies that the configuration file was not found in flash memory. The network administrator should use TFTP to transfer a configuration file to the router.

C. This prompt signifies that the IOS image in flash memory is invalid or corrupt. The network administrator should use TFTP to transfer an IOS image to the router.

D. This prompt signifies that the router could not authenticate the user. The network administrator should modify the IOS mage and reboot the router.

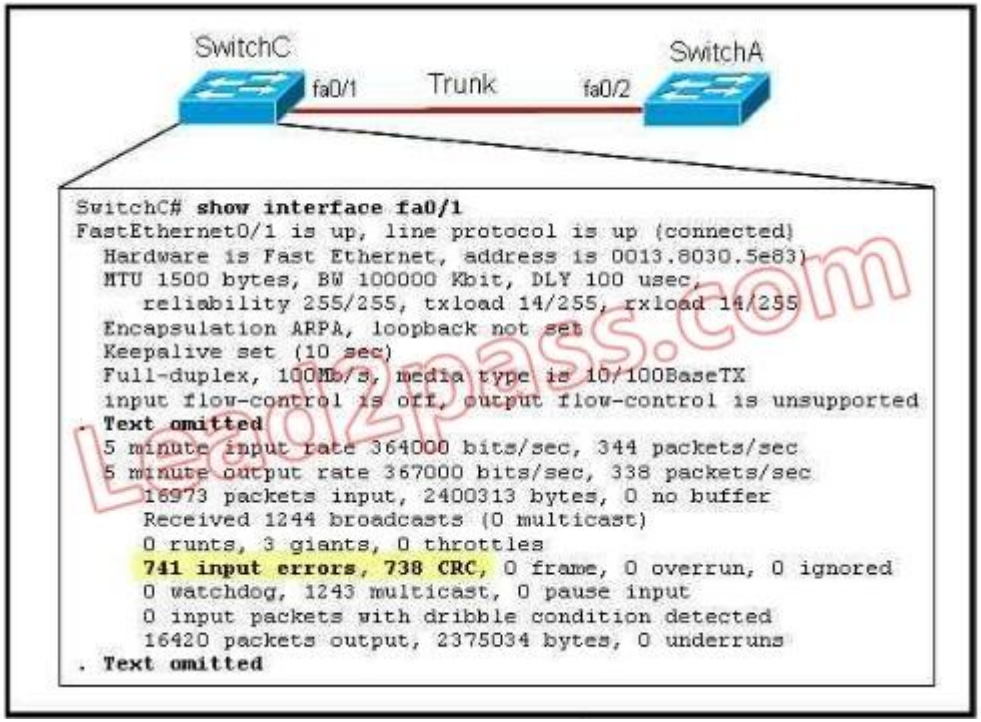
Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:
If a Cisco router boots in ROMmon mode, it means:

+ The value of the configuration register is set to XXX**0** (the boot field – fourth bit – is 0)
+ The router is unable to locate a valid Cisco IOS software image (you can use the “dir flash:” command in ROMmon mode to look for the IOS in the Flash then try to boot that flash with the “boot flash:” command).

If the IOS image is invalid or corrupted, the fastest way to re-install a new Cisco IOS software image on the router is to copy a new one from TFTP (with “tftpdnld” command).

QUESTION 3
Refer to the exhibit.
Given this output for SWITCHC, what should the network administrator’s next action be?



A. Check the trunk encapsulation mode for SWITCHC's fa0/1 port.
B. Check the trunk encapsulation mode for SWITCHA's fa0/2 port.
C. Check the duplex mode for SWITCHC's fa0/1 port.
D. Check the duplex mode for SWITCHA's fa0/2 port.

Correct Answer: D
Section: Troubleshoot Switching
Explanation

Explanation/Reference:
When operating at full-duplex, FCS, cyclic redundancy checks (CRC), alignment errors, and runt counters are probably minimal.
If the link operates at full-duplex, the collision counter is not active. If the FCS, CRC, alignment, or runt counters increment, check for a duplex mismatch.
Duplex mismatch is a situation in which the switch operates at full-duplex and the connected device operates at half-duplex, or the other way around.
The result of a duplex mismatch is extremely slow performance, intermittent connectivity, and loss of connection.
Other possible causes of data link errors at full-duplex are bad cables, a faulty switch port, or NIC software or hardware issues.

QUESTION 4
Refer to the exhibit.
Which of these statements correctly describes the state of the switch once the boot process has been completed?

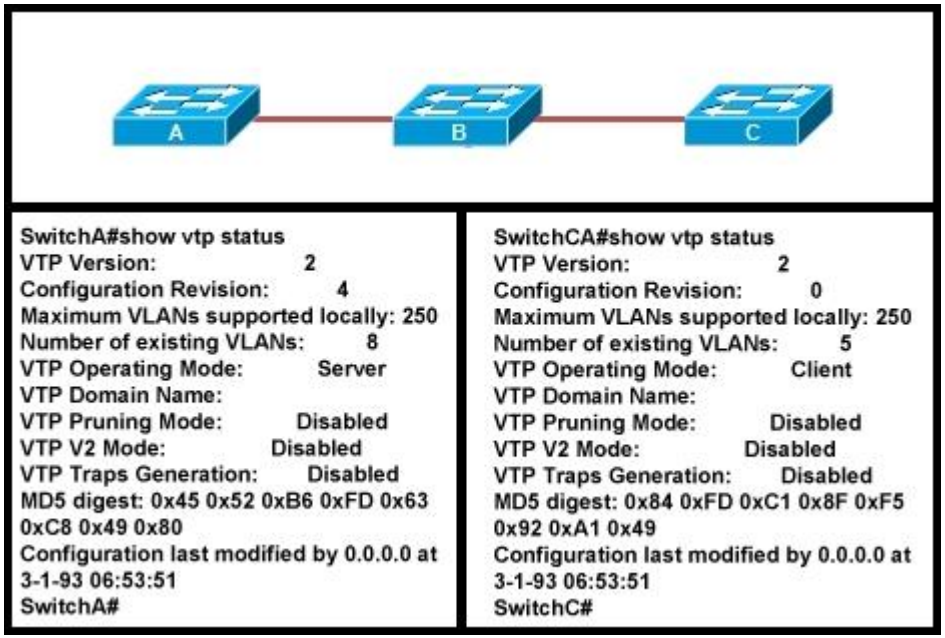
```
00:00:39: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to down
00:00:40: %SPANTREE-5-EXTENDED_SYSID: Extended SysId enabled for type vlan
00:00:42: %SYS-5-CONFIG_I: Configured from memory by console
00:00:42: %SYS-5-RESTART: System restarted --
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 12.2(25)SEE2, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2006 by Cisco Systems, Inc.
Compiled Fri 28-Jul-06 11:57 by yenanh
00:00:44: %LINK-5-CHANGED: Interface Vlan1, changed state to administratively down
00:00:44: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
00:00:44: %LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to up
00:00:44: %LINK-3-UPDOWN: Interface FastEthernet0/11, changed state to up
00:00:45: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
00:00:45: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
00:00:45: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up
00:00:48: %LINK-3-UPDOWN: Interface FastEthernet0/12, changed state to up
00:00:49: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to up
```


A. As FastEthernet0/12 will be the last to come up.it will not 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.

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
Notice the first 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.

QUESTION 5
Refer to the exhibit. The three Catalyst 2950 switches have been configured for VTP.
Trunking is properly configured and operational on all three switches.
The show vlan command issued on SwitchC displays only the default VLANs.
Based on the output from the show vtp status commands shown in the exhibit, why is this true?



A. Only the default VLANs are configured on SwitchA.
B. SwitchA does not have a VTP domain name configured.
C. VTP pruning needs to be enabled on SwitchA.
D. SwitchC needs to have the VTP domain name configured.
E. SwitchB is in transparent mode.

Correct Answer: B
Section: VTP

Explanation

Explanation/Reference:

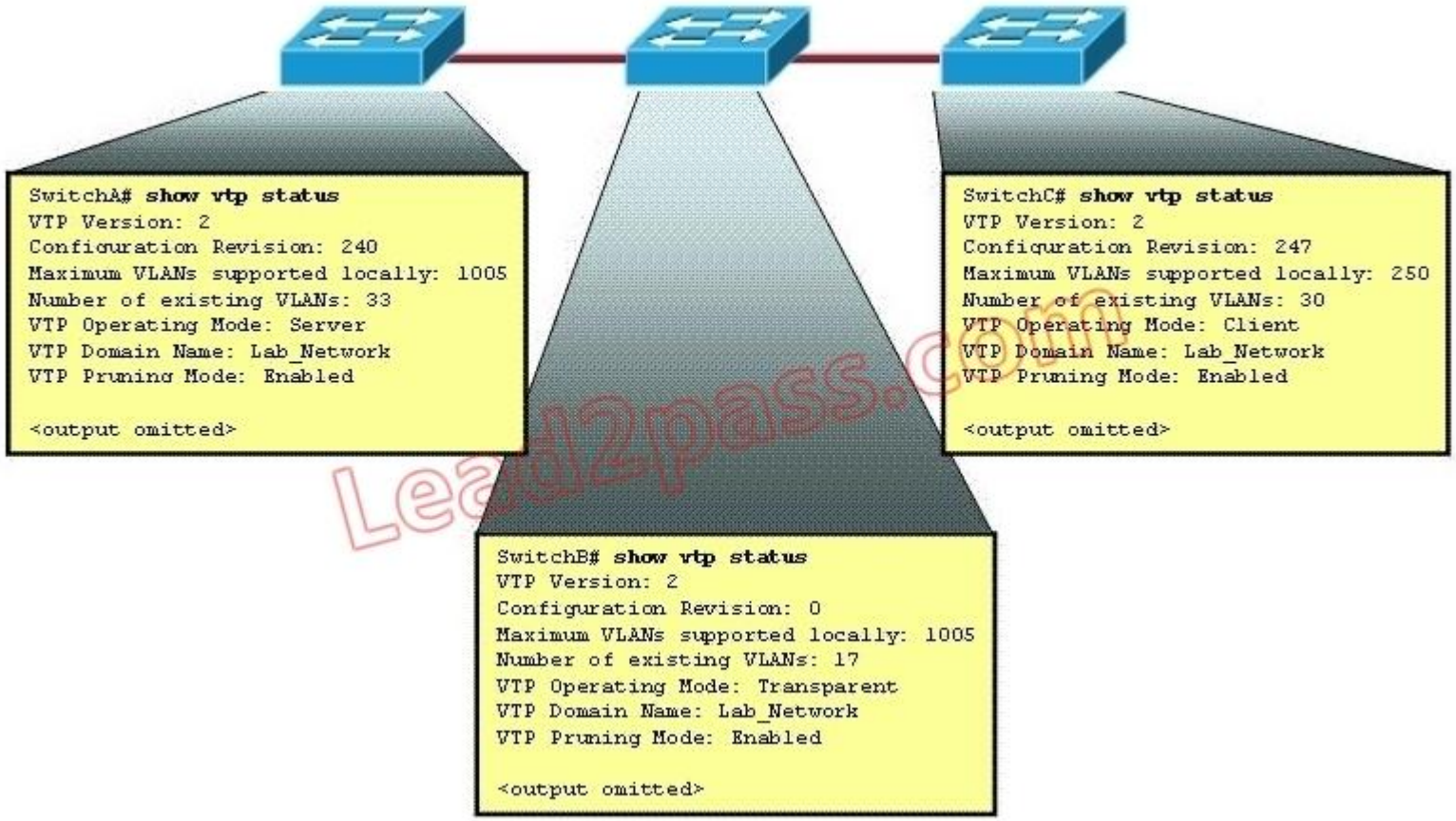
QUESTION 6
How many hosts and submasks in 172.16.0.0/23 subnetted /27

A. 8 subnet 32hosts
B. 8 subnet 31 hosts
C. 16 subnet 30hosts
D. 16 subnet 32hosts

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
A network mask of /23 will provide for up to 512 IP addresses.
A /27 will provide for up to 32 IP address (30 usuable hosts).
512/32 = 16 different network subnets.

QUESTION 7
Refer to the exhibit.
The network administrator has discovered that the VLAN configuration of SwitchC is not synchronized with the rest of the switched network.
Why is SwitchC not receiving VTP updates?



A. SwitchA supports a greater number of VLANs than does SwitchC.
B. SwitchC has fewer existing VLANs than does SwitchA.
C. SwitchC has a revision number higher than that being advertised.
D. SwitchC should be operating in VTP server mode to receive VTP updates.
E. SwitchB is not relaying VTP advertisements to SwitchC.
F. SwitchB should be operating in VTP server or client mode to relay VTP updates.

Correct Answer: C
Section: VTP

Explanation

Explanation/Reference:
VTP revision number is to indicate the modified version that VTP configured is a 32-bit value, which begins with 0. If VLAN information changes, the revision number will plus 1 until 4294967295.
Then circulate and then return 0, re-start and increase. When the monitoring switch receives notices bigger than the revision number they stored, this notice will override the stored VLAN information,
and thus it is very important to set the added revision number of the switch to default 0. To set the revision number to default 0, the following methods may be useD.
1> change the mode of switch VTP to transparent mode, and then return to the server mode
2> make changes to switch VTP domain name, and revert to the original domain name

Reference.
http://www.cisco.com/en/US/tech/tk389/tk689/technologies_tech_note09186a0080094c52.shtml

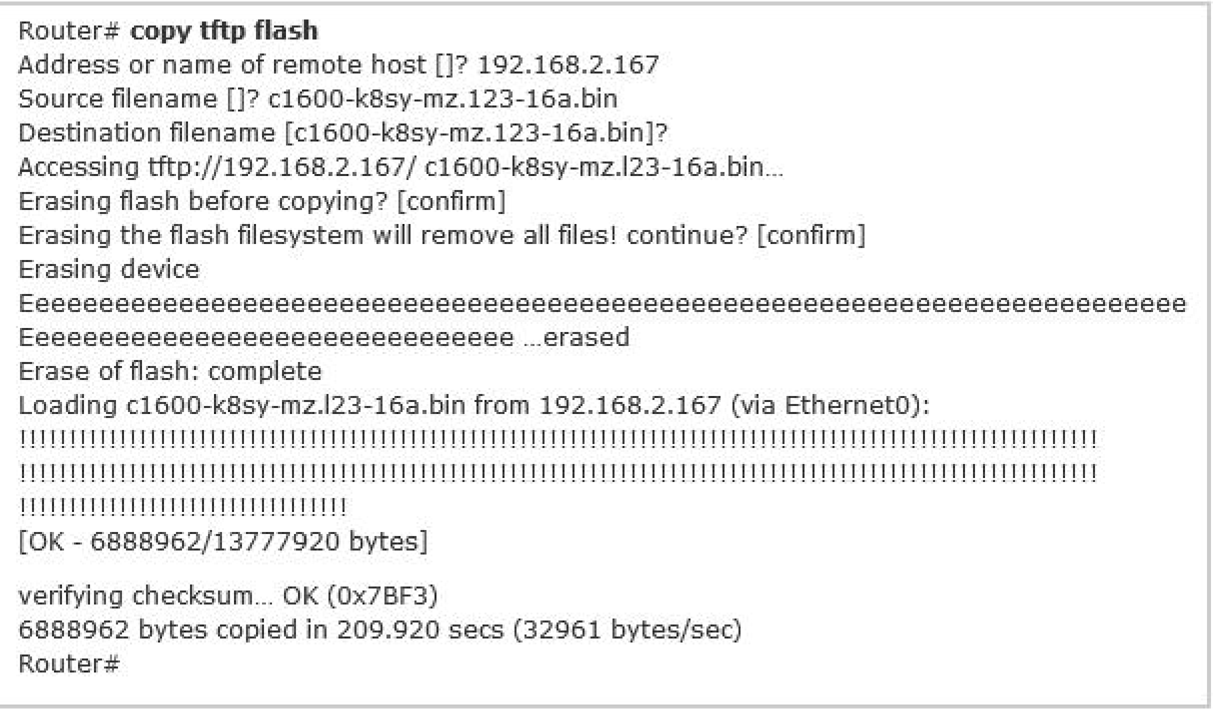
QUESTION 8
How many subnets can be gained by subnetting 172.17.32.0/23 into a /27 mask, and how many usable host addresses will there be per subnet?

A. 8 subnets, 31 hosts
B. 8 subnets, 32 hosts
C. 16 subnets, 30 hosts
D. 16 subnets, 32 hosts
E. A Class B address can't be subnetted into the fourth octet.

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:
A network mask of /23 will provide for up to 512 IP addresses. A /27 will provide for up to 32 IP address (30 usuable hosts). 512/32 = 16 different network subnets.

QUESTION 9
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
Eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Eeeeeeeeeeeeeeeeeeeeeeeeeeeeee ...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. In order for the router to use the new image as the default, it must be the only IOS image in flash.
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. The router cannot verify that the Cisco IOS image currently in flash is valid.

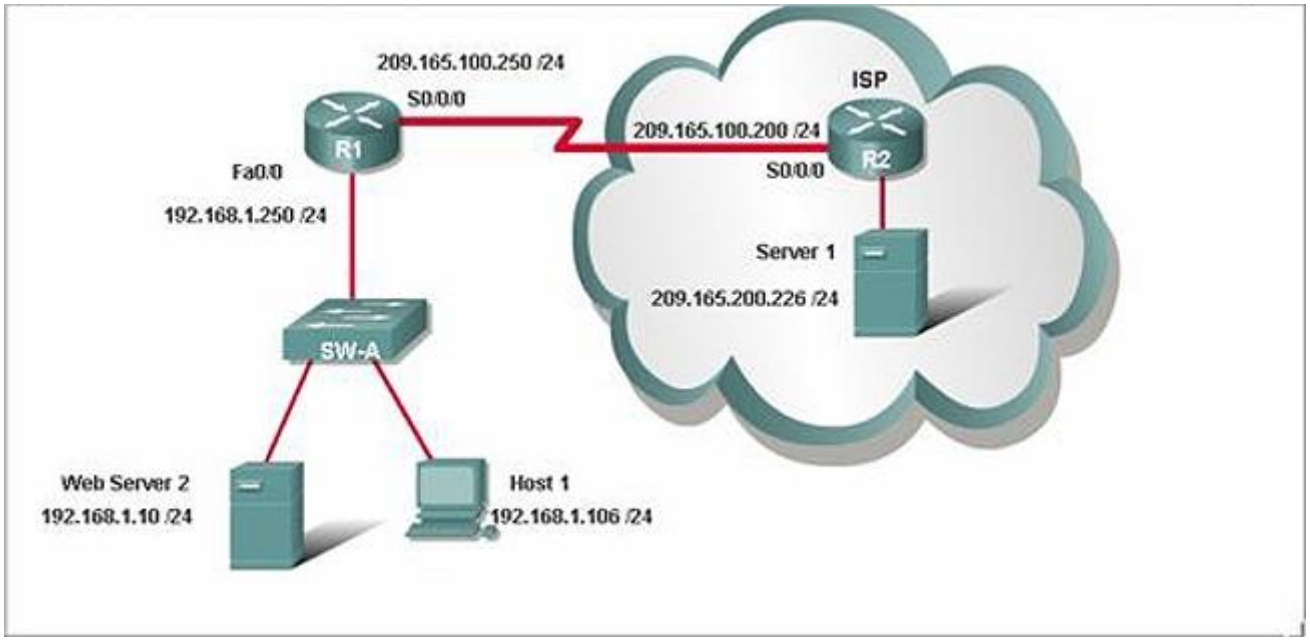
Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:
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 10
If the router R1 has a packet with a destination address 192.168.1.255, what describes the operation of the network?



A. R1 will forward the packet out all interfaces.
B. R1 will drop this packet because this is not a valid IP address.
C. As R1 forwards the frame containing this packet, Sw-A will add 192.168.1. 255 to its MAC table.
D. R1 will encapsulate the packet in a frame with a destination MAC address of FF-FF-FF-FF-FF- FF.
E. As R1 forwards the frame containing this packet, Sw-A will forward it to the device assigned the IP address of 192.168.1. 255

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 11
Refer to the exhibit.
What is the meaning of the term dynamic as displayed in the output of the show frame-relay map command shown?

```
R1# show frame-relay map
Serial0/0 (up): ip 172.16.3.1 dlci 100 (0x64, 0x1840), dynamic
          broadcast,, status defined, active
```

A. The Serial0/0 interface is passing traffic.
B. The DLCI100 was dynamically allocated by the router.
C. The Serial0/0 interface acquired the IP address of 172.16.3.1 from a DHCP server.
D. The DLCI100 will be dynamically changed as required to adapt to changes in the Frame Relay cloud.
E. The mapping between DLCI 100 and the end station IP address 172.16.3.1 was learned through inverse ARP.

Correct Answer: E
Section: WAN
Explanation

Explanation/Reference:
Inverse Address Resolution Protocol (Inverse ARP) was developed to provide a mechanism for dynamic DLCI to Layer 3 address maps. Inverse ARP works much the same way Address Resolution Protocol (ARP) works on a LAN. However, with ARP, the device knows the Layer 3 IP address and needs to know the remote data link MAC address. With Inverse ARP, the router knows the Layer 2 address which is the DLCI, but needs to know the remote Layer 3 IP address. When using dynamic address mapping, Inverse ARP requests a next-hop protocol address for each active PVC. Once the requesting router receives an Inverse ARP response, it updates its DLCI-to-Layer 3 address mapping table. Dynamic address mapping is enabled by default for all protocols enabled on a physical interface. If the Frame Relay environment supports LMI autosensing and Inverse ARP, dynamic address mapping takes place automatically. Therefore, no static address mapping is required.

QUESTION 12
What can be done to secure the virtual terminal interfaces on a router? (Choose two.)

A. Administratively shut down the interface.
B. Physical secure the interface
C. Create an access list and apply to the virbal 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.

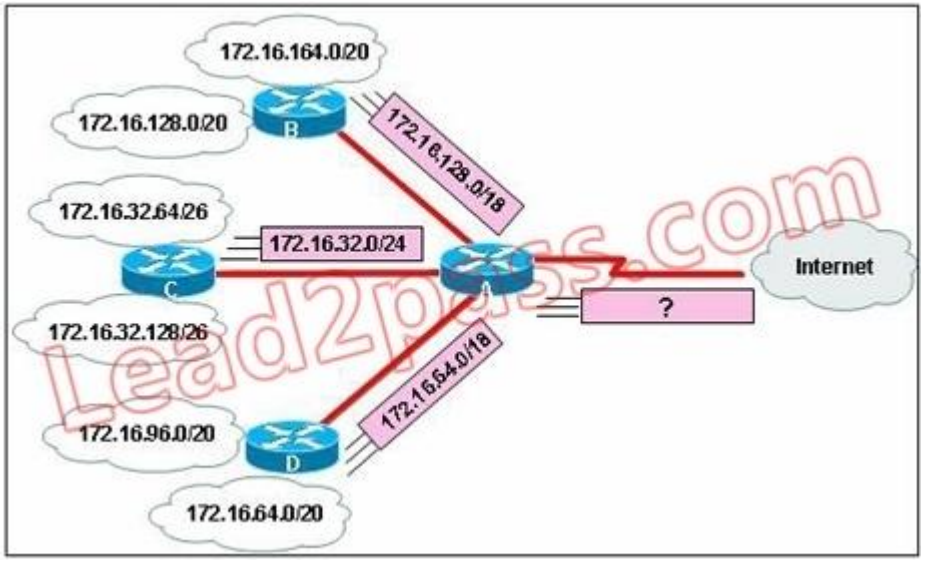
Correct Answer: DE
Section: Basic device operation

Explanation

Explanation/Reference:
The most simple way to secure the virtual terminal interface is to configure a username & password to prevent unauthorized login -> D is correct

To apply an access list to a virtual terminal interface we must use the “access-class” command.> E is correct

QUESTION 13
Refer to the exhibit.
In this VLSM addressing scheme, what summary address would be sent from router A?



A. 172.16.0.0/16
B. 172.16.0.0/20
C. 172.16.0.0/24
D. 172.32.0.0/16
E. 172.32.0.0/17
F. 172.64.0.0/16

Correct Answer: A
Section: IP addressing

Explanation

Explanation/Reference:

QUESTION 14
Refer to the exhibit.
The show vtp status command is executed at a switch that is generating the exhibited output. Which statement is true for this switch?

```
Switch# show vtp status
VTP Version                     :       2
Configuration Revision          :       0
Maximum VLANs supported locally :       64
Number of existing VLANs        :       17
VTP Operating Mode              :       Transparent
VTP Domain Name                 :       ICND
VTP Pruning Mode                :       Disabled
VTP V2 Mode                     :       Disabled
VTP Traps Generation            :       Disabled

<output omitted>
```


A. The switch forwards its VLAN database to other switches in the ICND VTP domain.
B. The configuration revision number increments each time the VLAN database is updated.
C. The switch forwards VTP updates that are sent by other switches in the ICND domain,
D. The VIAN database is updated when VTP information is received from other switches.

Correct Answer: C
Section: VTP
Explanation

Explanation/Reference:
Switches in transparent mode don't participate in the VTP domain or share its VLAN database, but they'll still forward VTP advertisements through any configured trunk links.
VTP is organized into management domains or areas with common VLAN requirements. A switch can belong to only one VTP domain. Switches in different VTP domains do not share VTP information. Switches in a VTP domain advertise several attributes to their domain neighbors. Each advertisement contains information about the VTP management domain, VTP configuration revision number, known VLANs, and specific VLAN parameters. From the output of the command how vtp status provided in the exhibit, we know that the VTP mode of the switch is the transparent mode. Transparent mode does not allow the switch to participate in VTP negotiations. Thus, a switch does not advertise its own VLAN configuration, and a switch does not synchronize its VLAN database with received advertisements. VLANs can still be created, deleted, and renamed on the transparent

switch. However, they will not be advertised to other neighboring switches. VTP advertisements received by a transparent switch will be forwarded on to other switches on trunk links.

QUESTION 15
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?

```
RouterD# show ip interface brief
Interface        IP-Address     OK?  Method  Status  Protocol
FastEthernet0/0  192.168.5.3    YES  manual  up      up
FastEthernet0/1  10.1.1.2       YES  manual  up      up
Loopback0        172.16.5.1     YES  NVRAM   up      up
Loopback1        10.154.154.1   YES  NVRAM   up      up
```

A. 10.11.2
B. 10.154.154.1
C. 172.16.5.1
D. 192.168.5.3

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

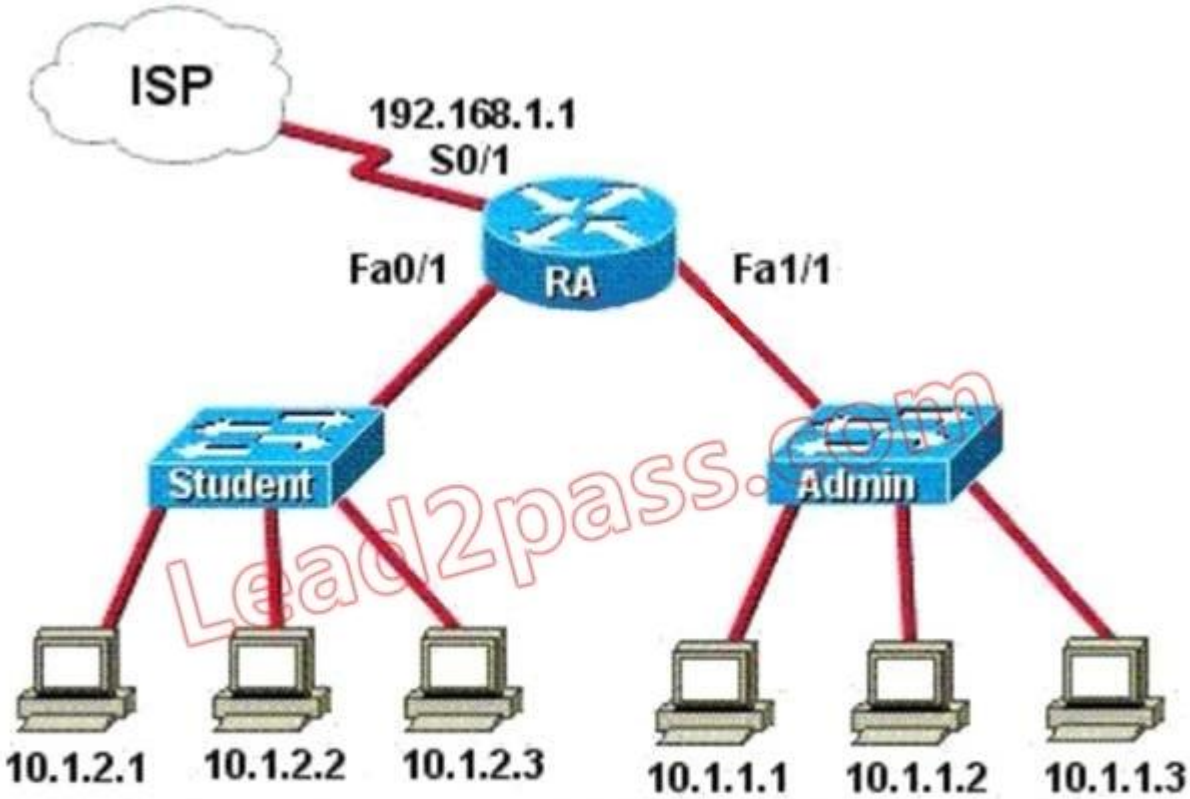
QUESTION 16
Which spread spectrum technology does the 802.11b standard define for operation?

A. IR
B. DSSS
C. FHSS
D. DSSS and FHSS
E. IR, FHSS, and DSSS

Correct Answer: B
Section: WLAN
Explanation

Explanation/Reference:
This question is to examine the knowledge point about the wireless. The differences of performance and capacity of the Wireless local area network mainly depends on the applied FHSS or DSSS, as well as the applied modulation type, to achieve. Up to now, if we compare the parameters of existing products in detail, we can see that the DSSS technology shows relative advantage in the applications which require optimum reliability, while FHSS technology plays relative advantage in the applications which require low cost. In the selection of wireless products, we have to pay attention which spread-spectrum technology, DSSS or FHSS, is chosen by manufacturers. We must prudence the market positioning of end view products because they can solve the transmission capability and characteristic of the wireless LAN, including anti-interference ability, usable distance range, bandwidth size, and the data transfer size.
Generally, DSSS uses the full bandwidth to transmit data to quicken its transmission speed, which means a greater potential to higher transmission frequency in the future. DSSS technology is applicable to a fixed environment, or to applications which have higher quality requirement, therefore, mostly applications, such as wireless plant, wireless hospital, network community, branch school networking, are applied to DSSS wireless technology products.FHSS is mostly used in fast-moving endpoint, for example, mobile phone applies FHSS technology in wireless transmission technology part. Due to the small FHSS transmission range, though under the same transmission environment, the required technology devices of FHSS is more than those of DSSS and the price of FHSS will probably be higher as a whole. As to the current business requirement, high-speed mobile endpoint applications are relatively less, while mostly pay attention to the transmission rate, as well as the stability of transmission. Therefore, the DSSS technology will be the mainstream of the future development of wireless networking products.

QUESTION 17
Why would the network administrator configure RA in this manner?




```
RA(config)# access-list 2 permit 10.1.1.0 0.0.0.255
RA(config)# line vty 0 4
RA(config-line)# access-class 2 in
```

A. To give students access to the Internet
B. To prevent students from accessing the command prompt of RA
C. To prevent administrators from accessing the console of RA
D. To give administrators access to the Internet
E. To prevent students from accessing the Internet
F. To prevent students from accessing the Admin network

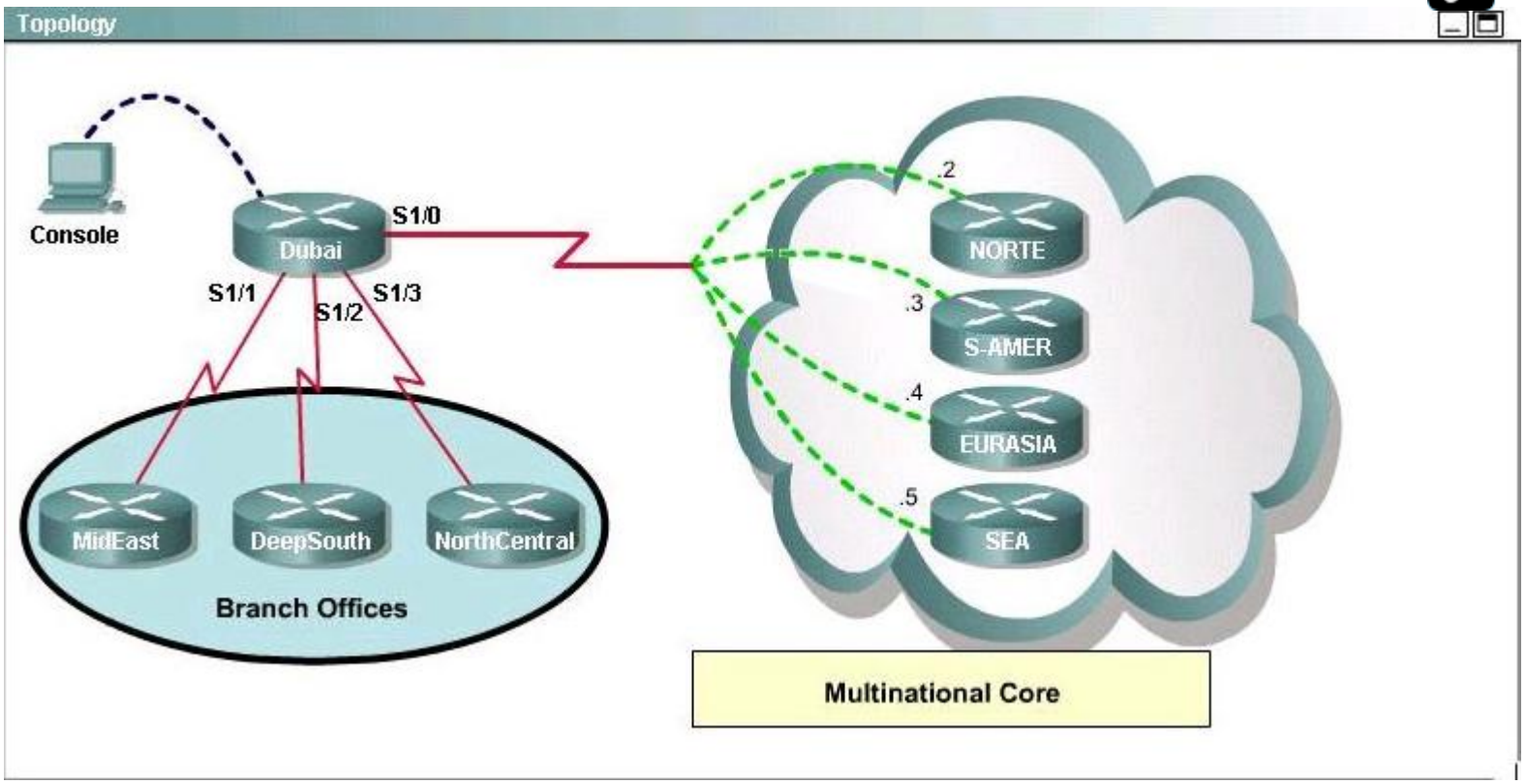
Correct Answer: B
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 18
What destination layer 2 address will be used in the frame the host 172.30.0.4?

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
Dubai#
interface FastEthernet0/0
 no ip address
 shutdown
!
interface Serial1/0
 ip address 172.30.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulation ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Tlnet
 login
!
end
```

Exhibit:



A. 767
B. 682
C. 455
D. 46
E. 704
F. 196.
G. 702
H. 345

Correct Answer: G
Section: WAN
Explanation

Explanation/Reference:
From the exhibit you extract 702:

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
```

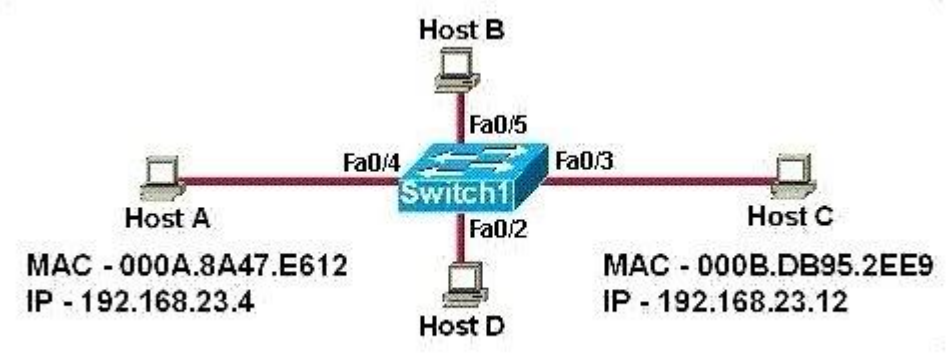
QUESTION 19
What is the purpose of the Cisco VLAN Trunking Protocol?

A. To allow traffic to be carried from multiple VLANs over a single link between switches
B. To allow native VLAN information to be carried over a trunk link
C. To allow for managing the additions, deletions, and changes of VLANs between switches
D. To provide a mechanism to manually assign VLAN membership to switch ports
E. To provide a mechanism to dynamically assign VLAN membership to switch ports

Correct Answer: C
Section: VTP
Explanation

Explanation/Reference:

QUESTION 20
Refer to the exhibit.



Switch1 has just been restarted and has passed the POST routine. Host A sends its initial frame to Host C. What is the first thing the switch will do as regards populating the switching table?

A. Switch1 will add 192.168.23.4 to the switching table.
B. Switch1 will add 192.168.23.12 to the switching table.
C. Switch1 will add 000A.8A47.E612 to the switching table.
D. Switch1 will add 000B. DB95.2EE9 to the switching table.

Correct Answer: C
Section: Switching
Explanation

Explanation/Reference:

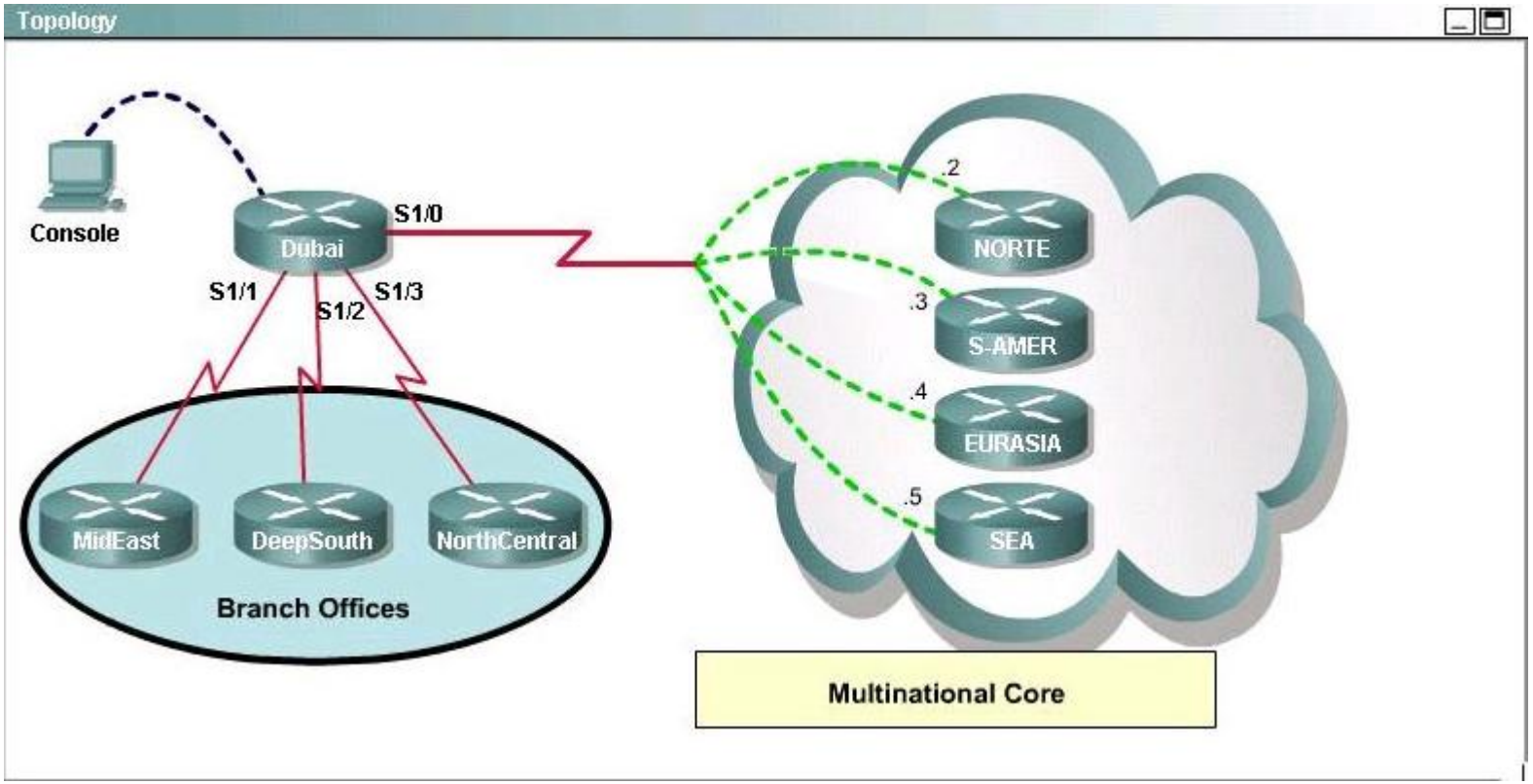
QUESTION 21

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
Dubai#
interface FastEthernet0/0
 no ip address
 shutdown
!
interface Serial1/0
 ip address 172.30.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulation ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Tlnet
 login
!
end
```

Please study the exhibit shown above carefully, and answer the following question.
If required, what password should be configured on the DeepSouth router in the branch office to allow a connection to be established with the MidEast

router?

Exhibit:



A. No password is required.
B. Enable
C. Secret
D. Telnet
E. Console

Correct Answer: B
Section: WAN
Explanation

Explanation/Reference:

In the diagram, DeepSouth is connected to Dubai's S1/2 interface and is configured as follows:

Interface Serial1/2
IP address 192.168.0.5 255.255.255.252
Encapsulalation PPP ; Encapsulation for this interface is PPP

Check out the following Cisco Link:
http://www.cisco.com/en/US/tech/tk713/tk507/technologies_configuration_example09186a008009
4333.shtml#configuringausernamedifferentfromtheroutersname

Here is a snipit of an example:

Network Diagram
If Router 1 initiates a call to Router 2, Router 2 would challenge Router 1, but Router 1 would not challenge Router 2. This occurs because the ppp authentication chap callin command is configured on Router 1. This is an example of a unidirectional authentication. In this setup, the ppp chap hostname alias-r1 command is configured on Router 1. Router 1 uses "alias-r1" as its hostname for CHAP authentication instead of "r1." The Router 2 dialer map name should match Router 1's ppp chap hostname; otherwise, two B channels are established, one for each direction.

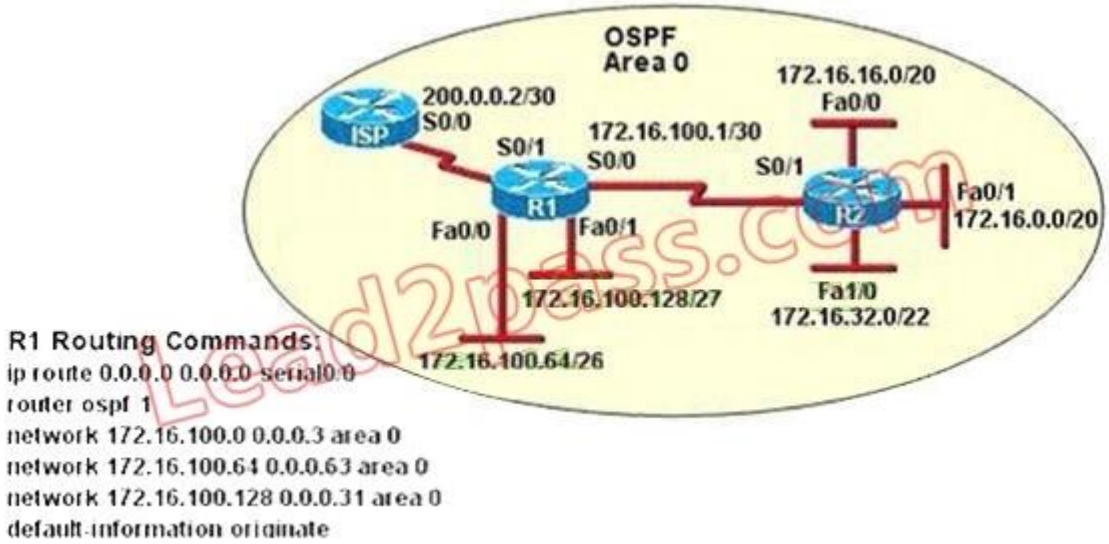
288

Configurations

Router 1

```
!
 isdn switch-type basic-5ess
 !
 hostname r1
 !
 username r2 password 0 cisco

! -- Hostname of other router and shared secret

!
 interface BRI0/0
  ip address 20.1.1.1 255.255.255.0
  no ip directed-broadcast
  encapsulation ppp
  dialer map ip 20.1.1.2 name r2 broadcast 5772222
  dialer-group 1
  isdn switch-type basic-5ess
  ppp authentication chap callin

! -- Authentication on incoming calls only

 ppp chap hostname alias-r1

! -- Alternate CHAP hostname
```

QUESTION 22
Refer to the exhibit.
Assume that all router interfaces are operational and correctly configured. In addition, assume that OSPF has been correctly configured on router R2.
How will the default route configured on R1 affect the operation of R2?



A. Any packet destined for a network that is not directly connected to router R2 will be dropped immediately.
B. Any packet destined for a network that is not referenced in the routing table of router R2 will be directed to R1. R1 will then send that packet back to R2 and a routing loop will occur.
C. Any packet destined for a network that is not directly connected to router R1 will be dropped.
D. The networks directly connected to router R2 will not be able to communicate with the 172.16.100.0, 172.16.100.128, and 172.16.100.64 subnetworks.
E. Any packet destined for a network that is not directly connected to router R2 will be dropped immediately because of the lack of a gateway on R1.

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
This question is to examine the understanding of the knowledge points about the default routing and the routing loop.

QUESTION 23
Which two passwords must be supplied in order to connect by Telnet to a properly secured Cisco switch and make changes to the device configuration?

(Choose two.)

A. tty password
B. enable secret password
C. vty password
D. aux password
E. console password
F. username password

Correct Answer: BC
Section: Basic device operation
Explanation

Explanation/Reference:
Telnet presents a potential security risk, so Telnet uses vty for connecting a remote Cisco switch. For access security, the vty password and enable password must be configured.

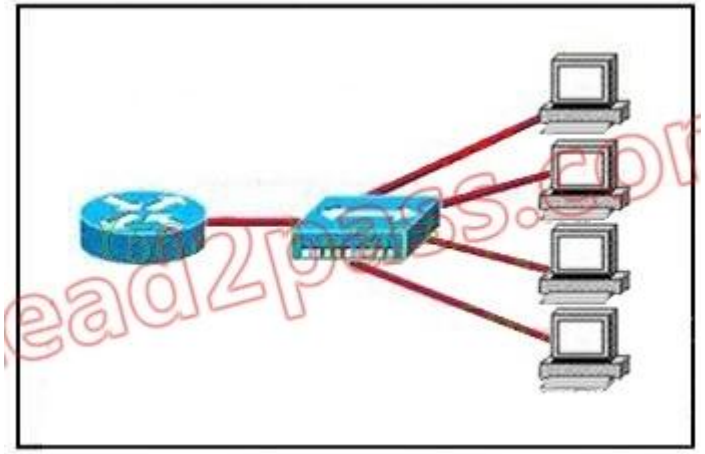
QUESTION 24
A default Frame Relay WAN is classified as what type of physical network?

A. Point-to-point
B. Broadcast multi-access
C. Nonbroadcast multi-access
D. Nonbroadcast multipoint
E. Broadcast point-to-multipoint

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
A default Frame Relay WAN is classified as Nonbroadcast multi-access (NBMA).

QUESTION 25
Refer to the exhibit.
What two results would occur if the hub were to be replaced with a switch that is configured with one Ethernet VLAN? (Choose two.)



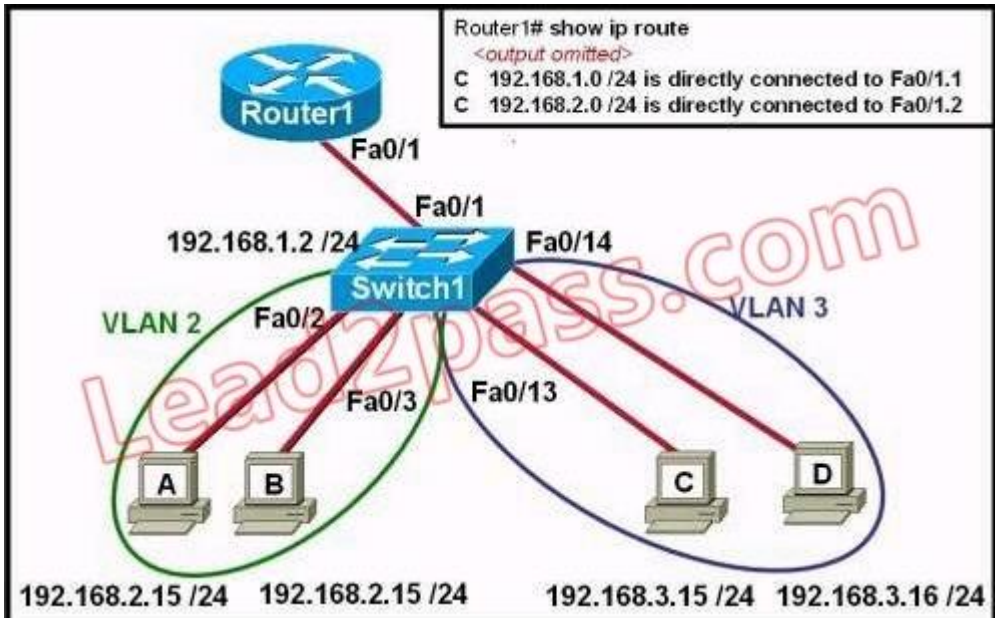
A. The number of broadcast domains would remain the same.
B. The number of collision domains would increase.
C. The number of collision domains would decrease.
D. The number of broadcast domains would decrease.
E. The number of collision domains would remain the same.
F. The number of broadcast domains would increase.

Correct Answer: AB
Section: Switching
Explanation

Explanation/Reference:
Basically, a collision domain is a network segment that allows normal network traffic to flow back and forth.
In the old days of hubs, this meant you had a lot of collisions, and the old CSMA/CD would be working overtime to try to get those packets re-sent every time there was a collision on the wire
(since ethernet allows only one host to be transmitting at once without there being a traffic jam). With switches, you break up collision domains by switching packets bound for other collision domains.
These days, since we mostly use switches to connect computers to the network, you generally have one collision domain to a PC.
Broadcast domains are exactly what they imply: they are network segments that allow broadcasts to be sent across them.
Since switches and bridges allow for broadcast traffic to go unswitched, broadcasts can traverse collision domains freely.
Routers, however, don't allow broadcasts through by default, so when a broadcast hits a router (or the perimeter of a VLAN), it doesn't get forwarded.
The simple way to look at it is this way: switches break up collision domains, while routers (and VLANs) break up collision domains and broadcast domains.
Also, a broadcast domain can contain multiple collision domains, but a collision domain can never have more than one broadcast domain associated with it.

Collision Domain: A group of Ethernet or Fast Ethernet devices in a CSMA/CD LAN that are connected by repeaters and compete for access on the network.
Only one device in the collision domain may transmit at any one time, and the other devices in the domain listen to the network in order to avoid data collisions.
A collision domain is sometimes referred to as an Ethernet segment.
Broadcast Domain: Broadcasting sends a message to everyone on the local network (subnet). An example for Broadcasting would be DHCP Request from a Client PC.
The Client is asking for a IP Address, but the client does not know how to reach the DHCP Server. So the client sends a DHCP Discover packet to EVERY PC in the local subnet (Broadcast).
But only the DHCP Server will answer to the Request.
How to count them?
Broadcast Domain:
No matter how many hosts or devices are connected together, if they are connected with a repeater, hub, switch or bridge, all these devices are in ONE Broadcast domain (assuming a single VLAN). A Router is used to separate Broadcast-Domains (we could also call them Subnets
- or call them VLANs).
So, if a router stands between all these devices, we have TWO broadcast domains.
Collision Domain:
Each connection from a single PC to a Layer 2 switch is ONE Collision domain. For example, if 5 PCs are connected with separate cables to a switch, we have 5 Collision domains.
If this switch is connected to another switch or a router, we have one collision domain more. If 5 Devices are connected to a Hub, this is ONE Collision Domain.
Each device that is connected to a Layer 1 device (repeater, hub) will reside in ONE single collision domain.

QUESTION 26
Refer to the exhibit. The network administrator has created a new VLAN on Switch1 and added host C and host D.
The administrator has properly configured switch interfaces FastEthernet0/13 through FastEthernet0/24 to be members of the new VLAN.
However, after the network administrator completed the configuration, host A could communicate with host B, but host A could not communicate with host C or host D.
Which commands are required to resolve this problem?



A. Switch1# vlan database
Switch1(vlan)# vtp v2-mode
Switch1(vlan)# vtp domain cisco
Switch1(vlan)# vtp server

B. Router(config)# router rip
Router(config-router)# network 192.168.1.0
Router(config-router)# network 192.168.2.0
Router(config-router)# network 192.168.3.0

C. Switch1(config)# interface fastethernet 0/1
Switch1(config-if)# switchport mode trunk
Switch1(config-if)# switchport trunk encapsulation isl

D. Router(config)# interface fastethernet 0/1.3
Router(config-if)# encapsulation dot1q 3
Router(config-if)# ip address 192.168.3.1 255.255.255.0

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
Here is the example of configuring the router for inter-vlan communication

RouterA(config)#int f0/0.1
RouterA(config-subif)#encapsulation ?
dot1Q IEEE 802.1Q Virtual LAN
RouterA(config-subif)#encapsulation dot1Q or isl VLAN ID
RouterA(config-subif)# ip address x.x.x.x y.y.y.y

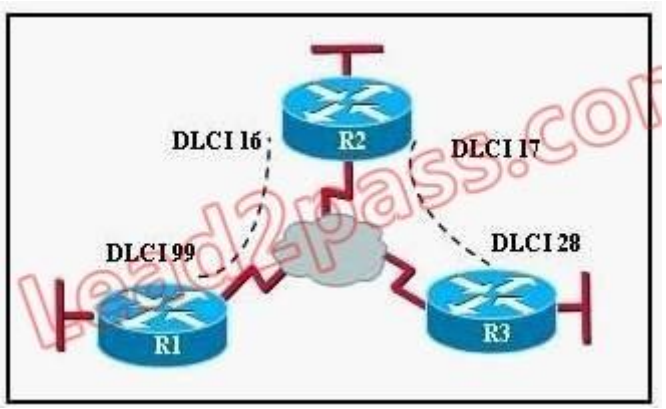
QUESTION 27
What is the purpose of Spanning Tree Protocol?

A. to provide multiple gateways for hosts
B. to maintain a loop-free Layer 2 network topology
C. to prevent routing loops
D. to create a default route

Correct Answer: B
Section: Spanning Tree
Explanation

Explanation/Reference:
STP (Spanning Tree protocol) is able to overcome transparent bridge in network redundancy.
Through the use of non-loop path, STP is able to avoid and eliminate network loops. It may locate the loop and cut off link redundancy.
STP's main task is to stop network loops from occurring on your Layer 2 network (bridges or switches).
It vigilantly monitors the network to find all links, making sure that no loops occur by shutting down any redundant ones.
STP uses the spanning-tree algorithm (STA) to first create a topology database, then search out and destroy redundant links.
With STP running, frames will only be forwarded on the premium, STP-picked links.

QUESTION 28
Refer to the exhibit. Which statement describes DLCI 17?

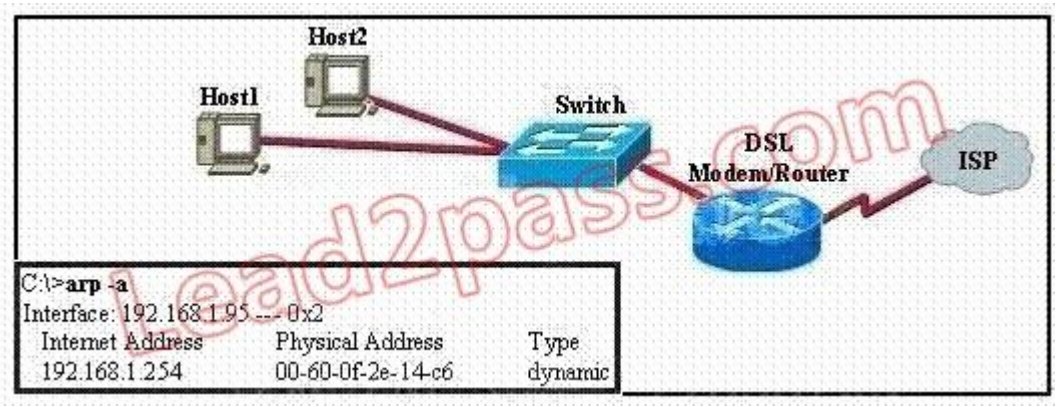


A. DLCI 17 is the Layer 2 address used by R2 to describe a PVC to R3.
B. DLCI 17 describes a PVC on R2. It cannot be used on R3 or R1.
C. DLCI 17 describes the dial-up circuit from R2 and R3 to the service provider.
D. DLCI 17 describes the ISDN circuit between R2 and R3.

Correct Answer: A
Section: WAN
Explanation

Explanation/Reference:
DLCI-Data Link Connection Identifier Bits:
The DLCI serves to identify the virtual connection so that the receiving end knows which information connection a frame belongs to.
Note that this DLCI has only local significance. Frame Relay is strictly a Layer 2 protocol suite

QUESTION 29
The user of Host1 wants to ping the DSL modem/router at 192.168.1.254.
Based on the Host1 ARP table that is shown in the exhibit, what will Host1 do?



A. send a unicast ARP packet to the DSL modem/router
B. send a Layer 2 broadcast that is received by Host2, the switch, and the DSL modem/router
C. send Layer 3 broadcast packets to which the DSL modem/router responds
D. send unicast ICMP packets to the DSL modem/router

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
When Host1 sends ICMP packets to the DSL modem/router for the first time, Host1 checks the mapping between the target IP address and the MAC with APP cache and sends unicast ICMP packets.
If Host1 cannot find the mapping between the target IP address and the MAC, Host1 sends broadcast packets to find the MAC mapping the target IP address.
The ARP cache contains the MAC mapping the target IP address 192.168.1.254, so Host1 sends unicast ICMP packets to the DSL modem/router.
When Host1 sends ICMP packets to the DSL modem/router

QUESTION 30
On point-to-point networks, OSPF hello packets are addressed to which address?

A. 127.0.0.1
B. 172.16.0.1
C. 192.168.0.5
D. 223.0.0.1
E. 224.0.0.5
F. 254.255.255.255

Correct Answer: E
Section: Routing
Explanation

Explanation/Reference:

QUESTION 31
A network administrator has configured two switches, named London and Madrid, to use VTP.
However, the switches are not sharing VTP messages. Given the command output shown in the graphic

London# show vtp status		Madrid# show vtp status	
VTP Version	: 2	VTP Version	: 2
Configuration Revision	: 0	Configuration Revision	: 0
Maximum VLANs supported locally	: 64	Maximum VLANs supported locally	: 64
Number of existing VLANs	: 5	Number of existing VLANs	: 5
VTP Operating Mode	: Server	VTP Operating Mode	: Server
VTP Domain Name	: London	VTP Domain Name	: Madrid
VTP Pruning Mode	: Disabled	VTP Pruning Mode	: Disabled
VTP V2 Mode	: Disabled	VTP V2 Mode	: Disabled
VTP Traps Generation	: Disabled	VTP Traps Generation	: Disabled

Why are these switches not sharing VTP messages?

A. The VTP version is not correctly configured.
B. The VTP operating mode is not correctly configured.
C. The VTP domain name is not correctly configured.
D. VTP pruning mode is disabled.
E. VTP V2 mode is disabled.
F. VTP traps generation is disabled.

Correct Answer: C
Section: VTP
Explanation

Explanation/Reference:
1. According to the information provided in the question, we know that the switches are not sharing VTP messages.We need to check VTP status.
2. Check VTP domain name, switches within the same domain can learn from each other. Check VTP mode, the VTP learning process must occur with a server mode existence.
   The Server is the default mode.

QUESTION 32
While troubleshooting a network connectivity problem, a technician observes steady link lights on both the workstation NIC and the switch port to which the workstation is connected.
However, when the ping command is issued from the workstation, the output message "Request timed out." is displayed. At which layer of the OSI model does the problem most likely exist?

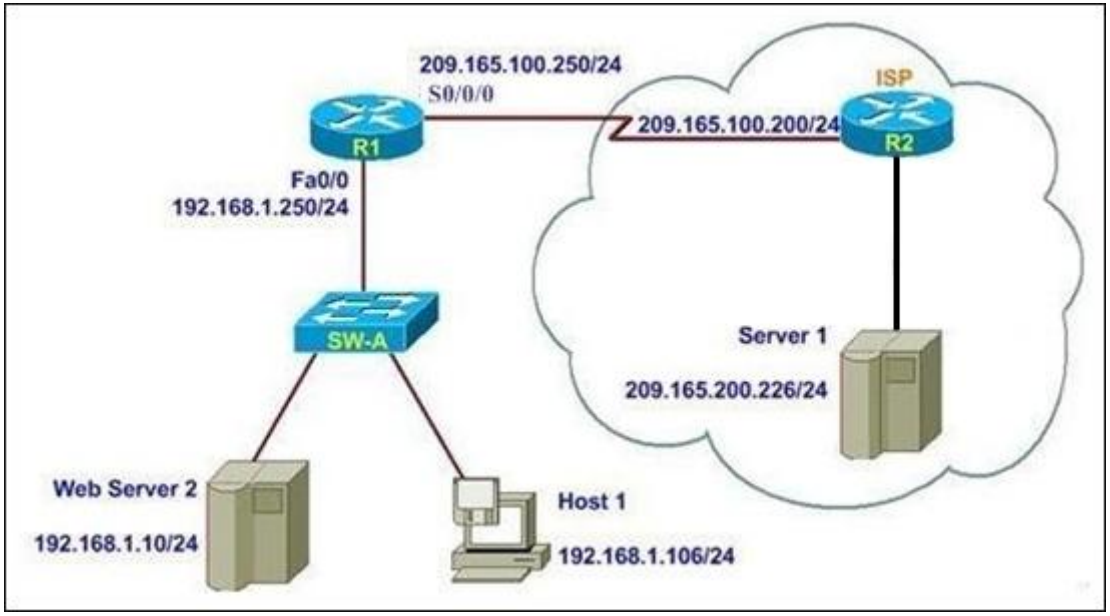
A. The session layer

B. The protocol layer
C. The data link layer
D. The access layer
E. The network layer
F. The application layer

Correct Answer: E
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 33
When a packet is sent from Host 1 to Server1, in how many different frames will the packet be encapsulated as it is sent across the internetwork?



A. 0
B. 1
C. 2
D. 3

E. 4

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
We believe the correct answer is 3 because the packet will be encapsulated in one more frame sent between routers R1 and R2.
Source MAC is interface S0/0/0 on router R1 and destination is the serialinterface on router R2.

QUESTION 34
The corporate head office has a teleconferencing system that uses VOIP(voice over IP) technology.
This system uses UDP as the transport for the data transmissions.
If these UDP datagrams arrive at their destination out of sequence, what will happen?

A. UDP will send an ICMP information Request to the source host.
B. UDP will pass the information in the datagrams up to the next OSI layer in the order that they arrive.
C. UDP will drop the datagrams.
D. UDP will use the sequence numbers in the datagram headers to reassemble the data in the correct order.

Correct Answer: B
Section: VoIP
Explanation

Explanation/Reference:
VOIP systems utilize UDP because it is faster and uses less overhead.
In addition, the reliable transport mechanism used in TCP is useless to VOIP because if a packet gets dropped and needs to be resent, it will be already too late.
UDP provides a service for applications to exchange messages. Unlike TCP, UDP is connectionless and provides no reliability, no windowing, and no reordering of the received data.
However, UDP provides some functions of TCP , such as data transfer, segmentation, and multiplexing using port numbers, and it does so with fewer bytes of overhead and with less processing required.
UDP data transfer differs from TCP data transfer in that no reordering or recovery is accomplished. Applications that use UDP are tolerant of lost data, or they have some application mechanism to recover data loss.

Reference:
CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1- 58720-094-5) Page 161.

QUESTION 35
While troubleshooting a connectivity problem, a network administrator notices that a port status LED on a Cisco Catalyst series switch is alternating green and amber. Which condition could this indicate?

A. The port is experiencing errors.
B. The port is administratively disabled.
C. The port is blocked by spanning tree.
D. The port has an active link with normal traffic activity.

Correct Answer: A
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 36
Refer to the exhibit.
Switch-1 needs to send data to a host with a MAC address of 00b0.d056.efa4.
What will Switch-1 do with this data?

```
Switch-1# show mac address-table
Dynamic Addresses Count:                 3
Secure Addresses (User-defined) Count:   0
Static Addresses (User-defined) Count:   0
System Self Addresses Count:            41
Total Mac addresses:                    50
Non-static Address Table:
Destination Address  Address Type  VLAN  Destination Port
-------------------  ------------  ----  ----------------
0010.0de0.e289       Dynamic       1     FastEthernet0/1
0010.7b00.1540       Dynamic       2     FastEthernet0/3
0010.7b00.1545       Dynamic       2     FastEthernet0/2
```

A. Switch-1 will drop the data because it does not have an entry for that MAC address.
B. Switch-1 will forward the data to its default gateway.
C. Switch-1 will flood the data out all of its ports except the port from which the data originated.
D. Switch-1 will send an ARP request out all its ports except the port from which the data originated.

Correct Answer: C

Section: Switching
Explanation

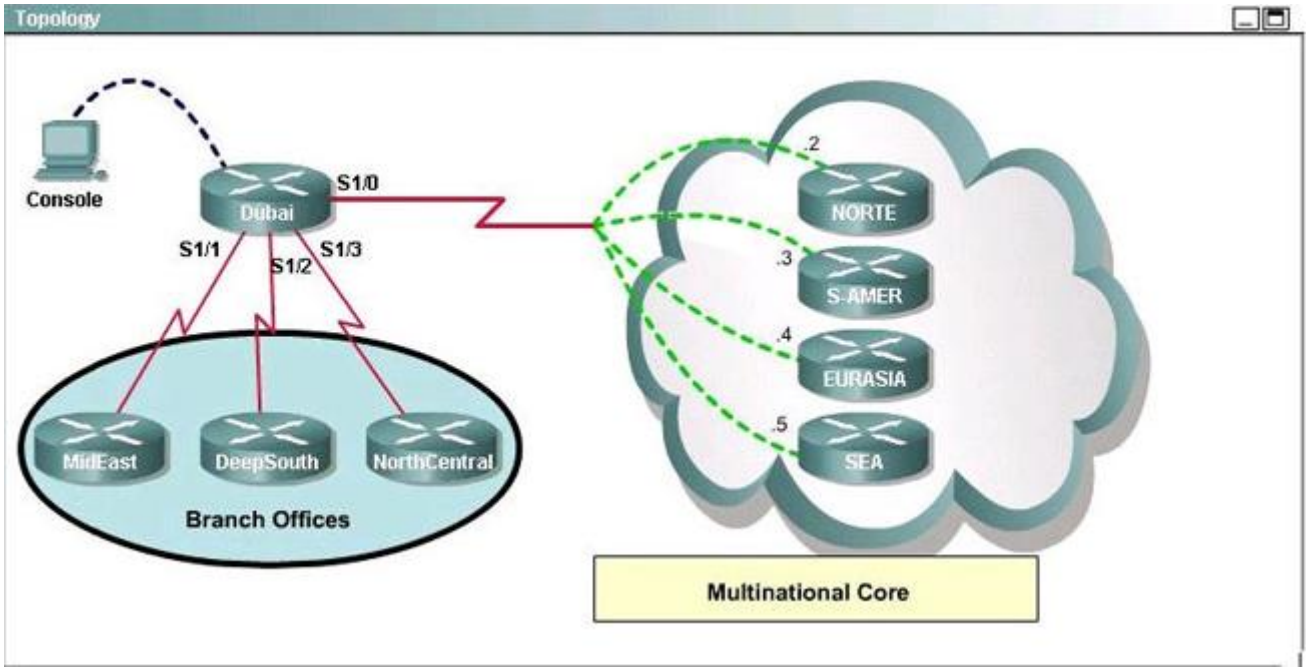
Explanation/Reference:
This question tests the operating principles of the Layer 2 switch. Check the MAC address table of Switch1 and find that the MAC address of the host does not exist in the table.
Switch1 will flood the data out all of its ports except the port from which the data originated to determine which port the host is located in.
Switches work as follows:
· Switches learn the MAC addresses of PCs or workstations that are connected to their switch ports by examining the source address of frames that are received on that port.
Machines may have been removed from a port, turned off, or moved to another port on the same switch or a different switch.
· This could cause confusion in frame forwarding.
· The MAC address entry is automatically discarded or aged out after 300 seconds · If there is not MAC address of destination host in MAC table, switch sends broadcast to all ports except the source to find out the destination host. In output there is no MAC address of give host so switch floods to all ports except the source port.

QUESTION 37
Please study the exhibit (Exhibit Button) shown above carefully, and answer the following question.

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
Dubai#
interface FastEthernet0/0
 no ip address
 shutdown
!
interface Serial1/0
 ip address 172.30.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulation ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Tlnet
 login
!
end
```

Which connection user the default encapsulation for serial interfaces on Cisco routers?

Exhibit:



A. The serial connection to the MidEast branch office.
B. The serial connection to the DeepSouth branch office.
C. The serial connection to the NorthCentral branch office.
D. The serial connection to the Multinational Core.

Correct Answer: A
Section: WAN
Explanation

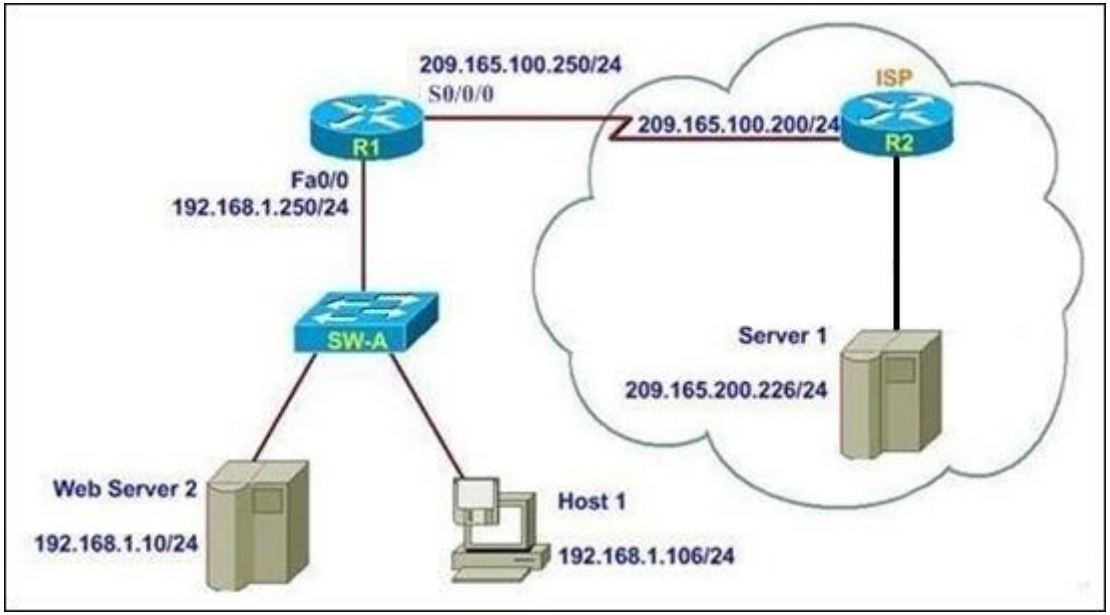
Explanation/Reference:

On the basis of the configuration on Dubai provided in the exhibit, we know that the encapsulation types of different interfaces are as follows:
Serial 1/0 : encapsulation frame-relay
Serial 1/2 and Serial 1/3 : both interfaces are encapsulated PPP Serial 1/1: There is no related encapsulation information displayed, so its default encapsulation type is HDLC .
Based on the network topology provided in the exhibit, the interface Serial 1/1 is connected to the router Mideast of the branch office, so the encapsulation type of the router Mideast is by default.

The default encapsulation on a serial interface is HDLC. The original HDLC encapsulation was defined by the International Organization for Standards (ISO), those same folks who developed the OSI model. The ISO version of HDLC had one shortcoming, however; it had no options to support multiple Layer 3 routed protocols. As a result, most vendors have created their own form of HDLC. Cisco is no exception because it has its own proprietary form of HDLC to support various Layer 3 protocols such as IPX, IP, and AppleTalk.

The Serial connection to the Dub<i branch office using the default encapsulation type. You can change using:
* encapsulation <type> command on interface

QUESTION 38
Users on the 192.168.1.0/24 network must access files located on the Server1.
What route could be configured on router R1 for file requests to reach the server?



A. ip route 0.0.0.0 0.0.0.0 209.165.200.226
B. ip route 0.0.0.0 0.0.0.0 s0/0/0
C. ip route 192.168.1.0 255.255.255.0 209.165.100.250
D. ip route 209.165.200.0 255.255.255.0 192.168.1.250

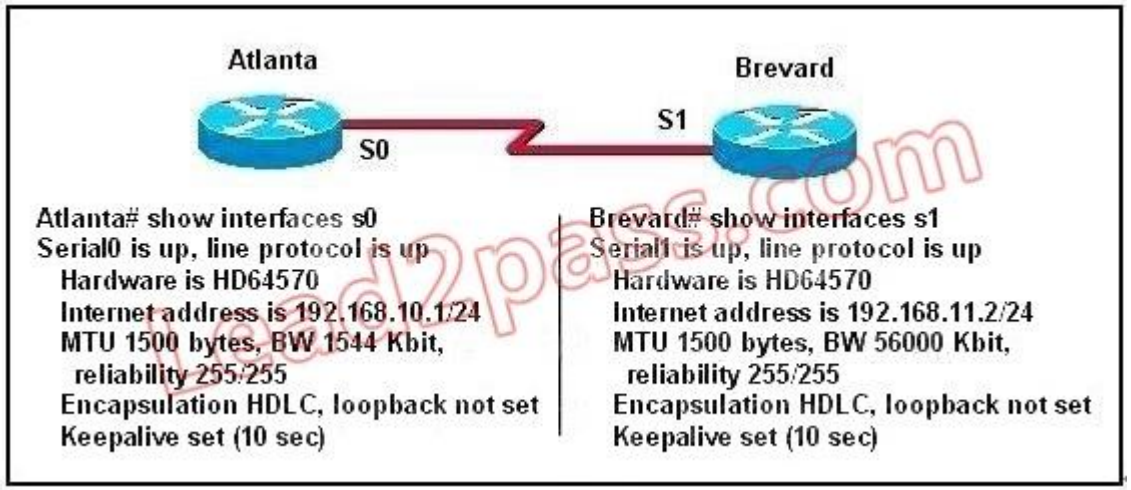
Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
In order to allow the network of 192.168.1.0/24 to access Serverl1, we need to establish a default route.

The format of this default route is as follows:
ip route prefix mask {ip-address interface-type interface-number [ip-address]} [distance] [name] [permanent track number] [tag tag]

Based on the request of this subject, we need to configure the correct route as follows:
ip route 0.0.0.0 0.0.0.0 s0/0/0

QUESTION 39
Two routers named Atlanta and Brevard are connected by their serial interfaces as shown in the exhibit, but there is no data connectivity between them. The Atlanta router is known to have a correct configuration.
Given the partial configurations shown in the exhibit, what is the problem on the Brevard router that is causing the lack of connectivity?



A. The serial line encapsulations are incompatible.
B. The subnet mask is incorrect.
C. The bandwidth setting is incompatible with the connected interface.
D. The maximum transmission unit (MTU) size is too large.
E. The IP address is incorrect.
F. A loopback is not set.

Correct Answer: E
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
The IP address of the S0 interface of Atlanta is 192.168.10.0/24, and the IP address of the S1 interface of Breavard is 192.168.11.0/24.
Change the IP address of the S1 interface to 192.168.10.0/24, the same as that of the S0 interface.

QUESTION 40
Which two statements best describe the wireless security standard that is defined by WPA? (Choose two.)

A. It specifies the use of dynamic encryption keys that change each time a client establishes a connection.
B. It specifies use of a static encryption key that must be changed frequently to enhance security.
C. It includes authentication by PSK.
D. It requires that all access points and wireless devices use the same encryption key.
E. It requires use of an open authentication method.

Correct Answer: AC
Section: WLAN
Explanation

Explanation/Reference:
WPA is a more powerful security technology for Wi-Fi networks than WEP.
It provides strong data protection by using encryption as well as strong access controls and user authentication.
WPA utilizes 128-bit encryption keys and dynamic session keys to ensure your wireless network's privacy and enterprise security.

There are two basic forms of WPA:
· WPA Enterprise (requires a Radius server)· WPA Personal (also known as WPA-PSK)Either can use TKIP or AES for encryption.
Not all WPA hardware supports AES.WPA-PSK is basically an authentication mechanism in which users provide some form of credentials to verify that they should be allowed access to a network.
This requires a single password entered into each WLAN node (Access Points, Wireless Routers, client adapters, bridges). As long as the passwords match, a client will be granted access to a WLAN.
Encryption mechanisms used for WPA and WPA-PSK are the same. The only difference between the two is in WPA-PSK, authentication is reduced to a simple common password, instead of user-specific credentials.
The Pre-Shared Key (PSK) mode of WPA is considered vulnerable to the same risks as any other shared password system - dictionary attacks for example.
Another issue may be key management difficulties such as removing a user once access has been granted where the key is shared among multiple users, not likely in a home environment.

ReferencE. http://www.dslreports.com/faq/wifisecurity/2.2_WPA

WPA is a standard-based interoperable solution designed to enhance the security of WLAN, which greatly improves the present and future level of data protection and access control of WLAN.
WPA is evolved from the being developed IEEE802.11i standards and keeps compatible with its former.
WPA can protect WLAN users data with proper deployment , and only the authorized network users can access the WLAN network.

WPA provides users with a temporary solution. The encryption of this standard adopts TKIP (Temporary Key Integrity Protocol).
There are two authentication modes to choose :one mode uses 802.1 x protocol to authenticate, the other is known as PSK (Pre-Shared Key) Mode.

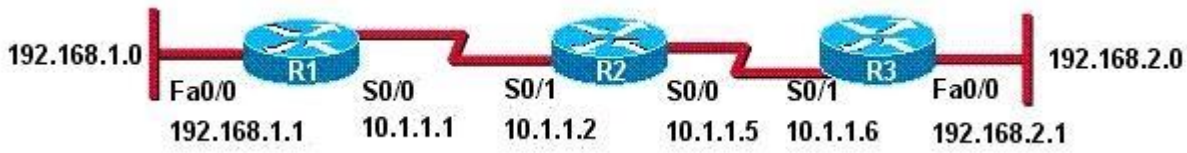
QUESTION 41
Which wireless LAN design ensures that a mobile wireless client will not lose connectivity when moving from one access point to another?

A. utilizing MAC address filtering to allow the client MAC address to authenticate with the surrounding APs
B. using adapters and access points manufactured by the same company
C. overlapping the wireless cell coverage by at least 10%
D. configuring all access points to use the same channel

Correct Answer: C
Section: WLAN
Explanation

Explanation/Reference:
To ensure that wireless users will not lose connectivity when moving from the initial access point to a new access point, we have to ensure that the two access point has at least 10 percent coverage.

QUESTION 42
Refer to the exhibit.
The network shown in the exhibit is running the RIPv2 routing protocol. The network has converged, and the routers in this network are functioning properly.
The FastEthernet0/0 interface on R1 goes down. In which two ways will the routers in this network respond to this change? (Choose two.)



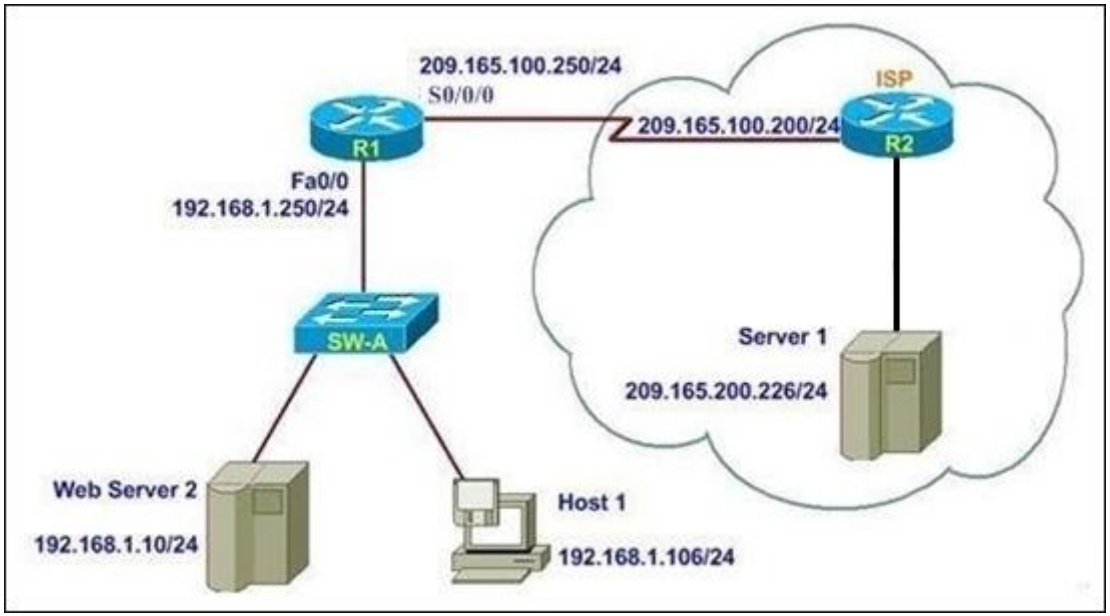
A. R1 will send LSAs to R2 and R3 informing them of this change, and then all routers will send periodic updates at an increased rate until the network again converges.
B. Because of the split-horizon rule, router R2 will be prevented from sending erroneous information to R1 about connectivity to the 192.168.1.0 network.
C. When router R2 learns from R1 that the link to the 192.168.1.0 network has been lost, R2 will respond by sending a route back to R1 with an infinite metric to the 192.168.1.0 network.
D. Routers R2 and R3 mark the route as inaccessible and will not accept any further routing updates from R1 until their hold-down timers expire.
E. All routers will reference their topology database to determine if any backup routes to the 192.168.1.0 network are known.

Correct Answer: BC
Section: Routing
Explanation

Explanation/Reference:
RIP version 2 will send triggered updates when the topology changes like when a link goes down.
The following are the key characteristics of RIPv2 pertaining to this question:

ReferencE. http://www.ethanbanks.net/?m=200702

QUESTION 43
What must be configured on the network in order for users on the Internet to view web pages located on Web Server 2?



A. On router R1, configure a default static route to the 192.168.1.0 network.
B. On router R1, configure NAT to translate an address on the 209.165.100.0/24 network to 192.168.1.10
C. On router R1 ,configure DNS to resolve the URL assigned to Web Server 2 to the 192.168.1.10 address
D. On router R2, configure DHCP to assign a registered IP address on the 209.165.100.0/24 network to Web Server 2.

Correct Answer: B
Section: NAT & ACLs
Explanation

Explanation/Reference:
In order to allow internet users to access Web Server 2, we need to configure NAT address translation on router R1.

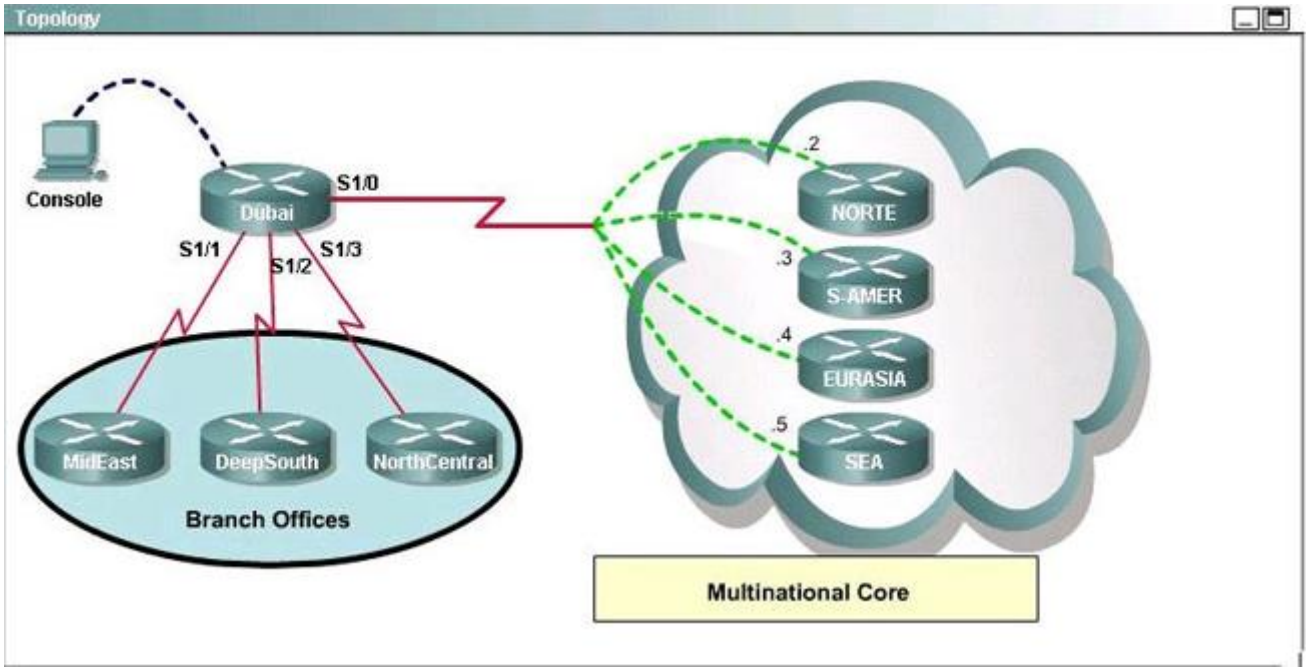
QUESTION 44

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
Dubai#
interface FastEthernet0/0
 no ip address
 shutdown
!
interface Serial1/0
 ip address 172.30.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulation ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Tlnet
 login
!
end
```

Please study the exhibit shown above carefully, and answer the following questions.

A static map to the S-AMER location is required. Which command should be used to create this map?

Exhibit:



A. frame-relay map ip 172.30.0.3 702 broadcast
B. frame-relay map ip 172.30.0.3 196 broadcast
C. frame-relay map ip 172.30.0.3 344 broadcast
D. frame-relay map ip 172.30.0.3 704 broadcast

Correct Answer: B
Section: WAN
Explanation

Explanation/Reference:
Based on the output of the command "show frame-relay map", we know that DLCI mapped to the router S-AMER is 196. (.3 In the above network topology, the complete layer3 IP address is172.30.0.3)
Frame-relay map: The mapping command "Frame-relay map" can statically create a mapping reaching the remote protocol address.
The format is :

frame-relay map protocol protocol-address dlci [broadcast][ietf | cisco]

Configuring a static Frame Relay map is optional unless you are using subinterfaces. The Frame Relay map will map a Layer 3 address to a local DLCI. This step is optional because inverse-arp will automatically perform this map for you.

Syntax for frame-relay map is:

frame-relay map protocol address dlci [broadcast] [cisco | ietf]

The broadcast option allows packets, such as RIP updates to be forwarded across the PVC.
If you are not using the broadcast option, you need to specify the neighbor to forward unicast packet using neighbor command.

neighbor a.b.c.d

Specify RIP neighbor. When a neighbor doesn't understand multicast, this command is used to specify neighbors.
In some cases, not all routers will be able to understand multicasting, where packets are sent to a network or a group of addresses.
In a situation where a neighbor cannot process multicast packets, it is necessary to establish a direct link between routers.
The neighbor command allows the network administrator to specify a router as a RIP neighbor. The no neighbor a.b.c.d command will disable the RIP neighbor.

QUESTION 45
Which routing protocol by default uses bandwidth and delay as metrics?

A. RIP
B. BGP
C. OSPF
D. EIGRP

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
This question tests the metrics of various routing protocols.
RIP uses hop-count as metrics;
BGP uses complicated path attributes as metrics;
OSPF uses bandwidth as metrics;
and EIGRP uses bandwidth and delay as metrics by default.

QUESTION 46
```
Router#show flash
```

```
System flash director
File Length Name/status
1 3802992 c827v-y6-mz.121-1.XB
[3803056 bytes used,4585552 available, 8388608 total]
8192K bytes of processor board System flash(Read/Write)
```

Refer to the exhibit. The technician wants to upload a new IOS in the router while keeping the existing IOS.
What is the maximum size of an IOS file that could be loaded if the original IOS is also kept in flash?

A. 3MB
B. 5MB
C. 7MB
D. 4MB

Correct Answer: D
Section: Basic device operation
Explanation

Explanation/Reference:
Based on the output provided, the total amount of flash memory available is 8388608 bytes (8 MB), but the existing IOS is using up 3803056 bytes (3 MB), so in order to fit both IOS files into the flash the new image must be no greater than the amount of available memory, which is 4585552 bytes (4 MB).

QUESTION 47
According to capabilities of WPA security, which encryption type does WPA2 use?

A. AES-CCMP
B. PSK
C. TKIP/MIC
D. PPKvialV

Correct Answer: A
Section: WLAN
Explanation

Explanation/Reference:

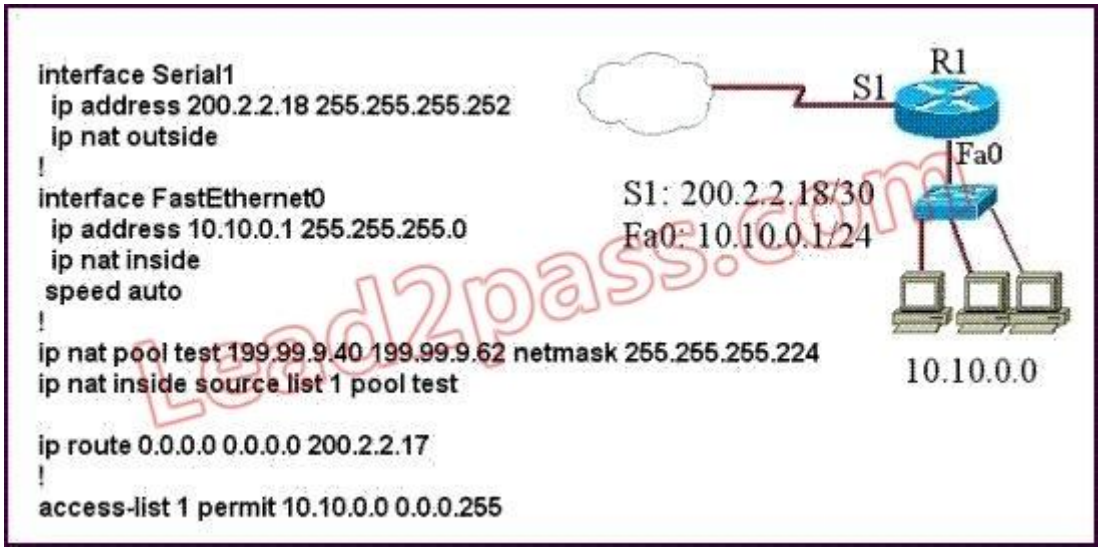
QUESTION 48
How should a router that is being used in a Frame Relay network be configured to avoid split horizon issues from preventing routing updates?

A. Configure a separate sub-interface for each PVC with a unique DLCI and subnet assigned to the sub-interface.
B. Configure each Frame Relay circuit as a point-to-point line to support multicast and broadcast traffic.
C. Configure many sub-interfaces on the same subnet.
D. Configure a single sub-interface to establish multiple PVC connections to multiple remote router interfaces.

Correct Answer: A
Section: WAN
Explanation

Explanation/Reference:

QUESTION 49
Refer to the topology and router configuration shown in the graphic.
A host on the LAN is accessing an FTP server across the Internet.
Which of the following addresses could appear as a source address for the packets forwarded by the router to the destination server?



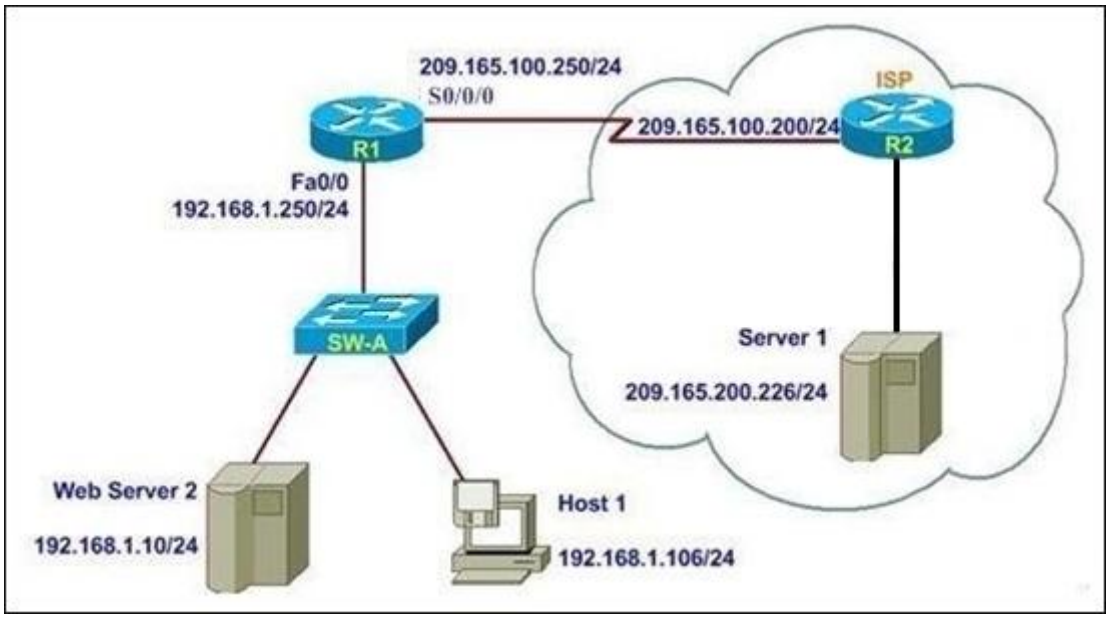
A. 10.10.0.1
B. 10. 10.0.2

C. 199.99.9.33
D. 199.99.9.57
E. 200.2.2.17
F. 200.2.2.18

Correct Answer: D
Section: NAT & ACLs
Explanation

Explanation/Reference:
Using NAT we can translate the Source or Destination Address. In our example all source address from the 10.10.00 0.0.0.255 network will be translated to an IP address form the 199.99.9.40-62 pool, making 199.99.9.57 correct.

QUESTION 50
The router address 192.168.1.250 is the default gateway for both the Web Server 2 and Host 1. What is the correct subnet mask for this network?



A. 255.255.255.250
B. 255.255.255.128

C. 255.255.255.252
D. 255.255.255.0

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:
1. Based on the information provided in the exhibit, we know that the IP address of the interface Fa0/0 is 192.168.1.250/24, that is to say the subnet mask is 255.255.255.0??
2. When configuring the correct IP address and not wasting IP address, the network of 192.168.1.0 needs to contain the following three IP addresses of interfaces:

R1(fa 0/0) : 192.168.1.250
Host1: 192.168.1.106/24
Web server 2: 192.168.1.10/24
The correct mask is 255.255.255.0.

QUESTION 51
Which of the following data network would you implement if you wanted a wireless network that had a relatively high data rate, but was limited to very short distances?

A. Broadband personal comm. Service (PCS)
B. Broadband circuit
C. Infrared
D. Spread spectrum
E. Cable

Correct Answer: C
Section: WLAN
Explanation

Explanation/Reference:
A good example of the range of an infrared is a television remote control or a garage door opener. Infrared networks are capable of high data rates, but they are limited in the distance between the infrared points, and also by the fact that a line of sight between the nodes is usually required.

QUESTION 52
Which of the following are associated with the application layer of the OSI model? (Choose two.)

A. Ping
B. Telnet
C. FTP

D. TCP
E. IP

Correct Answer: BC
Section: How a network works
Explanation

Explanation/Reference:
Application Layer (layer 7) Applications associated layer 7 :

Telnet
HTTP
FTP
WWW browsers
NFS
SMTP gateways
SNMP

QUESTION 53
When are packets processed by an inbound access list?

A. Before they are routed to an outbound interface
B. After they are routed to an outbound interface
C. Before and after they are routed to an outbound interface
D. After they are routed to an outbound interface but before being placed in the outbound queue

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:
For inbound ACL, before the router forwards groups to other interface, the router will compare group and interface ACL. ACL statement will process in top-down order, until a match item is found;
the follow-up statement will no longer be handled. If no matching item is found in ACL, groups will be discarded (implicit refusal).

When a packet is received on an interface with an inbound access list configured, the packets are matched against the access list to determine if they should be permitted or denied.
After this check, the packets are processed by the routing function. The access list check is always done first.

QUESTION 54
In addition to assigning an IP address, Which of the following correctly describe regarding TCP/IP stack configuration features can DHCP provide? (Choose three.)

A. Default gateway
B. DNS servers
C. FTP server
D. Helper address
E. Subnet mask
F. TFTP server

Correct Answer: ABE
Section: IP Services
Explanation

Explanation/Reference:
Default gateway refers to router default gateway, which is used to realize access between vlans. When a router receives a destination unknown address packet, it will be sent to the default gateway (such as a router's interface) if default gateway exists, otherwise the packet will be discarded. DNS is Domain Name Server. The conversion between Domain names and IP addresses is called domain analysis, and DNS is the server to process domain analysis. IP addresses use network number and host number to mark network host, and only computers under the same network number can intercommunicate "directly", computers with different networks may intercommunicate only through Gateway. Thus IP networks are divided into smaller networks, known as subnet. Subnet mask is used to determine whether two IP addresses are in the same subnet, then only computers under the same subnet can intercommunicate "directly".

DHCP is used by workstations (hosts) to get initial configuration information, such as an IP address, subnet mask, and default gateway upon bootup. Since each host needs an IP address to communicate in an IP network, DHCP eases the administrative burden of manually configuring each host with an IP address. Furthermore, if a host moves to a different IP subnet, it has to use a different IP address than the one it was previously using. DHCP takes care of this automatically, by allowing the host to choose an IP address in the correct IP subnet.
ReferencE.
"Understanding and Troubleshooting DHCP in Catalyst Switch or Enterprise Networks" http://www.cisco.com/en/US/tech/tk648/tk361/ technologies_tech_note09186a00800f0804.shtml#u nderstanding

QUESTION 55
As the network administrator, you have been instructed to prevent all traffic originating on the Router 1 LAN from entering the router2.
Which the following command would implement the access list on the interface of router2?

A. access-list 101 out
B. ip access-group 101 out
C. access-list 101 in
D. ip access-group 101 in

Correct Answer: D
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 56
The command frame-relay map ip 10.121.16.8 102 broadcast was entered on the router. Which of the following statements is true concerning this command?

A. This command should be executed from the global configuration mode.

B. The IP address 10.121.16. 8 is the local router port used to forward data.
C. 102 is the remote DLCI that will receive the information.
D. This command is required for all Frame Relay configurations.
E. The broadcast option allows packets, such as RIP updates, to be forwarded across the PVC.

Correct Answer: E
Section: WAN
Explanation

Explanation/Reference:
Broadcast is added to the configurations of the frame relay, so the PVC supports broadcast, allowing the routing protocol updates that use the broadcast update mechanism to be forwarded across itself.

QUESTION 57
You just entered the following command

Router(config#) line console 0

Which operation is most likely to follow?

A. Configure the terminal type.
B. Enter protocol parameters for a serial line.
C. Create a password on the console terminal line.
D. Establish a terminal type 4 connection to a remote host.

Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:
A console password is configured from global configuration mode, at the console line level.
The output below outlines each step from privileged EXEC mode forward.

Company-1#config t
Enter configuration commands, one per line. End with CNTL/Z.
Company - 1(config)#line console 0
Company -1(config-line)#login
Company -1(config-line)#password cisco1

QUESTION 58
The Company WAN is migrating from RIPv1 to RIPv2. Which three statements are correct about RIP version 2? (Choose three)

A. It has the same maximum hop count as version 1.
B. It uses broadcasts for its routing updates.
C. It is a classless routing protocol.
D. It has a lower default administrative distance than RIP version 1.
E. It supports authentication.
F. It does not send the subnet mask in updates.

Correct Answer: ACE
Section: Routing
Explanation

Explanation/Reference:
RIPV1
RIPV1 is a classful routing protocol , it sends update packets which does not contain subnet mask information every 30 seconds,
it does not support VLSM and performs border automatic route summary by default, it can't be shut down, so it does not support non-consecutive networks and authentication,
it uses hop counts as metric, the administrative distance is 120. Each packet contains 25 routing information at most , and routing update is broadcast.
RIPV2
RIPV2 is a classless routing protocol, whose transmitted packets contain subnet mask information, it supports VLSM and enables the function of auto-summary.
So, it is needed to manually shut down the function of auto-summary in order to send subnet information to the main network.
RIPV2 only supports summarizing routing to the main network instead of summarizing different main networks.
So it does not support CIDR. RIPV2 updates routing by use of the multicast address 224.0.0.9, only the corresponding multicast MAC address can reply to packets.
Whether reply to packets and support authentication or not can be distinguished at the MAC layer.

NotE:
Refer to the classful routing protocol, when the subnet of the interface sending routing packets is in the same main network as the subnet associated with the packets,
the router can transmit subnet information through this interface assuming that the interface and the subnet of packets use the same subnet mask.

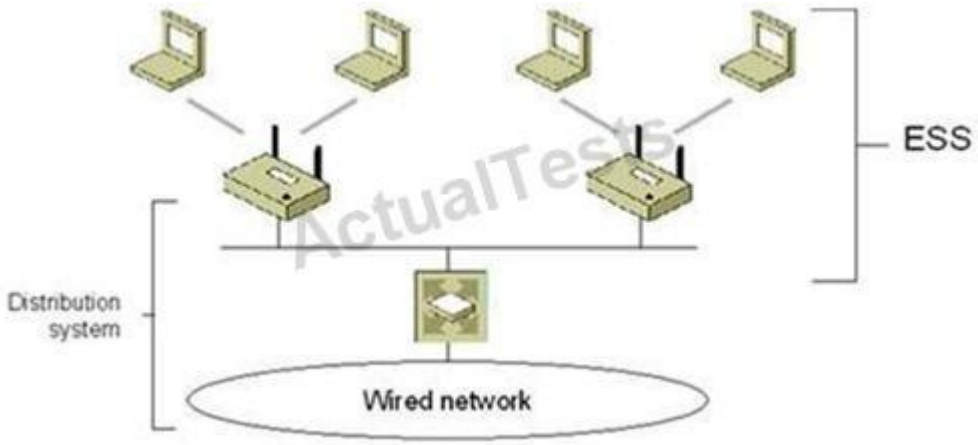
QUESTION 59
Three access points have been installed and configured to cover a small office. What term defines the wireless topology?

A. BSS
B. IBSS
C. ESS
D. SSID

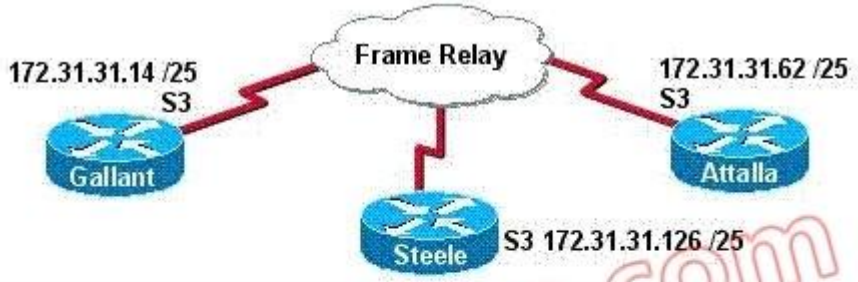
Correct Answer: C

Section: WLAN
Explanation

Explanation/Reference:
A single wireless AP supporting one or multiple wireless clients is known as a Basic Service Set (BSS).
A set of two or more wireless APs connected to the same wired network is known as an Extended Service Set (ESS).
An ESS is a single logical network segment (also known as a subnet), and is identified by its SSID.
See the Figure:



QUESTION 60
The Frame Relay network in the diagram is not functioning properly. What is the cause of the problem?




```
Gallant#show frame-relay map
Serial3 (up): ip 172.31.31.126 dlci 205 (0xCD,0x30D0), static, broadcast,
        CISCO, status defined, active
```

```
Steele#show frame-relay map
Serial3 (up): ip 172.31.31.126 dlci 605 (0x25D,0x94D0), static, broadcast,
        CISCO, status defined, active
```

```
Attalla#show frame-relay map
Serial3 (up): ip 172.31.31.62 dlci 509(0x1FD,0x7CD0), static, broadcast,
        CISCO, status deleted
Serial3 (up): ip 172.31.31.14 dlci 502(0x1F6,0x7C60), static, broadcast,
        CISCO, status defined, active
```

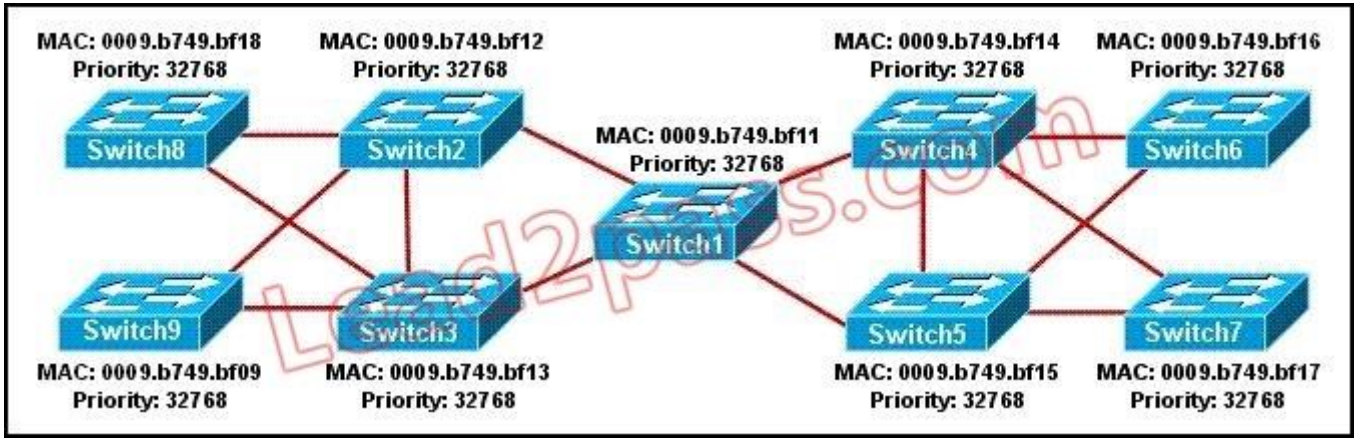

A. The Gallant router has the wrong LMI type configured.
B. The IP address on the serial interface of the Attalla router is configured incorrectly.
C. The frame-relay map statement in the Attalla router for the PVC to Steele is not correct.
D. The S3 interface of the Steele router has been configured with the frame-relay encapsulation ietf command.
E. Inverse ARP is providing the wrong PVC information to the Gallant router.

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
On serial 3 of Attalla we can see that there are 2 PVC's defined, but only one of them is working and is shown as active.
The frame relay map that was used to specify DLCI 509 was incorrect.
Incorrect DLCI assignments that are configured in routers normally show up as "deleted" in the frame relay maps.

QUESTION 61
Refer to the exhibit.
The switches on a campus network have been interconnected as shown.

All of the switches are running Spanning Tree Protocol with its default settings.
Unusual traffic patterns are observed and it is discovered that Switch9 is the root bridge.
Which change will ensure that Switch1 will be selected as the root bridge instead of Switch9?



A. Raise the bridge priority on Switch1.
B. Lower the bridge priority on Switch9.
C. Raise the bridge priority on Switch9.
D. Physically replace Switch9 with Switch1 in the topology.
E. Disable spanning tree on Switch9.
F. Lower the bridge priority on Switch1.

Correct Answer: F
Section: Spanning Tree
Explanation

Explanation/Reference:
The root bridge is the bridge or switch that is the root of the Spanning Tree, with the branches being loop-free paths to the other switches in the system.
The Root is the switch with the lowest Bridge ID; the ID is determined by a combination of an administrative Priority and the MAC address of the switch.
The Priority is set to 32,768 (8000 hex) by default; if we leave the Priority at the default, whatever switch has the lowest MAC will be the Root.
So to elect the Switch1 switch as a root bridge need to set the lowest priority.

QUESTION 62
What are two recommended ways of protecting network device configuration files from outside network security threats? (Choose two.)

A. Allow unrestricted access to the console or VTY ports.
B. Use a firewall to restrict access from the outside to the network devices.

C. Always use Telnet to access the device command line because its data is automatically encrypted.
D. Use SSH or another encrypted and authenticated transport to access device configurations.
E. Prevent the loss of passwords by disabling password encryption.

Correct Answer: BD
Section: Layer 3 Security
Explanation

Explanation/Reference:
A firewall will restrict access from the outside to internal network devices and resources.

Secure Shell (SSH) is a protocol which provides a secure remote access connection to network devices. Communication between the client and server is encrypted in both SSH version 1 and SSH version 2. Implement SSH version 2 when possible because it uses a more enhanced security encryption algorithm.

QUESTION 63
What should be part of a comprehensive network security plan?

A. Allow users to develop their own approach to network security.
B. Physically secure network equipment from potential access by unauthorized individuals.
C. Encourage users to use personal information in their passwords to minimize the likelihood of passwords being forgotten.
D. Delay deployment of software patches and updates until their effect on end-user equipment is well known and widely reported
E. Minimize network overhead by deactivating automatic antivirus client updates.

Correct Answer: B
Section: Layer 3 Security
Explanation

Explanation/Reference:
Computer systems and networks are vulnerable to physical attack; therefore, procedures should be implemented to ensure that systems and networks are physically secure.
Physical access to a system or network provides the opportunity for an intruder to damage, steal, or corrupt computer equipment, software, and information.
When computer systems are networked with other departments or agencies for the purpose of sharing information, it is critical that each party to the network take
appropriate measures to ensure that its system will not be physically breached, thereby compromising the entire network.
Physical security procedures may be the least expensive to implement but can also be the most costly if not implemented.
The most expensive and sophisticated computer protection software can be overcome once an intruder obtains physical access to the network.

QUESTION 64
Refer to the exhibit.

Which two statements are true based the output of the show frame-relay lmi command issued on the Branch router? (Choose two.)

```
Branch# show frame-relay lmi

LMI Statistics for interface Serial0/0 (Frame Relay DTE) LMI TYPE = ANSI
  Invalid Unnumbered info 0          Invalid Prot Disc 0
  Invalid dummy Call Ref 0           Invalid Msg Type 0
  Invalid Status Message 0           Invalid Lock Shift 0
  Invalid Information ID 0           Invalid Report IE Len 0
  Invalid Report Request 0           Invalid Keep IE Len 0
  Num Status Enq. Sent 61            Num Status msgs Rcvd 0
  Num Update Status Rcvd 0           Num Status Timeouts 60
Branch#
```


A. LMI messages are being sent on DLCI 1023.
B. The LMI exchange between the router and Frame Relay switch is functioning properly.
C. LMI messages are being sent on DLCI 0.
D. The Frame Relay switch is not responding to LMI requests from the router.
E. The router is providing a clock signal on Serial0/0 on the circuit to the Frame Relay switch.
F. Interface Serial0/0 is not configured to encapsulate Frame Relay.

Correct Answer: CD
Section: WAN
Explanation

Explanation/Reference:
Local Management Interface (LMI) messages manage the local access link between the router and the Frame Relay switch.
A Frame Relay DTE can send an LMI Status Enquiry message to the switch; the switch then replies with an LMI Status message to inform the router about information about each VC.
As we can see, the router has sent 61 messages, but received back none. We also know that DLCI 0 is used as this is the LMI DLCI used in ANSI. If the LMI type had been Cisco, the DLCI used is 1023.

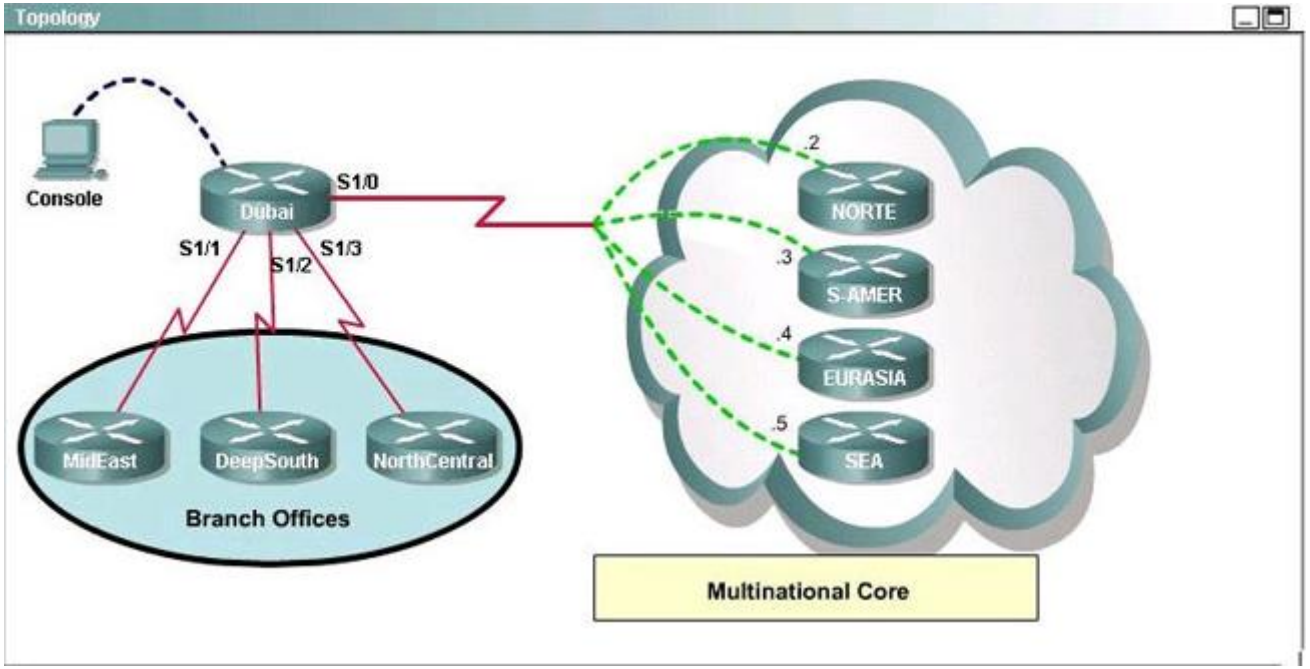
ReferencE.
http://www.cisco.com/en/US/tech/tk713/tk237/technologies_tech_note09186a0080094183.shtml

QUESTION 65
Refer to the topology.

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
Dubai#
interface FastEthernet0/0
 no ip address
 shutdown
!
interface Serial1/0
 ip address 172.30.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulation ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Tlnet
 login
!
end
```

What destination Layer 2 address will be used in the frame header containing a packet for host 172.30.4.4?

Exhibit:



A. 704
B. 196
C. 702
D. 344

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
The destination layer 2 address is a DLCI for frame-relay network.
The destination host packet address is 172.30.0.4 corresponding DLCI is 702.
This can be confirmed by looking at the show frame-relay map output which shows the frame- relay map statements for layer 3 address to its corresponding layer 2 address IP 172.30.0.4 is mapped to DLCI 702 .

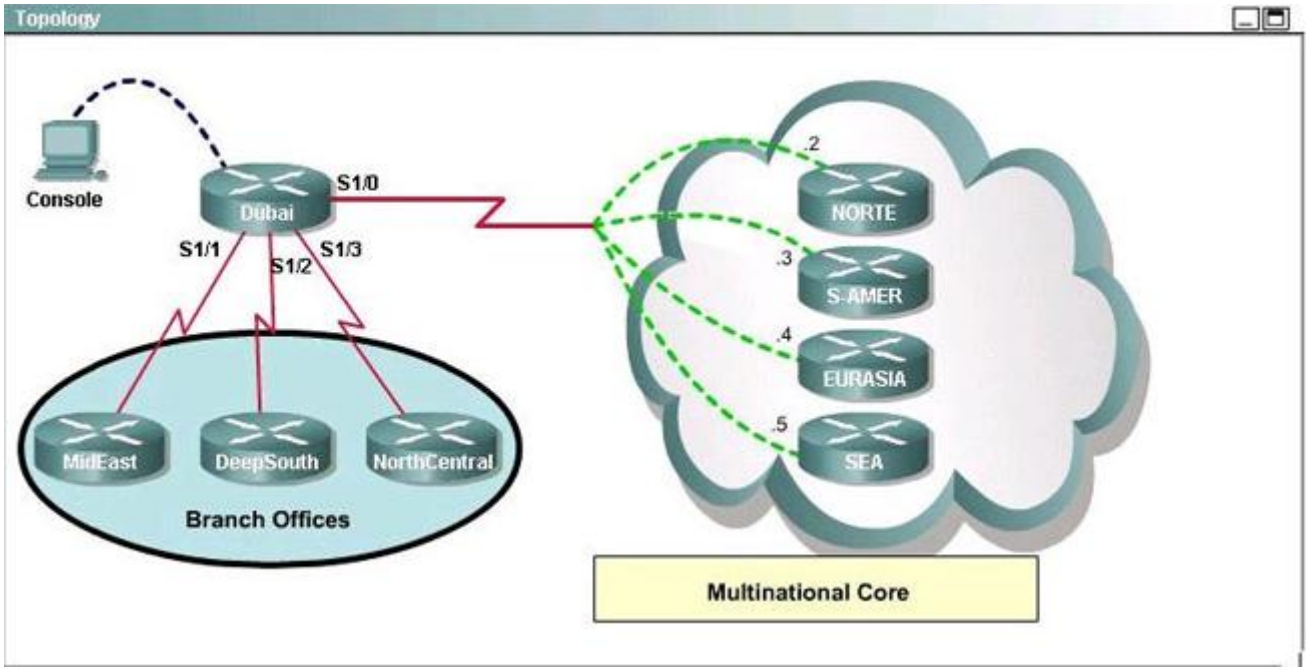
```
Dubai    1# show frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B , 0x1CB0) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA , 0x38A0) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x15E , 0x5490) , dynamic ,
                broadcast , , status defined , active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8 , 0x7080) , dynamic ,
                broadcast  status defined , active
```

QUESTION 66
Refer to the topology.

```
Dubai#sh frame-relay map
Serial1/0 (up): ip 172.30.0.2 dlci 704 (0x7B,0x1CB0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.3 dlci 196 (0xEA,0x38A0), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.4 dlci 702 (0x159,0x5490), dynamic,
                broadcast,, status defined, active
Serial1/0 (up): ip 172.30.0.5 dlci 344 (0x1C8,0x7080), dynamic,
                broadcast,, status defined, active
Dubai#
interface FastEthernet0/0
 no ip address
 shutdown
!
interface Serial1/0
 ip address 172.30.0.1 255.255.255.240
 encapsulation frame-relay
 no fair-queue
!
interface Serial1/1
 ip address 192.168.0.1 255.255.255.252
!
interface Serial1/2
 ip address 192.168.0.5 255.255.255.252
 encapsulation ppp
!
interface Serial1/3
 ip address 192.168.0.9 255.255.255.252
 encapsulation ppp
 ppp authentication chap
!
router rip
 version 2
 network 172.30.0.0
 network 192.168.0.0
 no auto-summary
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 password Tlnet
 login
!
end
```

If required, what password should be configured on the router in the MidEast branch office to allow a connection to be established with the Dubai router?

Exhibit:

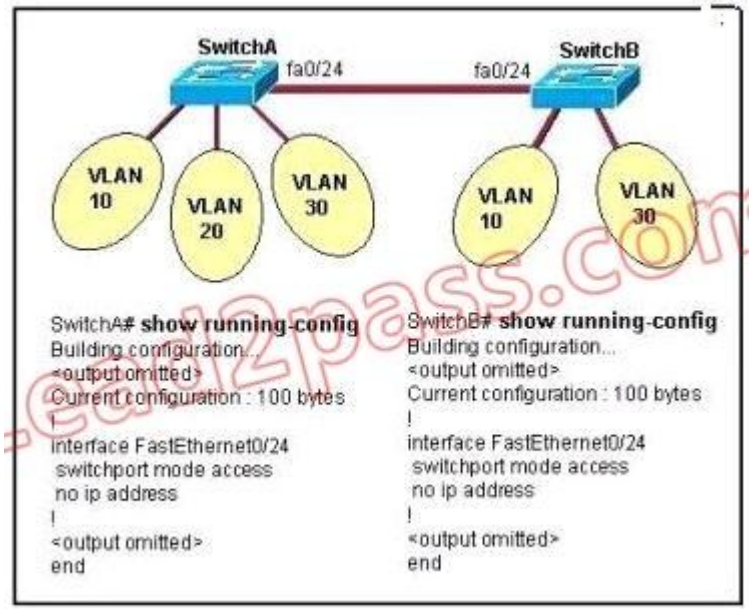


A. No password is required
B. Enable
C. Scr
D. Telnet
E. Console

Correct Answer: A
Section: WAN
Explanation

Explanation/Reference:

QUESTION 67
Refer to the Exhibit.



All Switches ports are assigned to the correct VLANs, but none of the hosts connected to switchA can communicate with hosts in the same VLAN connected to switchB.
Based on the output shown, what is the most likely problem?

A. The access link needs to be configured in multiple VLANs.
B. The link between the switches is configured in the wrong VLAN.
C. The link between the switches needs to be configured as a trunk.
D. VTP is not configured to carry VLAN information between the switches.
E. Switch IP addresses must be configured in order for traffic to be forwarded between the switches.

Correct Answer: C
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 68
Refer to the exhibit. Which two statements are true of the interfaces on Switch1? (Choose two.)

```
System Self Addresses Count: 41
Total MAC addresses: 50
Non-static Address Table:
Destination Address    AddressType    VLAN    Destination Port
-------------------    -----------    ----    ----------------
000a.0de0.e289         Dynamic        1       FastEthernet0/1
0010.7b00.1540         Dynamic        2       FastEthernet0/5
0010.7b00.1545         Dynamic        2       FastEthernet0/5
0060.5cf4.0076         Dynamic        1       FastEthernet0/1
0060.5cf4.0077         Dynamic        3       FastEthernet0/1
0060.5cf4.1315         Dynamic        1       FastEthernet0/1
0060.70cb.f301         Dynamic        2       FastEthernet0/1
0060.70cb.3f01         Dynamic        5       FastEthernet0/2
0060.1e42.9978         Dynamic        4       FastEthernet0/1
0060.1e9f.3900         Dynamic        3       FastEthernet0/1
0060.70cb.33f1         Dynamic        6       FastEthernet0/3
0060.70cb.103f         Dynamic        6       FastEthernet0/4

<output omitted>

Switch1# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID        Local Intrfce     Holdtime    Capability  Platform  Port ID
Switch2          Fas 0/1           157           S         2950-12    Fas 0/1
Switch3          Fas 0/2           143           S         2950-12    Fas 0/5

Switch1#
```


A. Interface FastEthernet0/2 has been disabled.
B. Multiple devices are connected directly to FastEthernet0/1.
C. FastEthernet0/1 is configured as a trunk link.
D. FastEthernet0/1 is connected to a host with multiple network interface cards.
E. FastEthernet0/5 has statically assigned MAC addresses.
F. A hub is connected directly to FastEthernet0/5.

Correct Answer: CF
Section: Switching
Explanation

Explanation/Reference:
Carefully observe the information given after command show.

Fa0/1 is connected to Switch2, seven MAC addresses correspond to Fa0/1, and these MAC are in different VLAN.
From this we know that Fa0/1 is the trunk interface.
From the information given by show cdp neighbors we find that there is no Fa0/5 in CDP neighbor.
However, F0/5 corresponds to two MAC addresses in the same VLAN. Thus we know that Fa0/5 is connected to a Hub.
Based on the output shown, there are multiple MAC addresses from different VLANs attached to the FastEthernet 0/1 interface.
Only trunks are able to pass information from devices in multiple VLANs.

QUESTION 69
A receiving host computes the checksum on a frame and determines that the frame is damaged. The frame is then discarded. At which OSI layer did this happen?

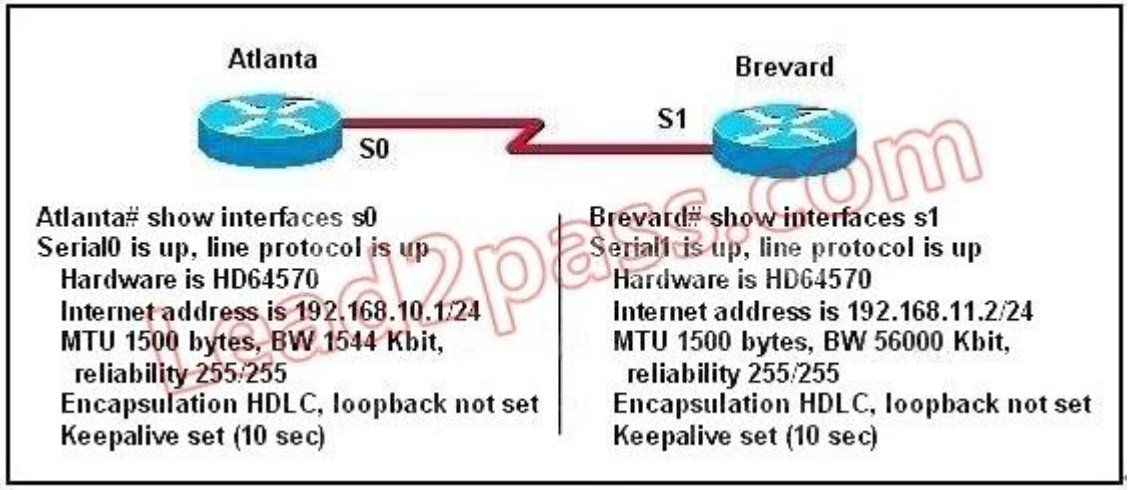
A. physical
B. session
C. data link
D. transport
E. network

Correct Answer: C
Section: How a network works
Explanation

Explanation/Reference:
The Data Link layer provides the physical transmission of the data and handles error notification, network topology, and flow control.
The Data Link layer formats the message into pieces, each called a data frame, and adds a customized header containing the hardware destination and source address.
Protocols Data Unit (PDU) on Datalink layer is called frame. **According to this question the frame is damaged and discarded which will happen at the Data Link layer.**

Error correction only happens at the Transport Layer

QUESTION 70
Two routers named Atlanta and Brevard are connected by their serial interfaces as shown in the exhibit, but there is no data connectivity between them. The Atlanta router is known to have a correct configuration. Given the partial configurations shown in the exhibit, what is the problem on the Brevard router that is causing the lack of connectivity?

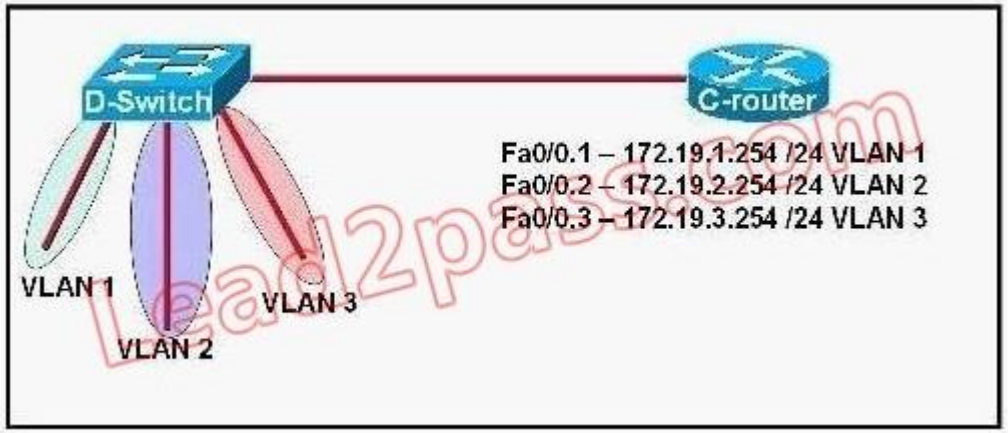


A. incompatible IP addresses
B. insufficient bandwidth
C. incorrect subnet mask
D. incompatible encapsulation
E. Link reliability too low
F. IPCP closed

Correct Answer: A
Section: WAN
Explanation

Explanation/Reference:
Answer A is correct because Interface Serial 0 of Atlanta Router has 192.168.10.1 And Interface Serial 1 of Router Brevard has 192.168.11.2. These are from different network.

QUESTION 71
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 can be said 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. No further routing configuration is required.
C. 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
D. These commands need to be added to the configuration:
   C-router(config)# router rip
   C-router(config-router)# network 172.19.0.0

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
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 72
Which of the following services use UDP? (Choose three.)

A. Telnet
B. TFTP
C. SNMP
D. DNS
E. SMTP
F. HTTP

Correct Answer: BCD
Section: IP Services
Explanation

Explanation/Reference:

TABLE 2.2 Key Protocols That Use TCP and UDP

TCP	UDP
Telnet 23	SNMP 161
SMTP 25	TFTP 69
HTTP 80	DNS 53
FTP 21	
DNS 53	
HTTPS 443	

QUESTION 73
Which two states are the port states when RSTP has converged? (Choose two)

A. blocking
B. learning
C. disabled

D. forwarding
E. listening

Correct Answer: AD
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 74
There are no boot system commands in a router configuration in NVRAM. What is the fallback sequence that the router will use to find an IOS during reload?

A. Flash, TFTP server, ROM
B. Flash, NVRAM, ROM
C. ROM, NVRAM, TFTP server
D. NVRAM, TFTP server, ROM
E. TFTP server, Flash, NVRAM

Correct Answer: A
Section: Switching
Explanation

Explanation/Reference:

QUESTION 75
Refer to the graphic.

A host is connected to switch port Fa0/3 with a crossover cable. The host and switch have as shown.
However, the port indicator on switch port Fa0/3 is not on, and the host cannot communicate with to vlan 2 on the same switch.
Based on the information given. what is the problem?

A. The switch has been assigned an incorrect subnet mask.
B. Switch port FA0/3 is not configured as a trunk port
C. Switch port FA0/3 has been blocked by STP
D. The switch and the hosts must be in the same subnet
E. The cable is the wrong type

Correct Answer: E
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 76
Refer to the exhibit.

```
Router#config1

Router(cofing)#line vty 04

Router(confing-line)#password c1 sc0

Router(confing-line)#login
```


Which user-mode password has just been set?

A. Telnet
B. Auxiliary
C. SSH
D. Console

Correct Answer: A
Section: IP Services
Explanation

Explanation/Reference:

QUESTION 77
Which item represents the standard IP ACL?

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

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 78
What is one benefit of PVST+?

A. PVST+ reduces the CPU cycles for all the switches in the network
B. PVST+ automatically selects the root bridge location, to provide optimize.
C. PVST+ allows the root switch location to be optimized per VLAN.
D. PVST+ supports Layer 3 load balancing without loops.

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 79
Refer to following command.

access-list 114 permit ip 10.4.4.0 0.0.0.255

What would be the effect of issuing the command ip access-group 114 in to the fa0/0 interface?

A. Attempts to telnet to the router would fail
B. It would allow all traffic from the 10.4.4.0 network
C. IP traffic would be passed through the interface but TCP and UDP traffic would not
D. Routing protocol updates for the 10.4.4.0 network would not be accepted from the fa0/0 interface

Correct Answer: B
Section: NAT & ACLs
Explanation

Explanation/Reference:
From the output of access-list 114:
access-list 114 permit ip 10.4.4.0 0.0.0.255 any
we can easily understand that this access list allows all traffic (ip) from 10.4.4.0/24 network

QUESTION 80
What would be the effect of issuing the command ip access-group 115 in on the s0/0/1 interface?

A. No host could connect to RouterC through s0/0/1.
B. Telnet and ping would work but routing updates would fail.

C. FTP, FTP-DATA, echo, and www would work but telnet would fail.
D. Only traffic from the 10.4.4.0 network would pass through the interface.

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 81
Which statement is true?

A. An IPv6 address is 64 b long and is represented as hexadecimal characters.
B. An IPv6 address is 32 b long and is represented as decimal digits.
C. An IPv6 address is 128 b long and is represented as decimal digits.
D. An IPv6 address is 128 b long and is represented as hexadecimal characters.

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:
IPv6 uses a 128-bit address technique, as compared to IPv4's 32-bit address structure. There is also a difference in the way the IP addresses are listed. IPv6 numbers are written in hexadecimal rather than dotted decimal, as with IPv4. For example, the following is an IPv6 address represented with 32 hexadecimal digits Note: 32 hex digits with 4 bits/hex digit = 128 bits):
6789:ABCD:1234:EF98:7654:321F:EDCB:AF21

This is classified as a **full IPv6 address**. The *full* means that all 32 hexadecimal positions contain a value other than 0.

QUESTION 82
In which circumstance are multiple copies of the same unicast frame likely to be transmitted in a switched LAN?

A. after broken links are re-established
B. in an improperly implemented redundant topology
C. when upper-layer protocols require high reliability
D. during high traffic periods
E. when a dual ring topology is in use

Correct Answer: B
Section: Switching
Explanation

Explanation/Reference:

QUESTION 83
Which command sets and automatically encrypts the privileged enable mode password?

A. Enable password cisco
B. Secret enable cisco
C. Password enable cisco
D. Enable secret cisco

Correct Answer: D
Section: Basic device operation
Explanation

Explanation/Reference:
The Enable Secret password accomplishes the same thing as Enable. However, it is encrypted by default and supercedes Enable if it is set. In other words, if you set the Enable password and then set the Enable Secret password, the Enable password will never be used.

You set the Enable Secret password from global configuration mode by using the command:
enable secret *password*

Here's an example:
Router#config t
Router(config)#enable secret cisco

QUESTION 84
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. an OSPF update for network 192.168.0.0/16
B. a static route to network 192.168.10.0/24
C. a static route to network 192.168.10.0/24 with a local serial interface configured as the next hop
D. a RIP update for network 192.168.10.0/24

E. a directly connected interface with an address of 192.168.10.254/24
F. a default route with a next hop address of 192.168.10.1 416

Correct Answer: E
Section: Routing
Explanation

Explanation/Reference:

QUESTION 85
Which two commands can be used to verify a trunk link configuration status on a given Cisco switch? (Choose two)

A. show interface
B. show interface trunk
C. show interface switchport
D. show ip interface brief
E. show interfaces vlan

Correct Answer: BC
Section: Switching
Explanation

Explanation/Reference:

QUESTION 86
You are working in a data center environment and are assigned the address range 10.188.31.0/23.
You are asked to develop an IP addressing plan to allow the maximum number of subnets with as many as 30 hosts each.
Which IP address range meets these requirements?

A. 10.188.31.0/27
B. 10.188.31.0/26
C. 10.188.31.0/29
D. 10.188.31.0/28
E. 10.188.31.0/25

Correct Answer: A
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 87
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 1
B. Router(config)#router ospf 0
C. Router(config)#router ospf area 0
D. Router(config-router)# network 192.168.16.0 0.0.0.255 area 0
E. Router(config-router)#network 192.168.16.0 0.0.0.255 0
F. Router(config-router)#network 192.168.16.0 255.255.255.0 area 0

Correct Answer: AD
Section: Routing
Explanation

Explanation/Reference:

QUESTION 88
Given an IP address 172.16.28.252 with a subnet mask of 255.255.240.0, what is the correct network address?

A. 172.16.16.0
B. 172.16.24.0
C. 172.16.0.0
D. 172.16.28.0

Correct Answer: A
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 89
Which command can be used to verify the DLCI destination address in a Frame Relay static configuration?

A. show frame-relay end-to-end

B. show frame-relay map
C. show frame-relay lmi
D. show frame-relay pvc

Correct Answer: B
Section: WAN
Explanation

Explanation/Reference:

QUESTION 90
Which statement about vlan operation on cisco catalyst switches is true?

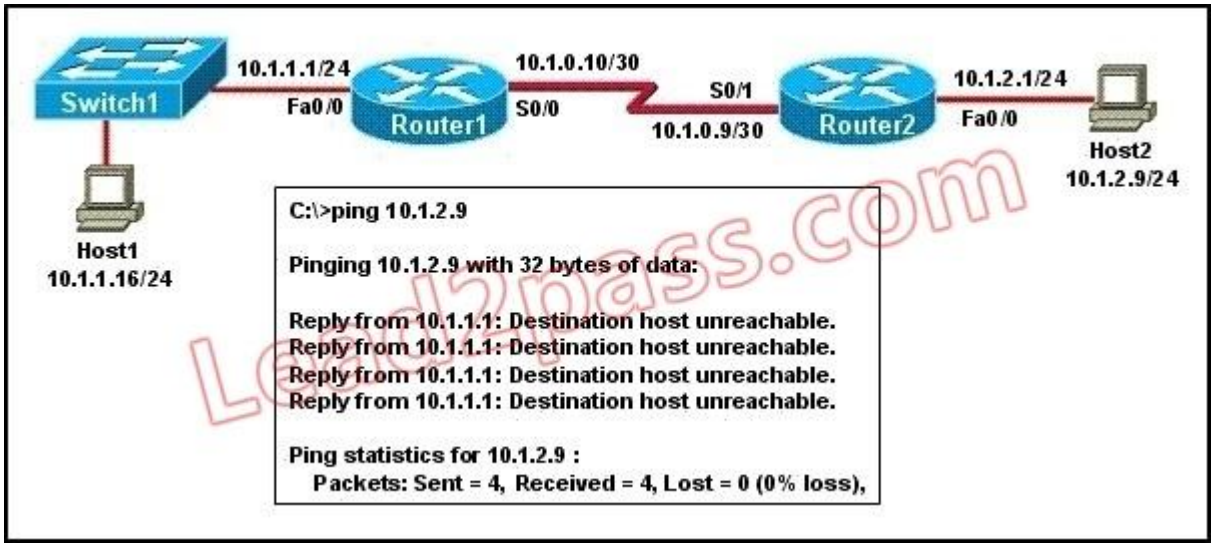
A. when a packet is received from an 802.1Q trunk,the vlan id can be determined from the source MAC address table.
B. Unknown unicast frames are retransmitted only to the ports that belong to the same VLAN.
C. ports between switches should be configured in access mode so that vlans can span across the ports
D. broadcast and multicast frames are retransmitted to ports that are configured on different vlan.

Correct Answer: B
Section: VTP
Explanation

Explanation/Reference:

Exam F

QUESTION 1
Refer to the exhibit.



A network administrator attempts to ping Host2 from Host1 and receives the results that are shown. What is a possible problem?

A. The link between Host1 and Switch1 is down.
B. Interface Fa0/0 Router1 is shutdown.
C. TCP/IP is not functioning on Host1
D. The link between Router1 and Router2 is down.
E. The link between Switch1 and Router1 is down.
F. The default gateway on Host1 is incorrect.

Correct Answer: D
Section: Troubleshoot Routing
Explanation

Explanation/Reference:
Host1 tries to communicate with Host2. The message destination host unreachable from Router1 indicates that the problem occurs when the data is forwarded from Host1 to Host2.
According to the topology, we can infer that The link between Router1 and Router2 is down.

QUESTION 2
Which two are features of IPv6 (Choose two)

A. pod cast
B. multicast
C. anycast
D. allcast
E. broadcast

Correct Answer: BC
Section: IPv6
Explanation

Explanation/Reference:

QUESTION 3
A network administrator receives an error message while trying to configure the Ethernet interface of a router with IP address 10.24.24.24/29.
Which statement explains the reason for this issue?

A. This address is a broadcast address.
B. VLSM-capable routing protocols must be enabled first on the router.
C. The Ethernet interface is faulty.
D. This address is a network address.

Correct Answer: D
Section: IP addressing
Explanation

Explanation/Reference:

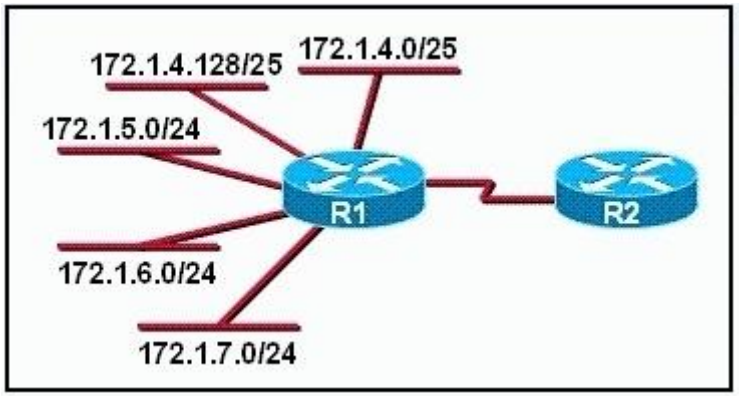
QUESTION 4
Which command enables RSTP on a switch?

A. spanning tree backbonefast
B. spanning-tree mode rapid-pvst
C. spanning-tree mode mst
D. spanning-tree uplinkfast

Correct Answer: B
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 5
Refer to the exhibit.



What is the most efficient summarization that R1 can use to advertise its networks to R2?

A. 172.1.4.0/25
172.1.4.128/25
172.1.5.0/24
172.1.6.0/24
172.1.7.0/24
B. 172.1.0.0/22
C. 172.1.4.0/24
172.1.5.0/24
172.1.6.0/24
172.1.7.0/24
D. 172.1.0.0/21
E. 172.1.4.0/22

Correct Answer: E
Section: IP addressing
Explanation

Explanation/Reference:
When the subnet mask is /22, R1 can advertise its networks to R2.

QUESTION 6
The enable secret command is used to secure access to which CLI mode?

A. global configuration mode
B. privileged EXEC mode
C. user EXEC mode
D. auxiliary setup mode

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:

`secret` This is the newer, encrypted password that overrides the enable password if it's set.

QUESTION 7
Which address is the IPv6 all-RIP-routers multicast group address that is used by RIPng as the destination address for RIP updates?

A. FF02::9
B. FF02::6
C. FF05::101
D. FF02::A

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 8
Which IPsec security protocol should be used when confidentiality is required?

A. PSK
B. AH

C. MD5
D. ESP

Correct Answer: D
Section: Layer 3 Security
Explanation

Explanation/Reference:

- **ESP**—A security protocol may be used to provide confidentiality (encryption) and authentication. ESP, shown in Figure 1-16, provides confidentiality by performing encryption at the IP packet layer. IP packet encryption conceals the data payload and the identities of the ultimate source and destination. ESP provides authentication for the inner IP packet and ESP header. Authentication provides data origin authentication and data integrity. Although both encryption and authentication are optional in ESP, at a minimum, one of them must be selected. ESP provides
  - Data confidentiality (encryption)
  - Data integrity
  - Data origin authentication
  - Anti-replay protection

QUESTION 9
What are three features of the IPv6 protocol? (Choose three.)

A. checksums
B. optional IPsec
C. autoconfiguration
D. complicated header
E. plug-and-play
F. no broadcasts

Correct Answer: CEF
Section: IPv6
Explanation

Explanation/Reference:
Autoconfiguration

IPv6 makes the network "*plug and play*" capable, which means that a newly set up system integrates into the (local) network without any manual configuration. The new host uses its automatic configuration mechanism to derive its own address from the information made available by the neighboring routers, relying on a protocol called the neighbor discovery (ND) protocol. This method does not require any intervention on the administrator's part and there is no need to maintain a central server for address allocation—an additional advantage over IPv4, where automatic address allocation requires a DHCP server.

Read more: http://linuxpoison.blogspot.com/2009/01/advantages-of-ipv6-next-generation.html#ixzz2eQN4VF6F

Multicasting, the transmission of a packet to multiple destinations in a single send operation, is part of the base specification in IPv6. In IPv4 this is an optional although commonly implemented feature.[17] IPv6 multicast addressing shares common features and protocols with IPv4 multicast, but also provides changes and improvements by eliminating the need for certain protocols. **IPv6 does not implement traditional IP broadcast,** i.e. the transmission of a packet to all hosts on the attached link using a special *broadcast address*, and therefore does not define broadcast addresses

QUESTION 10
At which layer of the OSI model is RSTP used to prevent loops?

A. data link
B. network
C. physical
D. transport

Correct Answer: A
Section: Switching
Explanation

Explanation/Reference:

QUESTION 11
Which device might be installed at a branch office to enable and manage an IPsec site-to-site VPN?

A. Cisco IOS IPsec/SSL VPN client
B. Cisco VPN Client
C. ISDN terminal adapter
D. Cisco Adaptive Security Appliance

Correct Answer: D
Section: Layer 3 Security
Explanation

Explanation/Reference:

Site-to-Site IPsec VPN is done using Cisco Adapative Security Appliance (ASA)

http://www.cisco.com/en/US/products/ps9422/products_configuration_example09186a0080b4ae61.shtml

QUESTION 12
Which protocol is an open standard protocol framework that is commonly used in VPNs, to provide secure end-to-end communications?

A. PPTP
B. IPsec
C. RSA
D. L2TP

Correct Answer: B
Section: Layer 3 Security
Explanation

Explanation/Reference:

End-to-End Security Is Fundamental
Security on the endpoints (client-server, or client-client for peer-to-peer) is an absolute requirement for secure communications. Such a solution contains the following components:

- *Identity:* This component encompases known and verifiable entity identities on both ends; note that an identity can be temporary for a connection. For example, a user often is identified by username and password, whereas a server may be identified through a server certificate.
- *Protocols* (for example, TLS [1] and IPsec [2]): Protocols are used to dynamically negotiate session keys, and to provide the required security functions (for example, encryption and integrity verification) for a connection. Protocols use algorithms to implement these functions.

QUESTION 13
Which three statements about RSTP are true? (Choose Three)

A. RSTP port states are blocking, discarding, learning, or forwarding.
B. RSTP expands the STP port roles by adding the alternate and backup roles.
C. RSTP significantly reduces topology reconverging time after a link failure.
D. RSTP also uses the STP proposal-agreement sequence.
E. RSTP uses the same timer-based process as STP on point to point links.
F. RSTP provides a faster transition to the forwarding state on point-to-point links than STP does.

Correct Answer: BCF
Section: Spanning Tree

Explanation

Explanation/Reference:

QUESTION 14
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

Correct Answer: BDE
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 15
Which statement is true, as relates to classful or classless routing?

A. Automatic summarization at classful boundaries can cause problems on discontinuous subnets.
B. EIGRP and OSPF are classful routing protocols and summarize routes by default
C. RIPv1 and OSPF are classless routing protocols
D. Classful routing protocols send the subnet mask in routing updates

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 16
Refer to the exhibit.

```
ACL 10
Statements are written in this order:
A.    permit any
B.    deny    172.21.1.128.0.0.0.15
C.    permit  172.21.1.129.0.0.0.0
D.    permit  172.21.1.142.0.0.0.0
```

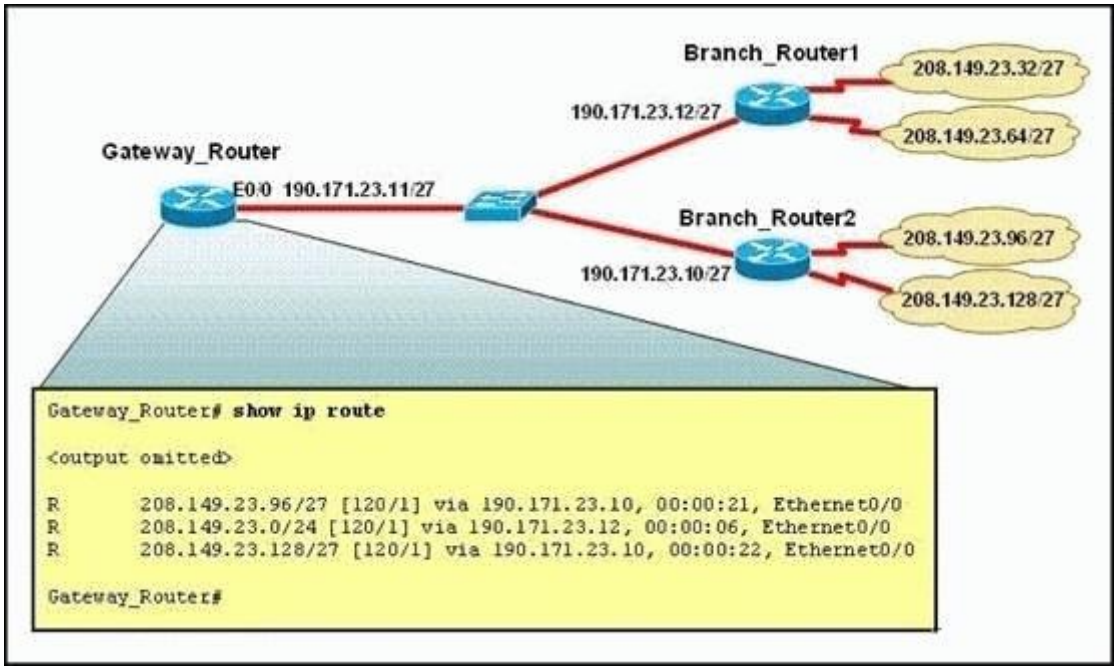
Statements A, B, C, and D of ACL 10 have been entered in the shown order and applied to interface E0 inbound, to prevent all hosts (except those whose address are the first and last IP of subnet 172.21.1.128/28) from accessing the network.
But as is, the ACL does not restrict anyone from the network. How can the ACL statements be re-arranged so that the system works as intended?

A. CDBA
B. ACDB
C. BADC
D. DBAC

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 17
Refer to the exhibit.



What is the most likely reason for the disparity between the actual network numbers at the branches and the routes in the routing table on Gateway_Router?

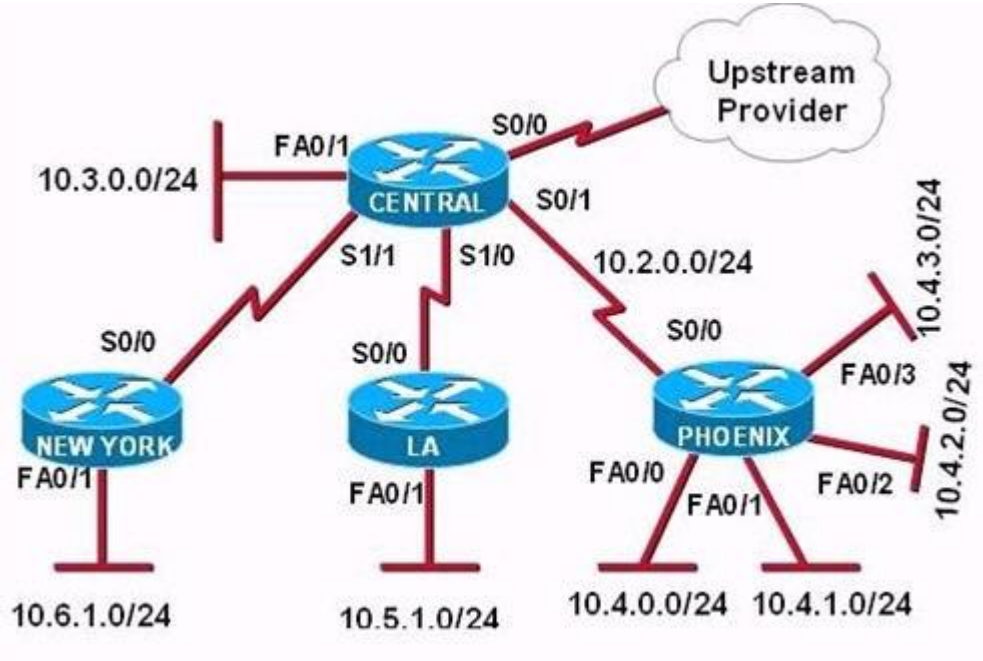
A. Gateway_Router is configured to receive only RIPv1 updates.
B. Gateway_Router is configured to only receive RIPv2 updates.
C. Branch_Router2 is configured to send both RIPv1 and RIPv2 updates.
D. Branch_Router1 is configured to only send RIPv1 updates.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
The default version of RIP is version 1, which doesn't supports multicast updates, classless networks, and authentication.
It appears that Router1 is configured with RIP v1 so it's sending only v1 packets, which means only the classful network of 208.149.23.0/24 is being advertised.
However, it appears that Router2 is indeed using RIPv2 as both the /27 networks are being advertised from that router.
If you wish to enable to RIP version 2 on router use following command:
Router(Config)#router rip

Router(Config-router)#version 2

QUESTION 18
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. 10.0.0.0/28 is subnetted, 1 subnets
D 10.4.4.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
D. 10.0.0.0/30 is subnetted, 1 subnets
D 10.4.4.4 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
E. 10.0.0.0/22 is subnetted, 1 subnets
D 10.4.0.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1
F. 10.0.0.0/30 is subnetted, 1 subnets

D 10.2.2.0 [90/20514560] via 10.2.0.2, 6w0d, Serial0/1

Correct Answer: E
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 19
Which two Cisco IOS commands, used in troubleshooting, can enable debug output to a remote location? (Choose two)

A. no logging console
B. logging host ip-address
C. terminal monitor
D. show loggin | redirect flash: out.txt
E. snmp-server enable traps syslog

Correct Answer: BC
Section: Basic device operation
Explanation

Explanation/Reference:
To log system messages and debug output to a remote host, use the logging host command in global configuration mode.

In order to enable logging on your virtual terminal connection via telnet, type:
terminal monitor

QUESTION 20
A network administrator needs to configure port security on a switch. Which two statements are true? (Choose two)

A. The network administrator can apply port security to dynamic access points.
B. When dynamic MAC address learning is enabled on an interface, the switch can learn new addresses, up to the maximum defined.
C. The network administrator can configure static secure or sticky secure MAC addresses in the voice VLAN.
D. The network administrator can apply port security to EtherChannels.
E. The sticky learning feature allows the addition of dynamically learned addresses to the running configuration.

Correct Answer: BE
Section: Layer 2 Security
Explanation

Explanation/Reference:
When dynamic mac address learning is enabled on an interface,the switch can learn new addresses,up to the maximum defined

The sticky learning feature allows the addition of dynamically learned addresses to the running configuration.

QUESTION 21
Which three statements accurately describe Layer 2 Ethernet switches? (Choose three)

A. Microsegmentation decreases the number of collisions on the network.
B. if a switch receives a frame for an unknown destination,it uses ARP to resolve the address.
C. Spanning Tree Protocol allows switches to automatically share vlan information.
D. In a properly functioning network with redundant switched paths, each switched segment will contain one root bridge with all its ports in the forwarding state. All other switches in that broadcast domain will have only one root port.
E. Establishing vlans increases the number of broadcast domains.
F. Switches that are configured with vlans make forwarding decisions based on both layer 2 and layer 3 address information.

Correct Answer: ADE
Section: Switching
Explanation

Explanation/Reference:

QUESTION 22
What is the purpose of Inverse ARP?

A. to map a known IP address to a MAC address
B. to map a known SPID to a MAC address
C. to map a known MAC address to an IP address
D. to map a known DLCI to an IP address
E. to map a known IP address to a SPID
F. to map a known DLCI to a MAC address

Correct Answer: D
Section: WAN

Explanation

Explanation/Reference:

QUESTION 23
Which two of these are characteristics of the 802.1Q protocol? (Choose two.)

A. It modifies the 802.3 frame header, and thus requires that the FCS be recomputed.
B. It is used exclusively for tagging VLAN frames and does not address network reconvergence following switched network topology changes.
C. It is a Layer 2 messaging protocol which maintains VLAN configurations across networks.
D. It is a trunking protocol capable of carrying untagged frames.
E. It includes an 8-bit field which specifies the priority of a frame.

Correct Answer: AD
Section: VTP
Explanation

Explanation/Reference:
802.1Q protocol, or Virtual Bridged Local Area Networks protocol, mainly stipulates the realization of the VLAN.
802.1Q is a standardized relay method that inserts 4 bytes field into the original Ethernet frame and re-calculate the FCS.
802.1Q frame relay supports two types of framE. marked and non-marked. Non-marked frame carries no VLAN identification information.

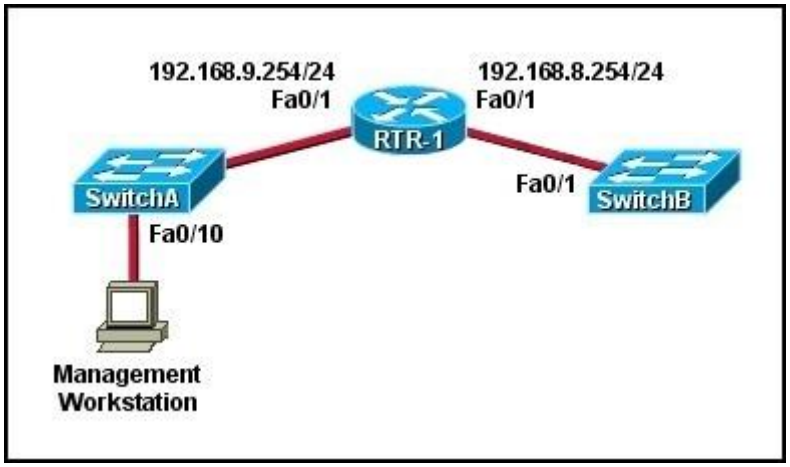
QUESTION 24
Which type of EIGRP route entry describes a feasible successor?

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

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:
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 25
Refer to the exhibit.



A technician has installed SwitchB and needs to configure it for remote access from the management workstation connected to SwitchA.
Which set of commands is required to accomplish this task?

A. SwitchB(config)# ip default-gateway 192.168.8.254
SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown

B. SwitchB(config)# ip default-network 192.168.8,254
SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown

C. SwitchB(config)# interface vlan 1
SwitchB(config-if)# ip address 192.168.8.252 255.255.255.0
SwitchB(config-if)# ip default-gateway 192.168.8.254 255.255.255.0
SwitchB(config-if)# no shutdown

D. SwitchB(config)# ip router 192.168.8.254 255.255.255.0
SwitchB(config-if)# interface FastEthernet 0/1
SwitchB(config-if)# ip default-gateway 192.168.8.254 255.255.255.0
SwitchB(config-if)# no shutdown

E. SwitchB(config-if)# interface FastEthernet 0/1
SwitchB(config-if)# ip default-gateway 192.168.8.252 255.255.255.0
SwitchB(config-if)# no shutdown

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 26
Which two statements describe the advantages to the use of RIP over the use of OSPF? (Choose two.)

A. RIP requires less time to converge.
B. RIP is less complex to configure.
C. RIP uses less bandwidth.
D. RIP has a more accurate metric.
E. RIP demands fewer router resources.

Correct Answer: BE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 27
Which IPv6 address is the equivalent of the IPv4 interface loopback address 127.0.0.1?

A. 0::/10
B. 2000::/3
C. ::
D. ::1

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:
The loopback address with IPv4 is 127.0.0.1. With IPv6, that address is ::1.

QUESTION 28
What does the frame-relay interface-dlci command configure?

A. remote DCLI on the subinterface
B. remote DLCI on the main interface
C. local DLCI on the main interface
D. local DLCI on the subinterface

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 29
Refer to the exhibit.

```
hostname Tampa
!
username Orlando password 0 cisco
ip subnet-zero
!
interface FastEthernet0/0
 ip address 192.168.1.1 255.255.255.0
!
interface Serial0/0
 ip address 10.0.1.1 255.255.255.0
 encapsulation ppp
 ppp authentication chap
!
router eigrp 10
 network 10.0.0.0
 network 192.168.1.0
 no auto-summary
```

The serial0/0 interface of the Tampa router connects to the Orlando router.
Which two statements are true about the connection between these two routers?

A. The link uses a three-way handshake for authentication.
B. The link uses a two-way handshake for authentication.
C. The only device with which the Tampa router will negotiate a data link is the Orlando router.
D. Data exchanges between the Orlando and Tampa routers are encrypted.
E. Routing updates exchanged between the Orlando and Tampa routers are authenticated.

Correct Answer: AC
Section: WAN
Explanation

Explanation/Reference:

QUESTION 30
Refer to the exhibit.

```
Router-1#telnet 10.3.3.1
Trying 10.3.3.1 … Open
Password required, but none set
[Connection to 10.3.3.1 closed by foreign host]
```


Why does the Telnet connection fail when a host attempts to connect to a remote router?

A. No password was set for cty lines.
B. No password was set for vty lines.
C. No password was set for aux lines.
D. No password was set for tty lines

Correct Answer: B
Section: Basic device operation
Explanation

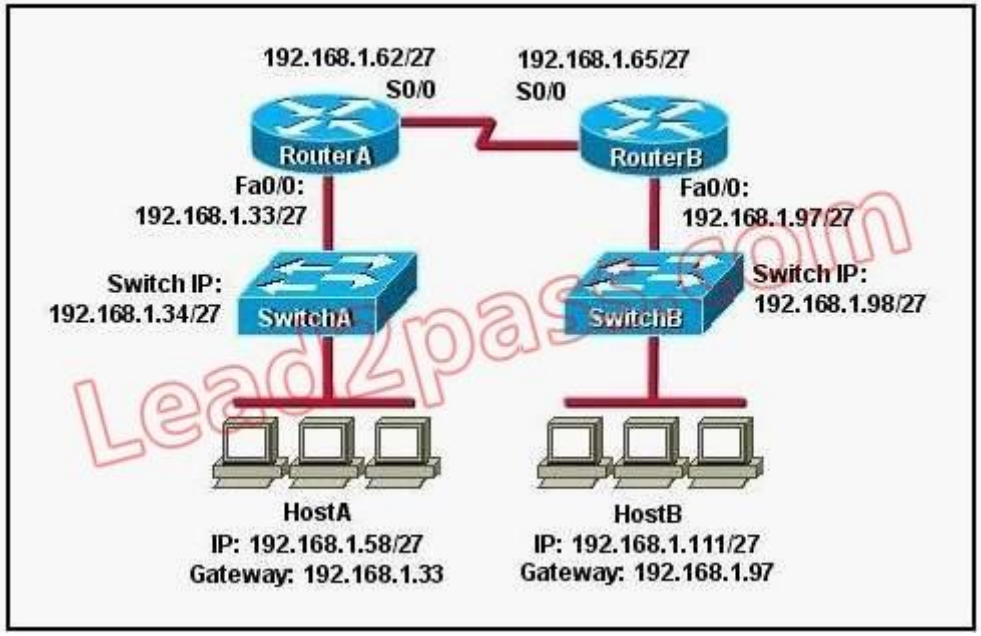
Explanation/Reference:

NOTE

You may or may not have to set the `login` command before the password on the VTY lines—it depends on the IOS version. The result is the same either way.

So what will happen if you try to telnet into a router that doesn't have a VTY password set? You'll receive an error stating that the connection is refused because, well, the password isn't set. So, if you telnet into a router and receive the message

QUESTION 31
Refer to the exhibit.



HostA cannot ping HostB. Assuming routing is properly configured, what could be the cause of this problem?

A. HostA is not on the same subnet as its default gateway
B. The Fa0/0 interface on RouterB is using a broadcast address.
C. The Fa0/0 interface on RouterA is on a subnet that can't be used.

D. The address of SwitchA is a subnet address.
E. The serial interfaces of the routers are not on the same subnet.

Correct Answer: E
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 32
Which component of VPN technology ensures that data can be read only by its intended recipient?

A. authentication
B. data integrity
C. key exchange
D. encryption

Correct Answer: A
Section: Layer 3 Security
Explanation

Explanation/Reference:
First you need to understand what these terms mean:

Data integrity: verifying that the packet was not changed as the packet transited the Internet

Encryption: conversion of data into a form, called a ciphertext, that cannot be easily understood by unauthorized people

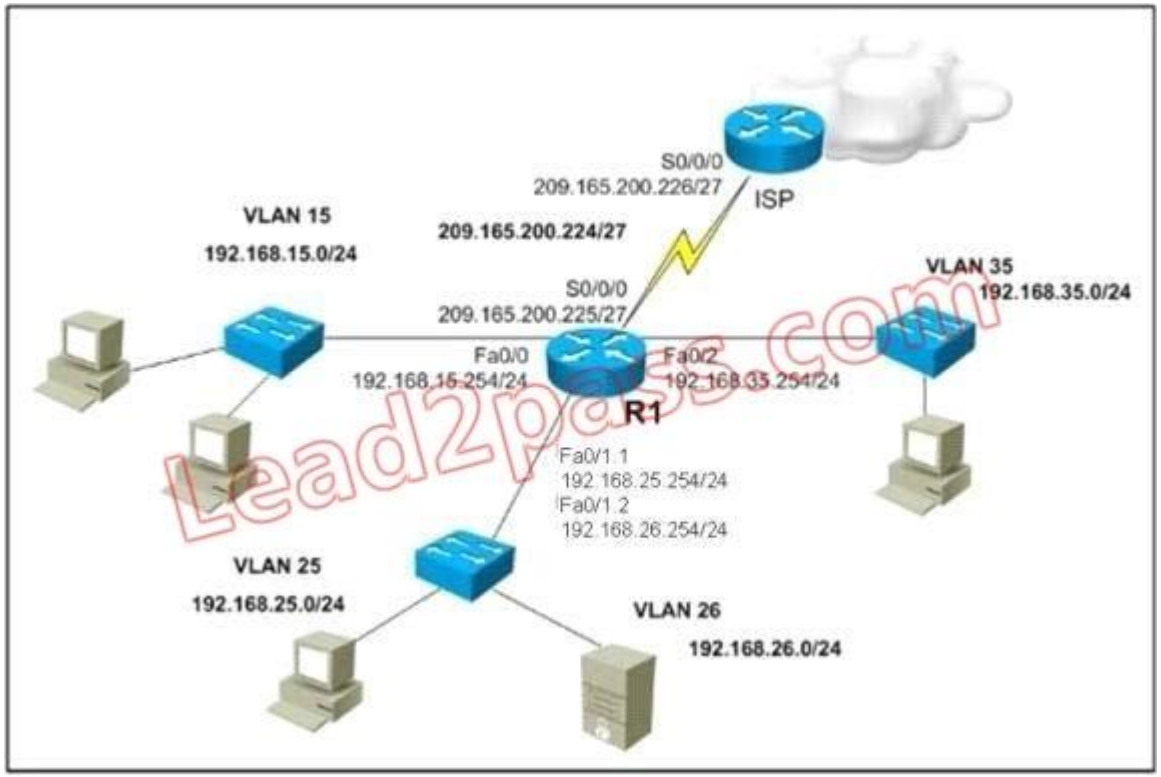
Authentication: the process of determining whether someone or something is, in fact, who or what it is declared to be. Authentication can take place at both sides, the sender and the receiver.

Key exchange: is any method in cryptography by which cryptographic keys are exchanged between users, allowing use of a cryptographic algorithm.

So in this question we realize that only authentication involves in the end user while others are about processing data -> D is correct.

QUESTION 33

Refer to the exhibit.



How many interfaces on R1 should be configured as ip nat inside to grant external access to the entire network?

A. 5
B. 3
C. 4
D. 1

Correct Answer: C
Section: NAT & ACLs
Explanation

Explanation/Reference:

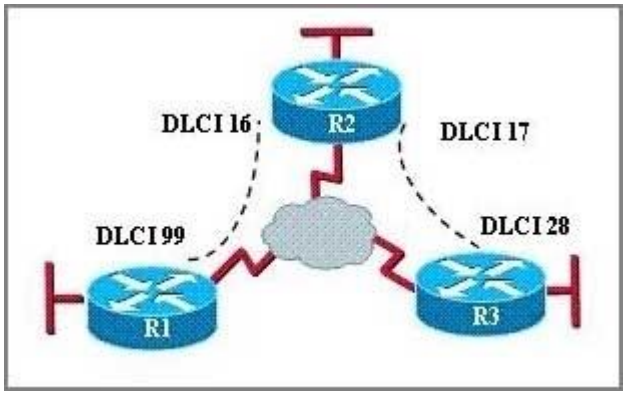
QUESTION 34
Assuming the default switch configuration, which VLAN range can be added, modified, and removed on a Cisco switch?

A. I through 1002
B. 2 through 1001
C. I through 1001
D. 2 through 1005

Correct Answer: B
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 35
Refer to the exhibit.



In the Frame Relay network, which IP addresses would be assigned to the interfaces with point-to- point PVCs?

A. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.10.1 /24
DLCI 99: 192.168.10.2 /24
DLCI 28: 192.168.10.3 /24
B. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.11.1 /24
DLCI 99: 192.168.12.1 /24

DLCI 28: 192.168.13.1 /24

C. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.10.2 /24
DLCI 99: 192.168.10.3 /24
DLCI 28: 192.168.10.4 /24

D. DLCI 16: 192.168.10.1 /24
DLCI 17: 192.168.11.1 /24
DLCI 99: 192.168.10.2 /24
DLCI 28: 192.168.11.2 /24

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

383

QUESTION 36
Which name describes an IPv6 host-enabled tunneling technique that uses IPv4 UDP, does not require dedicated gateway tunnels, and can pass through existing IPv4 NAT gateways?

A. dual stack
B. manual 6to4
C. Teredo
D. dynamic

Correct Answer: C
Section: IPv6
Explanation

Explanation/Reference:
Teredo operates using a platform independent tunneling protocol designed to provide IPv6 (Internet Protocol version 6) connectivity by encapsulating IPv6 datagram packets within IPv4 User Datagram Protocol (UDP) packets. These datagrams can be routed on the IPv4 Internet and through NAT devices.

QUESTION 37
What is the alternative notation for the IPv6 address B514:82C3:0000:0000:0029:EC7A:0000:EC72?

A. B514:82C3:0029::EC7A:0000:EC72

B. B514:82C3:0029:EC7A:EC72
C. B514:82C3::0029:EC7A:0:EC72
D. B514:82C3::0029:EC7A:EC72

Correct Answer: C
Section: IPv6
Explanation

Explanation/Reference:

QUESTION 38
Which IPv6 address is valid?

A. 2031:0:130F::9C0:876A:130B
B. 2001:0db8:0:130H::87C:140B
C. 2001:0db8:0000:130F:0000:0000:08GC:140B
D. 2031::130F::9C0:876A:130B

Correct Answer: A
Section: IPv6
Explanation

Explanation/Reference:
Values are in hexadecimal format (0 to F).

Answer B has value of **"H"** which is incorrect

Answer C has value **"G"** which is also incorrect.

You can't use **'::'** twice. D is incorrect.

QUESTION 39
Which component of VPN technology ensures that data is unaltered between the sender and recipient?

A. authentication
B. data integrity
C. key exchange
D. encryption

Correct Answer: B
Section: Layer 3 Security
Explanation

Explanation/Reference:
Data integrity: verifying that the packet was not changed as the packet transited the Internet

QUESTION 40
You have been asked to come up with a subnet mask that will allow all three web servers to be on the same network while providing the maximum number of subnets.
Which network address and subnet mask meet this requirement?

A. 192.168.252.8 255.255.255.252
B. 192.168.252.16 255.255.255.252
C. 192.168.252.8 255.255.255.248
D. 192.168.252.0 255.255.255.252
E. 192.168.252.16 255.255.255.240

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 41
Which two statistics appear in show frame-relay map output? (Choose two.)

A. the number of BECN packets that are received by the router
B. the value of the local DLCI
C. the number of FECN packets that are received by the router
D. the status of the PVC that is configured on the router
E. the IP address of the local router

Correct Answer: BD
Section: WAN
Explanation

Explanation/Reference:

QUESTION 42
Which parameter can be tuned to affect the selection of a static route as a backup, when a dynamic protocol is also being used?

A. link cost
B. administrative distance
C. link bandwidth
D. hop count
E. link delay

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 43
Which command encrypts all plaintext passwords?

A. Router# service password-encryption
B. Router(config)# service password-encryption
C. Router(config)# password-encryption
D. Router# password-encryption

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
To encrypt all passwords in the configuration file, use the following command:
`Router1(config)# service password-encryption`

QUESTION 44
What is the function of the command switchport trunk native vlan 999 on a Cisco Catalyst switch?

A. It designates VLAN 999 for untagged traffic.
B. It blocks VLAN 999 traffic from passing on the trunk

C. It creates a VLAN 999 interface.
D. It designates VLAN 999 as the default for all unknown tagged traffic.

Correct Answer: A
Section: Switching
Explanation

Explanation/Reference:
Configuring the Native VLAN for Untagged TrafficA trunk port configured with 802.1Q tagging can receive both taggedand untagged traffic.
By default, the switch forwards untagged trafficin the native VLAN configured for the port. The native VLAN is VLAN 1by default.

QUESTION 45
Which two statements about static NAT translation 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 can be configured with access lists, to allow two or more connections to be initiated from the outside.
D. They are always present in the NAT table.

Correct Answer: AD
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 46
Which command is used to display the collection of OSPF link states?

A. show ip ospf neighbors
B. show ip ospf database
C. show ip ospf link-state
D. show ip ospf Isa database

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

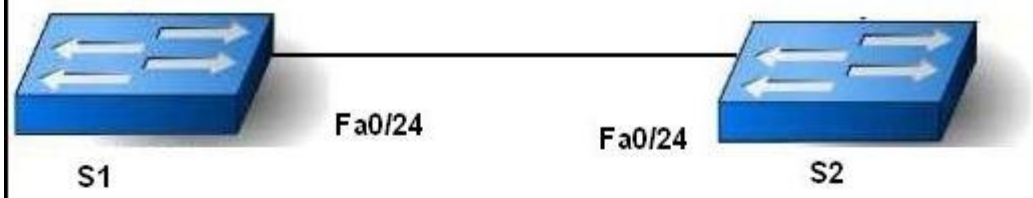
QUESTION 47
How are VTP advertisements delivered to switches across the network?

A. unicast frames
B. multicast frames
C. broadcast frames
D. anycast frames

Correct Answer: B
Section: VTP
Explanation

Explanation/Reference:

QUESTION 48
Refer to the exhibit.




```
S1#show running-config | include vtp
vtp mode transparent
vtp domain cisco
vtp password cisco

S1#show running-config  interface Fa 0/24
interface FastEthernet0/24
   switchport mode access
   no ip address

S2#show running-config | include vtp
vtp mode server
vtp domain cisco
vtp password cisco

S2#show running-config  interface Fa 0/24
interface FastEthernet0/24
   switchport mode dynamic auto
   no ip address
```

The VLAN configuration of S1 is not being updated in this VTP-enabled environment.
The VTP and uplink port configuration for each switch are displayed.
Which two command sets, if issued, resolve this failure and allow VTP to operate as expected?

A. S1(config)#vtp mode client
B. S2(config)#vtp mode client
C. S2(config)#interface FastEthernet 0/24
   S2(config-if)#switchport mode access

S2(config-if)end

D. S1(config)#interface FastEthernet 0/24
S1(config-if)#switchport mode trunk
S2(config-if)#end

E. S2(config)#vtp mode transparent

Correct Answer: AD
Section: VTP
Explanation

Explanation/Reference:

QUESTION 49
Refer to the exhibit.

```
ACL 102
access list 102 deny tcp 172.21.1.1.0.0.0.255 any eq 80
access list 102 deny any any

RouteA#sho ip int
FastEthernet0/0 is up, line protocol is up
  Internet address is 192.168.1.144/20
  Broadcast address is 255.255.255.255
  Address determined by DHCP
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is enabled
  Outgoing access list is 102
  Inbound access is not set
  Proxy ARP is enabled
```


An attempt to deny web access to a subnet blocks all traffic from the subnet.
Which interface command immediately removes the effect of ACL 102?

A. no ip access-class 102 out
B. no ip access-group 102 out

C. no ip access-group 102 in
D. no ip access-list 102 in
E. no ip access-class 102 in

Correct Answer: B
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 50
Which pairing reflects a correct protocol-and-metric relationship?

A. EIGRP and link cost
B. OSPF and number of hops and reliability
C. RIPv2 and number of hops
D. IS-IS and delay and reliability

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 51
Which term describes a spanning-tree network that has all switch ports in either the blocking or forwarding state?

A. spanned
B. converged
C. provisioned
D. redundant

Correct Answer: B
Section: Switching
Explanation

Explanation/Reference:

QUESTION 52
Refer to the exhibit.

```
Glencoe#show ip protocol
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 Glencoe router uses a single network statement.
From the output shown in the graphic, which network statement would advertise these networks in EIGRP?

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

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 53
Refer to the exhibit.

```
Router#config 1
Router(config)#line vty 0 4
Router(config-line)#password c1sc0
Router(config-line)#no login
```

What is the result of setting the no login command?

A. Telnet access is denied.
B. Telnet access requires a new password at the first login.
C. Telnet access requires a new password.
D. There is a virtually limitless supply of IP addresses.

Correct Answer: A
Section: IP Services
Explanation

Explanation/Reference:
Answer: No correct answer
Explanation
There is a mistake in this question because this configuration will let someone telnet to that router without the password (so the line “password c1sco” is not necessary).
If we want to deny telnet we can configure like this:
Router(config)#line vty 0 4
Router(config-line)#no password (if the password is set before)
Router(config-line)#login
With this configuration, when someone tries to telnet to this router, a message “Password required, but none set” is displayed.

QUESTION 54
Which command helps a network administrator to manage memory by displaying flash memory and NVRAM utilization?

A. show secure
B. show file systems
C. show version
D. show flash

Correct Answer: B
Section: Basic device operation

Explanation

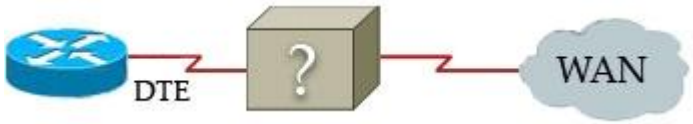
Explanation/Reference:

To display the available file systems on your switch, use the **show file systems** privileged EXEC command as shown in this example.

```
Switch# show file systems
File Systems:
     Size(b)     Free(b)      Type  Flags   Prefixes
*   15998976     5135872     flash     rw   flash:
          -           -    opaque     rw   bs:
          -           -    opaque     rw   vb:
     524288      520138     nvram     rw   nvram:
          -           -   network     rw   tftp:
          -           -    opaque     rw   null:
          -           -    opaque     rw   system:
          -           -    opaque     ro   xmodem:
          -           -    opaque     ro   ymodem:
```

Field	Value
Size(b)	Amount of memory in the file system in bytes.
Free(b)	Amount of free memory in the file system in bytes.
Type	Type of file system. **flash**—The file system is for a flash memory device. **nvram**—The file system is for a NVRAM device. **opaque**—The file system is a locally generated *pseudo* file system (for example, the *system*) or a download interface, such as brimux. **unknown**—The file system is an unknown type.
Flags	Permission for file system. **ro**—read-only. **rw**—read/write.\ **wo**—write-only.
Prefixes	Alias for file system. **flash:**—Flash file system. **nvram:**—NVRAM. **null:**—Null destination for copies. You can copy a remote file to null to find its size. **rcp:**—Remote Copy Protocol (RCP) network server. **system:**—Contains the system memory, including the running configuration. **tftp:**—TFTP network server. **xmodem:**—Obtain the file from a network machine by using the Xmodem protocol. **ymodem:**—Obtain the file from a network machine by using the Ymodem protocol.

QUESTION 55
Refer to the exhibit.



Which two devices can be used to complete the connection between the WAN router at the customer site and the service provider? (Choose two.)

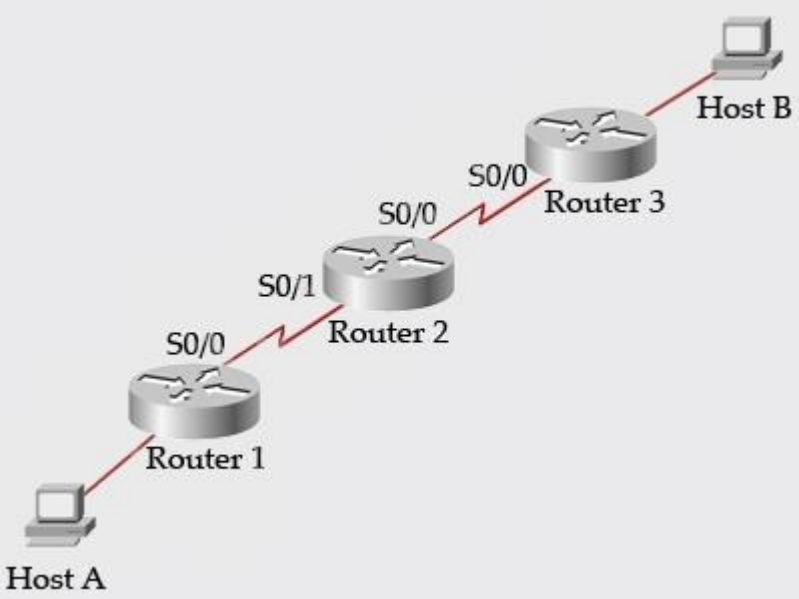
A. modem

B. ISDN TA
C. CSU/DSU
D. ATM switch
E. Frame Relay switch
F. WAN switch

Correct Answer: AC
Section: WAN
Explanation

Explanation/Reference:

QUESTION 56
Refer to Exhibit.



Host A pings interface S0/0 on router 3. What is the TTL value for the ping?

A. 253
B. 252

C. 255
D. 254

Correct Answer: A
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 57
What are two characteristics of a switch that is configured as a VTP client? (Choose two.)

A. VTP advertisement are not forwarded to neighboring switches that are configured in VTP transparent mode.
B. If a switch that is configured to operate in client mode cannot access a VTP server, then the switch reverts to transparent mode.
C. VTP client is the default VTP mode.
D. On switches that are configured to operate in client mode, VLANs can be created, deleted, or renamed locally.
E. The local VLAN configuration is updated only when an update that has a higher configuration revision number is received.
F. When switches in VTP client mode are rebooted, they send a VTP advertisement request to the VTP servers.

Correct Answer: EF
Section: VTP
Explanation

Explanation/Reference:

QUESTION 58
What value is primarily used to determine which port becomes the root port on each nonroot switch in a spanning-tree topology?

A. port priority number and MAC address
B. lowest port MAC address
C. path cost
D. VTP revision number
E. highest port priority number

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:

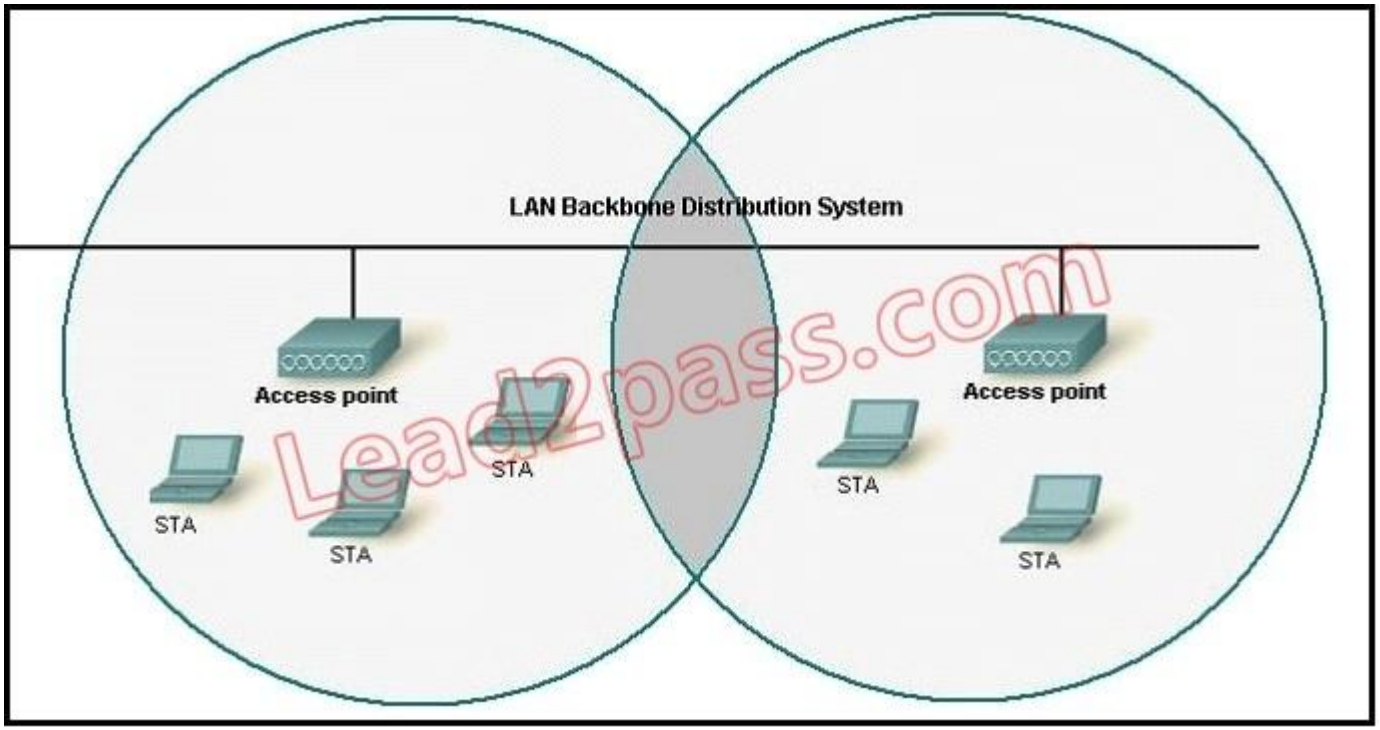
QUESTION 59
Two switches are connected through a trunk link. Which two commands show that there is a native VLAN mismatch on that link? (Choose two)

A. show interfaces interface switchport
B. show interface interface trunk
C. show vlan brief
D. show interfaces vlan
E. show interfaces interface
F. show interface switchport
G. show interface trunk

Correct Answer: FG
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 60
Refer to the exhibit.



What two facts can be determined from the WLAN diagram? (Choose two)

A. The two access points generally are configured with a common SSID to allow roaming from access point to access point.
B. Each access point must have a unique SSID.
C. The network diagram represents an extended service set (ESS).
D. The area of overlap of the two cells represents a basic service set (BSS).
E. The network diagram represents an ad hoc topology.

Correct Answer: AC
Section: WLAN
Explanation

Explanation/Reference:

QUESTION 61
Why will a switch never learn a broadcast address?

A. Broadcast frames are never sent to swiches.
B. Broadcast addresses use an incorrect format for the switching table.
C. A broadcast address will never be the source address of a frame.
D. Broadcasts only use network layer addressing.
E. A broadcast frame is never forwarded by a switch.

Correct Answer: C
Section: Switching
Explanation

Explanation/Reference:

QUESTION 62
Which command can you use to manually assign a static IPv6 address to a router interface?

A. ipv6 address PREFIX_1::1/64
B. ipv6 autoconfig 2001:db8:2222:7272::72/64
C. ipv6 autoconfig
D. ipv6 address 2001:db8:2222:7272::72/64

Correct Answer: D
Section: IPv6
Explanation

Explanation/Reference:

To enable IPv6 processing on the interface and configure an address based on the directly specified bits, you will use the command demonstrated here:

RouterX(config-if) ipv6 address 2001:DB8:2222:7272::72/64

QUESTION 63
What is the function of the command switchport trunk native vlan 999 on a trunk port?

A. It designates VLAN 999 for untagged traffic.
B. It blocks VLAN 999 traffic from passing on the trunk.
C. It creates a VLAN 999 interface.
D. It designates VLAN 999 as the default for all unknown tagged traffic.

Correct Answer: A
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 64
Which command can be used from a PC to verfy the connectivity between host that connect through path.?

A. tracert address
B. ping address
C. arp address
D. traceroute address

Correct Answer: A
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 65
In which solution is a router ACL used?

A. protecting a server from unauthorized access
B. controlling path selection, based on the route metric
C. reducing router CPU utilization
D. filtering packets that are passing through a router

Correct Answer: D
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 66
A router has two Fast Ethernet interfaces and needs to connect to four VLANs in the local network.
How can you accomplish this task, using the fewest physical interfaces and without decreasing network performance?

A. Add two more FastEthernet interfaces.
B. Add a second router to handle the vlan traffic.
C. Use a hub to connect the four vlans with a FastEthernet interface on router.
D. Implement a router-on-a-stick configuration.

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 67
Refer to the exhibit.

```
Switch2#show vlan brief

VLAN  Name                 Status     Ports
---- -------------------- ---------- -------------------------------
1    default              active
10   VLAN0010             active
11   VLAN0011             active
20   VLAN0020             active
```


How many broadcast domains are configured on switch2?

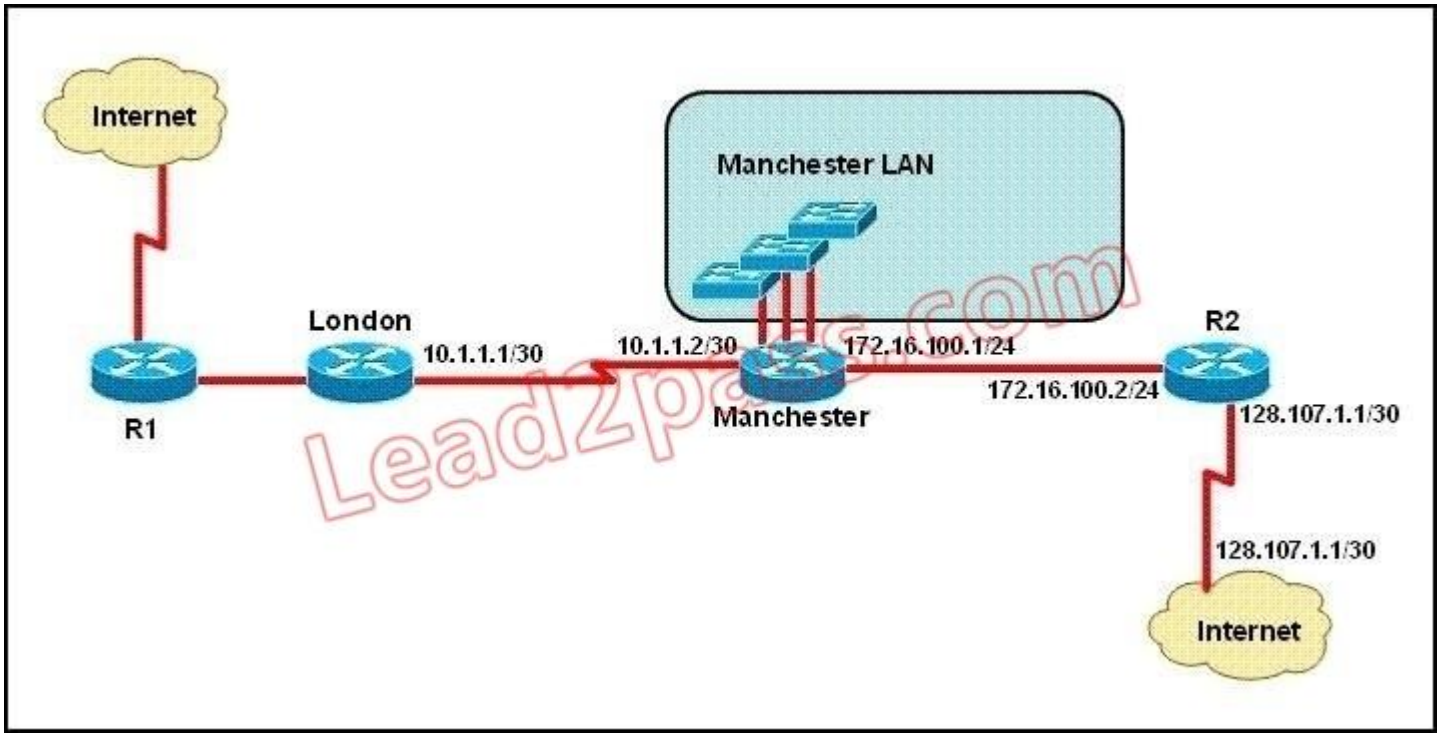
A. 5
B. 20
C. 4
D. 1

Correct Answer: C
Section: Switching

Explanation

Explanation/Reference:

QUESTION 68
Refer to the exhibit.



The speed of all serial links is E1 and the speed of the all Ethernet links is 100Mb/s.
A static route will be established on the Manchester router to the direct traffic toward the internet over the most direct path available.
What configuration on the Manchester router will establish a router toward the internet for traffic that originates from workstation on the Manchester LAN?

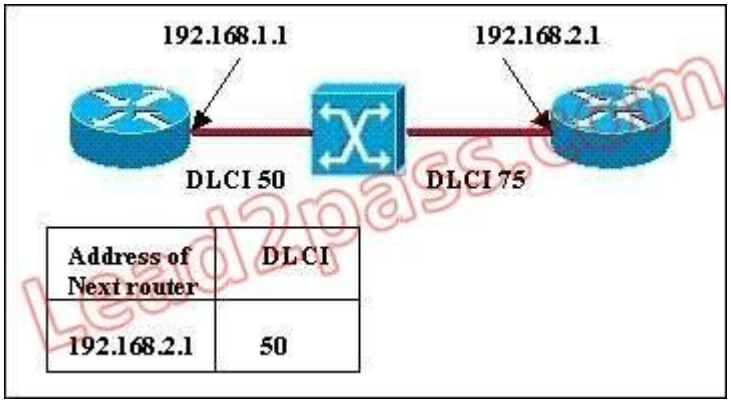
A. ip route 0.0.0.0 255.255.255.0 172.16.100.2
B. ip route 0.0.0.0 255.255.255.252 128.107.1.1
C. ip route 0.0.0.0 0.0.0.0 128.107.1.1
D. ip route 0.0.0.0 0.0.0.0 172.16.100.1

E. ip route 0.0.0.0 255.255.255.255 172.16.100.2
F. ip route 0.0.0.0 0.0.0.0 172.16.100.2

Correct Answer: F
Section: Routing
Explanation

Explanation/Reference:
We use default routing to send packets with a remote destination network not in the routing table to the next-hop router.
You should generally only use default routing on stub networks--those with only one exit path out of the network.
According to exhibit, all traffic towards Internet that originates from workstations should forward to Router R1.
Syntax for default route is:
ip route <Remote_Network> <Netmask> <Next_Hop_Address>.

QUESTION 69
What Frame Relay mechanism is used to build the map illustrated in the accompanying graphic?

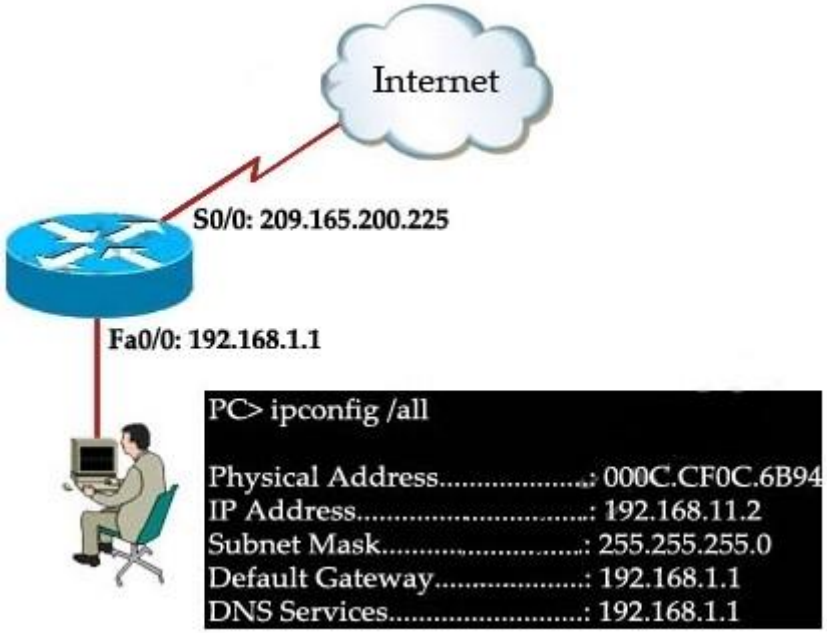


A. inverse multiplexing
B. LMI maping
C. Inverse ARP
D. ARP
E. Proxy ARP

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:
The locally significant DLCI must be mapped to the destination router's IP address. There are two options for this, Inverse ARP and static mapping.
In both of the following examples, the single physical Serial interface on Router 1 is configured with two logical connections through the frame relay cloud, one to Router 2 and one to Router 3.
Inverse ARP runs by default once Frame Relay is enabled, and starts working as soon as you open the interface.
By running show frame-relay map after enabling Frame Relay, two dynamic mappings are shown on this router. If a dynamic mapping is shown, Inverse ARP performed it.
R1#show frame map
Serial0 (up): ip 200.1.1.2 dlci 122(0x7A,0x1CA0), dynamic, broadcast,, status defined, active
Serial0 (up): ip 200.1.1.3 dlci 123(0x7B,0x1CB0), dynamic, broadcast,, status defined, active
Static mappings require the use of a frame map statement.
To use static mappings, turn Inverse ARP off with the no frame-relay inverse-arp statement, and configure a frame map statement for each remote destination that maps the local DLCI to the remote IP address.
Frame Relay requires the broadcast keyword to send broadcasts to the remote device.
R1#conf t
R1(config)#interface serial0
R1(config-if)#no frame-relay inverse-arp
R1(config-if)#frame map ip 200.1.1.2 122 broadcast
R1(config-if)#frame map ip 200.1.1.3 123 broadcast

QUESTION 70
Refer to the exhibit.
A network engineer is troubleshooting an internet connectivity problem on the computer. What is causing the problem?

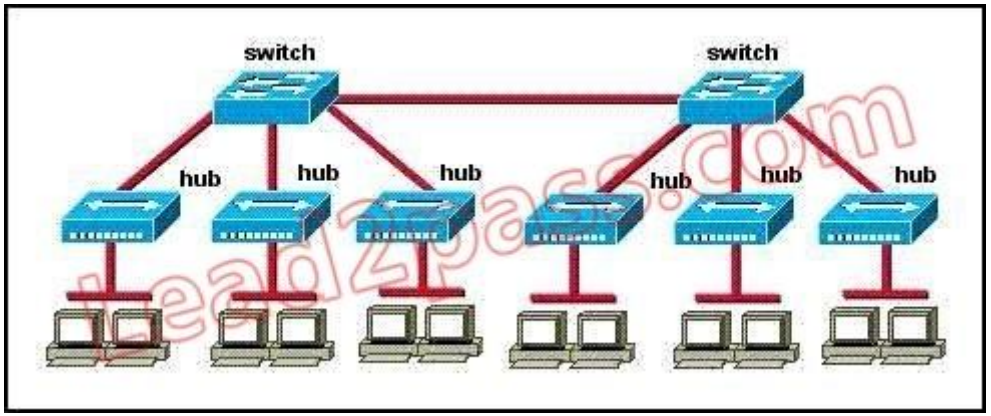


A. wrong DNS server
B. wrong default gateway
C. incorrect IP address
D. incorrect subnet mask

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 71
How many broadcast domains are shown in the graphic assuming only the default vlan is configured on the switches?



A. one
B. six
C. twelve
D. two

Correct Answer: A
Section: Switching
Explanation

Explanation/Reference:

QUESTION 72
How dose a DHCP server dynamically assign IP address to host?

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

Correct Answer: C
Section: IP Services
Explanation

Explanation/Reference:

QUESTION 73
What is the default maximum number of equal-cost paths that can be placed into the routing table of a Cisco OSPF router?

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

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 74
Which IPV6 routing protocol uses multicast group FF02::9 to send updates?

A. RIPng
B. OSPFv3
C. static
D. IS-IS for Ipv6

Correct Answer: A
Section: IPv6
Explanation

Explanation/Reference:

Well-known IPv6 multicast addresses

Address	Description
ff02::1	All nodes on the local network segment
ff02::2	All routers on the local network segment
ff02::5	OSPFv3 All SPF routers
ff02::6	OSPFv3 All DR routers
ff02::8	IS-IS for IPv6 routers
ff02::9	RIP routers
ff02::a	EIGRP routers
ff02::d	PIM routers
ff02::16	MLDv2 reports (defined in RFC 3810)
ff02::1:2	All DHCP servers and relay agents on the local network segment (defined in RFC 3315)
ff02::1:3	All LLMNR hosts on the local network segment (defined in RFC 4795)
ff05::1:3	All DHCP servers on the local network site (defined in RFC 3315)
ff0x::c	Simple Service Discovery Protocol
ff0x::fb	Multicast DNS
ff0x::101	Network Time Protocol
ff0x::108	Network Information Service
ff0x::114	Used for experiments

QUESTION 75
What are two benefits of using NAT? (Choose two)

A. NAT protects network security because private networks are not advertised.
B. NAT accelerates the routing process because no modifications are made on the packets.
C. Dynamic NAT facilitates connections from the outside of the network.
D. NAT facilitates end-to-end communication when IPsec is enable.

E. NAT eliminates the need to re-address all hosts that require external access.
F. NAT conserves addresses through host MAC-level multiplexing.

Correct Answer: AE
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 76
A switch is configured as a vtp sever with a domain name of CCNA. Which cisco ios privileged mode command,followed by a reload of the switch, will reset the VTP management domain name of the switch to a NULL value?

A. #vtp domain unset
B. #delete vlan.dat
C. #no vtp domain
D. #vtp domain null

Correct Answer: B
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 77
If an Ethernet port on a router was assigned an IP address of 172.1.1.1/20, what is the maximum number of hosts allowed on this subnet?

A. 4094
B. 1024
C. 8190
D. 2046
E. 4096

Correct Answer: A
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 78
Which two statements about static NAT translations are true? (Choose two)

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

Correct Answer: AB
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 79
Which of these represents an IPv6 link-local address?

A. FE08::280e:611:a:f14f:3d69
B. FE81::280f:512b:e14f:3d69
C. FE80::380e:611a:e14f:3d69
D. FEFE:0345:5f1b::e14d:3d69

Correct Answer: C
Section: IPv6
Explanation

Explanation/Reference:
link-local addresses always start at fe80::/10
each hex number takes 4 bits to represent
fe80 is
1111 – F
1110 – E
1000 – 8
0000 – 0

QUESTION 80
Assuming default setting,how can you erase the VTP database of VLANs on a CISCO IOS switch running in VTP server mode?

A. Enable VTP pruning
B. From privileged mode ,erase the startup configuration file,then reload.
C. From privileged mode ,erase the vlan dat file, then reload.
D. Cycle the switch power.

Correct Answer: C
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 81

```
Gateway of last resort is not set

    192.168.25.0/30 is subnetted, 4 subnets
D      192.168.25.20 [90/2681856] via 192.168.15.5, 00:00:10, Serial0/1
D      192.168.25.16 [90/1823638] via 192.168.15.5, 00:00:50, Serial0/1
D      192.168.25.24 [90/3837233] via 192.168.15.5, 00:05:23, Serial0/1
D      192.168.25.28 [90/8127323] via 192.168.15.5, 00:06:45, Serial0/1
C    192.168.15.4/30 is directly connected, Serial0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

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

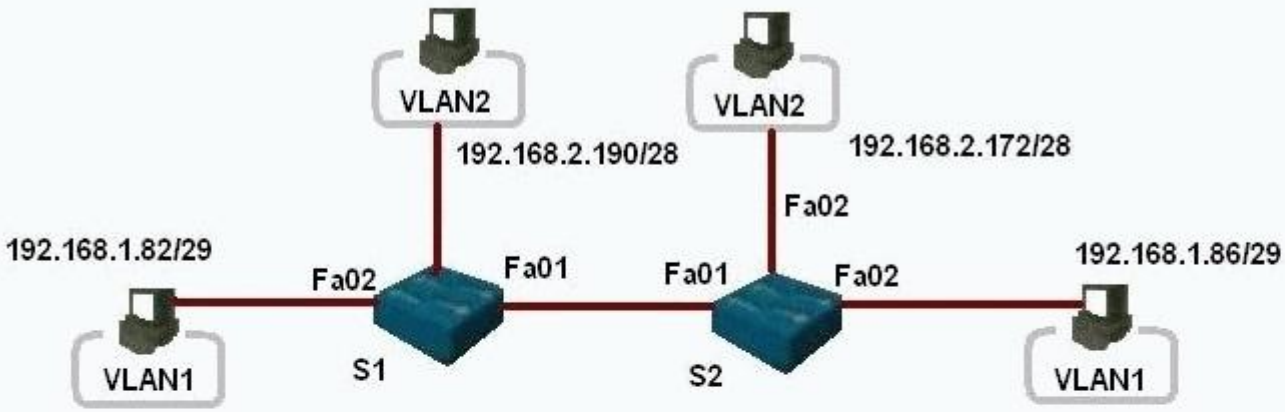
Correct Answer: E
Section: IP addressing
Explanation

Explanation/Reference:
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 82

Refer to the exhibit



S1#show interface trunk

Port	Mode	Encapsulation	Status
Fa0/1	on	802.1q	inuki

Port	Vlans allowed a trunk
Fa0/1	1.1005

Port	Vlans allowed and active in m
Fa0/1	12

S2#show interface trunk

Port	Mode	Encapsulation	Status	Network vlan
Fa0/1	on	802.1q	inuking	2

Port	Vlans allowed a trunk
Fa0/1	

Port	Vlans allowed and active in management domain
Fa0/1	12

A frame on vlan 1on switch s1 is sent to switch s2 when the frame is received on vlan 2, what causes this behavior?

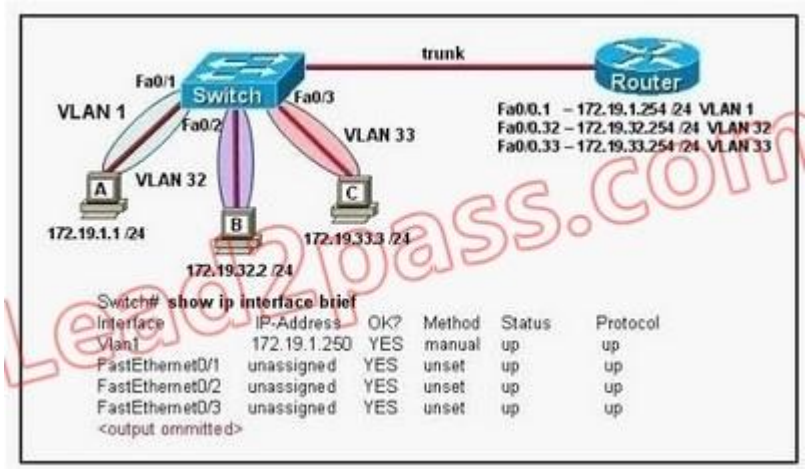
A. trunk mode mismatches
B. vlans that do not correspond to a unique IP subnet

C. native vlan mismatches
D. allowing only vlan 2 on the destination.

Correct Answer: C
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 83
Refer to the exhibit.



The network administrator normally establishes a Telnet session with the switch from host A. However, host A is unavailable.
The administrator's attempt to telnet to the switch from host B fails, but pings to the other two hosts are successful. What is the issue?

A. Host B and the switch need to be in the same subnet.
B. The switch needs an appropriate default gateway assigned.
C. The switch interface connected to the router is down.
D. Host B needs to be assigned an IP address in vlan 1.

Correct Answer: B
Section: Troubleshoot Switching
Explanation

Explanation/Reference:
Ping was successful form host B to other hosts because of intervlan routing configured on router.
But to manage switch via telnet the VLAN32 on the switch needs to be configured interface vlan32 along with ip address and its appropriate default-gateway address.
Since VLAN1 interface is already configure on switch Host A was able to telnet switch.

Topic 6, Volume F

QUESTION 84
Refer to the exhibit.

```
Router1# show ip interface brief

Interface              IP-Address      OK? Method Status                Protocol

Ethernet0              190.172.32.10   YES NVRAM  up                    up
Loopback0              208.149.23.162  YES NVRAM  up                    up
Loopback1              208.149.23.194  YES NVRAM  up                    up
Serial0                220.173.149.10  YES manual down                  down
Serial1                unassigned      YES NVRAM  administratively down down
```


Router1 was just successfully rebooted. Identify the current OSPF router ID for Router1.

A. 208.149.23.194
B. 220.173.149.10
C. 208.149.23.162
D. 190.172.32.10

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:
To identify the router ID for Router1, do as follows:
Step 1 Choose from all the activated interfaces.
Step 2 Compare the IP addresses of loopback interfaces.
Step 3 If there are no loopback interfaces, compare the IP addresses of all the physical interfaces.

Configures an OSPF router ID.

Description: Router ID is the tie-breaker for OSPF path selection. The path selection process uses a variety of metrics to select a route.
If all other metrics (accessibility, administrative weight, local preference, etc.) are equal,
OSPF determines the router ID using the following priority:

1. Use the address configured by the ospf router-id command
2. Use the address of the loopback 0 interface
3. Use the highest IP address of any interface
4. If no interface exists, set the router-ID to 0.0.0.0
5. If no OSPF router ID is explicitly configured, OSPF computes the router-ID based on the items 2, 3, and 4 and restarts OSPF (if the process is enabled and router-ID has changed).

WARNING
The ospf router-id command causes the OSPF process to restart using the new router-ID (if the processes are enabled and router-ID has changed).
Use ospf router-id ip-address command to set the OSPF router ID for the system.
Use the no ospf router-id to configure the OSPF router ID as the default value (address of the loopback 0 interface).

QUESTION 85
Why do large OSPF networks use a hierarchical design?(choose three)

A. to confine network instability to single areas of the network
B. to reduce the complexity of router configuration
C. to speed up convergence
D. to lower costs by replacing routers with distribution layer switches
E. to decrease latency by increasing bandwidth
F. to reduce routing overhead

Correct Answer: ACF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 86
A company has a small network,consisting of a single switch and a single router.
The switch has been configured with two vlans,and route-on-a-stick is being configured on the router for inter-vlan routing.
A trunk is configured to connect the switch to the router.
What is the minimum number of router subinterfaces that are required for all the vlans to communicate?

A. one
B. three
C. two

D. zero

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 87
Which command can be used from a router to verify the Layer 3 path to a host?

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

Correct Answer: A
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 88
What is the OSPF default frequency,in seconds,at which a cisco router sends hello packets on a multiaccess network?

A. 10
B. 40
C. 30
D. 20

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 89
Refer to the exhibit.

```
PC>tracert 10.16.176.23
Tracing route to 10.16.176.23 over a maximum of 30 hops:

1  31 ms   31 ms   32 ms   172.16.182.1
2  62 ms   62 ms   62 ms   192.168.1.6
3  93 ms   93 ms   34 ms   192.168.1.10
4  125 ms  110 ms  125 ms  10.16.176.23

Trace complete
```


Host A has tested connectivity to a remote network. What is the default gateway for host A?

A. 172.16.182.1
B. 192.168.1.1
C. 10.16.176.1
D. 192.168.1.6

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:

QUESTION 90
Which command is necessary to permit SSH or Telnet access to a cisco switch that is otherwise configured for these vty line protocols?

A. transport type all
B. transport output all
C. transport preferred all
D. transport input all

Correct Answer: D
Section: IP Services
Explanation

Explanation/Reference:
To define which protocols to use to connect to a specific line of the router, use the transport input command in line configuration mode.

All protocols are allowed on virtual terminal lines (vtys). Default is transport input all.

Exam G

QUESTION 1
Refer to the exhibit. Explain how the routes in the table are being affected by the status change on interface Ethernet0.

```
GW_Router# debug ip rip
RIP protocol debugging is on

<output omitted>

*Mar  1 00:19:36.804: %LINK-5-CHANGED: Interface Ethernet0, changed state to down
*Mar  1 00:19:36.805: RIP: sending v2 flash update to 224.0.0.9 via Ethernet1
(190.172.32.11)
*Mar  1 00:19:36.805: RIP: build flash update entries
*Mar  1 00:19:36.809:         190.171.23.0/24 via 0.0.0.0, metric 16, tag 0
*Mar  1 00:19:36.813:         208.149.23.32/27 via 0.0.0.0, metric 16, tag 0
*Mar  1 00:19:36.813:         208.149.23.64/27 via 0.0.0.0, metric 16, tag 0
*Mar  1 00:19:36.817:         208.149.23.96/27 via 0.0.0.0, metric 16, tag 0
*Mar  1 00:19:36.821:         208.149.23.128/27 via 0.0.0.0, metric 16, tag 0
*Mar  1 00:19:37.789: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0,
changed state to down
*Mar  1 00:19:39.131: RIP: sending request on Ethernet0 to 224.0.0.9
<output omitted>

GW_Router#
```

A. The router is poisoning the routes and multicasting the new path costs via interface Ethernet1.
B. The router is receiving updates about unreachable networks from router that are connected to interface Ethernet1.
C. The router is poisoning the routes and broadcasting the new path costs via interface Ethernet1.
D. The router is requesting updates for these networks from routers that are connected to interface Etherne1.

Correct Answer: A
Section: Routing
Explanation

Explanation/Reference:
Poison reverse: When path information becomes invalid, routers will not immediately remove them from the routing table, but use 16, an inaccessible metric value, to broadcast it out.
Although this increases the size of the routing table, but is helpful for the elimination of routing cycle, it can immediately remove any loop between adjacent routers.
The purpose of route poisoning is to avoid problems caused by inconsistent updates and to prevent network loops.
According to exhibit, the interfaces went to the down state so the affected routes were poisoned and removed and an update to the multicast IP address

of 224.0.0.9 was sent on interface Ethernet1.

QUESTION 2
Which two data link protocols are supported by Cisco IOS software for IPv6? (Choose two)

A. PPP
B. FDDI
C. Frame Relay PVC
D. NBMA
E. Frame Relay SVC

Correct Answer: BC
Section: IPv6
Explanation

Explanation/Reference:

The following data links are supported for IPv6:

ATM permanent virtual circuit (PVC) and ATM LANE,
Ethernet, Fast Ethernet, Gigabit Ethernet,
FDDI,
Frame Relay PVC,
Cisco High-Level Data Link Control (HDLC),
PPP over Packet over SONET (PoS),
ISDN, serial interfaces
dynamic packet transport (DPT).

QUESTION 3
Assuming the default switch configuration, which approach should you use to configure the extended VLAN range (1006 through 4094) on a Cisco Catalyst 3750 Series switch?

A. Configure the switch to be in VTP client mode.
B. Configure the switch to be in VTP domain mode.
C. Configure the switch to be in VTP transparent mode.
D. Configure the switch to be in VTPv2.

Correct Answer: C
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 4
Which command is used to enable CHAP authentication, with PAP as the fallback method, on a serial interface?

A. Router(config-if)# ppp authentication chap fallback ppp
B. Router(config-if)# authentication ppp chap fallback ppp
C. Router(config-if)# ppp authentication chap pap
D. Router(config-if)# authentication ppp chap pap

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:

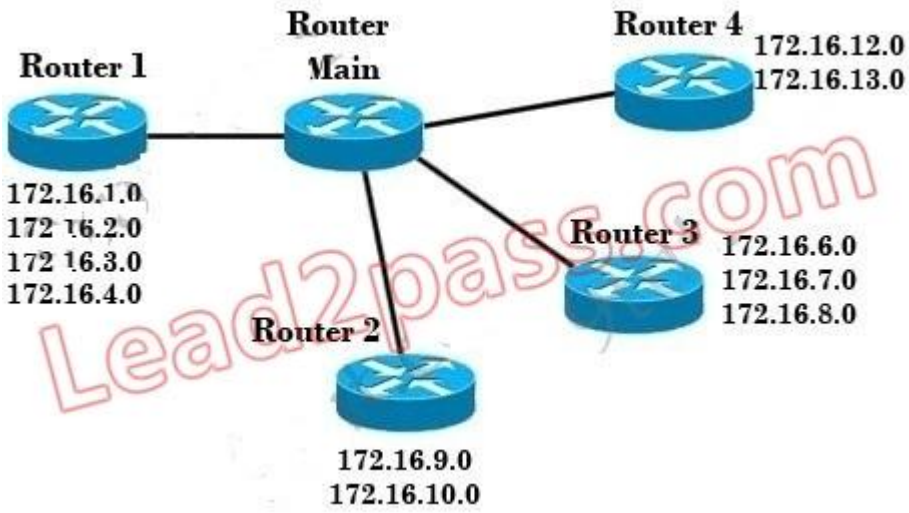
QUESTION 5
Which two statements apply to dynamic access lists?(choose two)

A. they offer simpler management in large internetworks.
B. you can control logging messages.
C. they allow packets to be filtered based on upper-layer session information.
D. you can set a time-based security policy.
E. they provide a level of security against spoofing.
F. they are used to authenticate individual users.

Correct Answer: AF
Section: NAT & ACLs
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios/11_3/security/configuration/guide/sclock.pdf

QUESTION 6
Which address range efficiently summarizes the routing table of the addresses for router main?



A. 172.16.0.0/18
B. 172.16.0.0/16
C. 172.16.0.0/20
D. 172.16.0.0/21

Correct Answer: C
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 7
If IP routing is enabled, which two commands set the gateway of last resort to the default gateway? (Choose two.)

A. ip default-gateway 0.0.0.0
B. ip route 172.16.2.1 0.0.0.0 0.0.0.0
C. ip default-network 0.0.0.0
D. ip default-route 0.0.0.0 0.0.0.0 172.16.2.1
E. ip route 0.0.0.0 0.0.0.0 172.16.2.1

Correct Answer: CE

Section: (none)
Explanation

Explanation/Reference:

QUESTION 8
Which parameter would you tune to affect the selection of a static route as a backup, when a dynamic protocol is also being used?

A. hop count
B. administrative distance
C. link bandwidth
D. link delay
E. link cost

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

QUESTION 9
Which layer in the OSI reference model is responsible for determining the availability of the receiving program and checking to see if enough resources exist for that communication?

A. transport
B. network
C. presentation
D. session
E. application

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:

QUESTION 10

A network administrator is verifying the configuration of a newly installed host by establishing an FTP connection to a remote server. What is the highest layer of the protocol stack that the network administrator is using for this operation?

A. application
B. presentation
C. session
D. transport
E. internet
F. data link

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

QUESTION 11
A network interface port has collision detection and carrier sensing enabled on a shared twisted pair network. From this statement, what is known about the network interface port?

A. This is a 10 Mb/s switch port.
B. This is a 100 Mb/s switch port.
C. This is an Ethernet port operating at half duplex.
D. This is an Ethernet port operating at full duplex.
E. This is a port on a network interface card in a PC.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

QUESTION 12
A receiving host computes the checksum on a frame and determines that the frame is damaged. The frame is then discarded. At which OSI layer did this happen?

A. session
B. transport

C. network
D. data link
E. physical

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

QUESTION 13
An administrator must assign static IP addresses to the servers in a network. For network 192.168.20.24/29, the router is assigned the first usable host address while the sales server is given the last usable host address. Which of the following should be entered into the IP properties box for 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

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

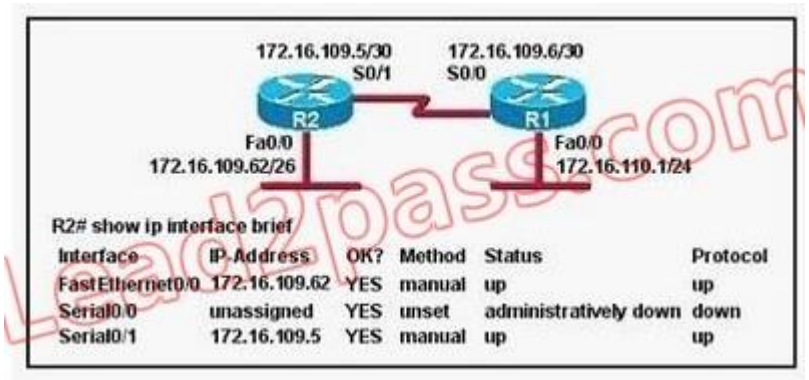
QUESTION 14
Which subnet mask would be appropriate for a network address range to be subnetted for up to eight LANs, with each LAN containing 5 to 26 hosts?

A. 0.0.0.240
B. 255.255.255.252
C. 255.255.255.0
D. 255.255.255.224
E. 255.255.255.240

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
111 00000
2(3)= 8 Subnets
2(5)-2= 30 Hosts

QUESTION 15
Refer to the Exhibit.



Assuming that the entire network topology is shown, what is the operational status of interfaces R2 as indicated by the command out put shown?

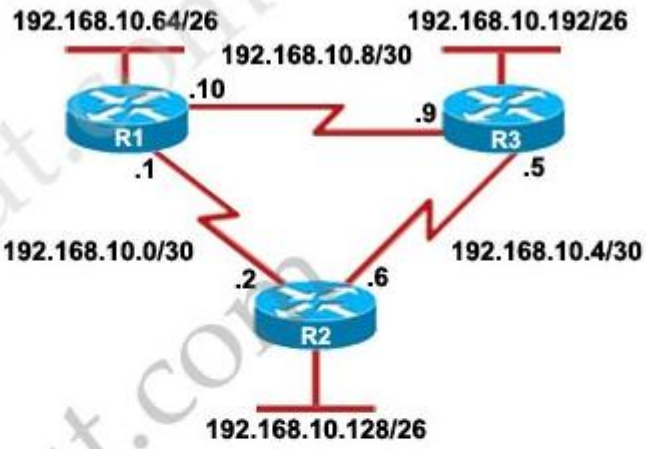
A. One interface has a problem.
B. Two interfaces have problems.
C. The interfaces are functioning correctly.
D. The operational status of the interfaces cannot be determined from the output shown.

Correct Answer: C

Section: Routing
Explanation

Explanation/Reference:

QUESTION 16
Refer to the exhibit.




```
R3# show ip route
Gateway of last resort is not set
    192.168.10.0/24 is variably subnetted, 6 subnets, 2 masks
D       192.168.10.64/26  [90/2195456] via 192.168.10.9, 00:03:31, Serial0/0
D       192.168.10.0/30  [90/2681856] via 192.168.10.9, 00:03:31, Serial0/0
                         [90/2681856] via 192.168.10.5, 00:03:31, Serial0/1
C       192.168.10.4/30 is directly connected, Serial0/1
C       192.168.10.8/30 is directly connected, Serial0/0
C       192.168.10.192/30 is directly connected, FastEthernet0/0
C       192.168.10.128/26 [90/2195456] via 192.168.10.5, 00:03:31, Serial0/1
```

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?

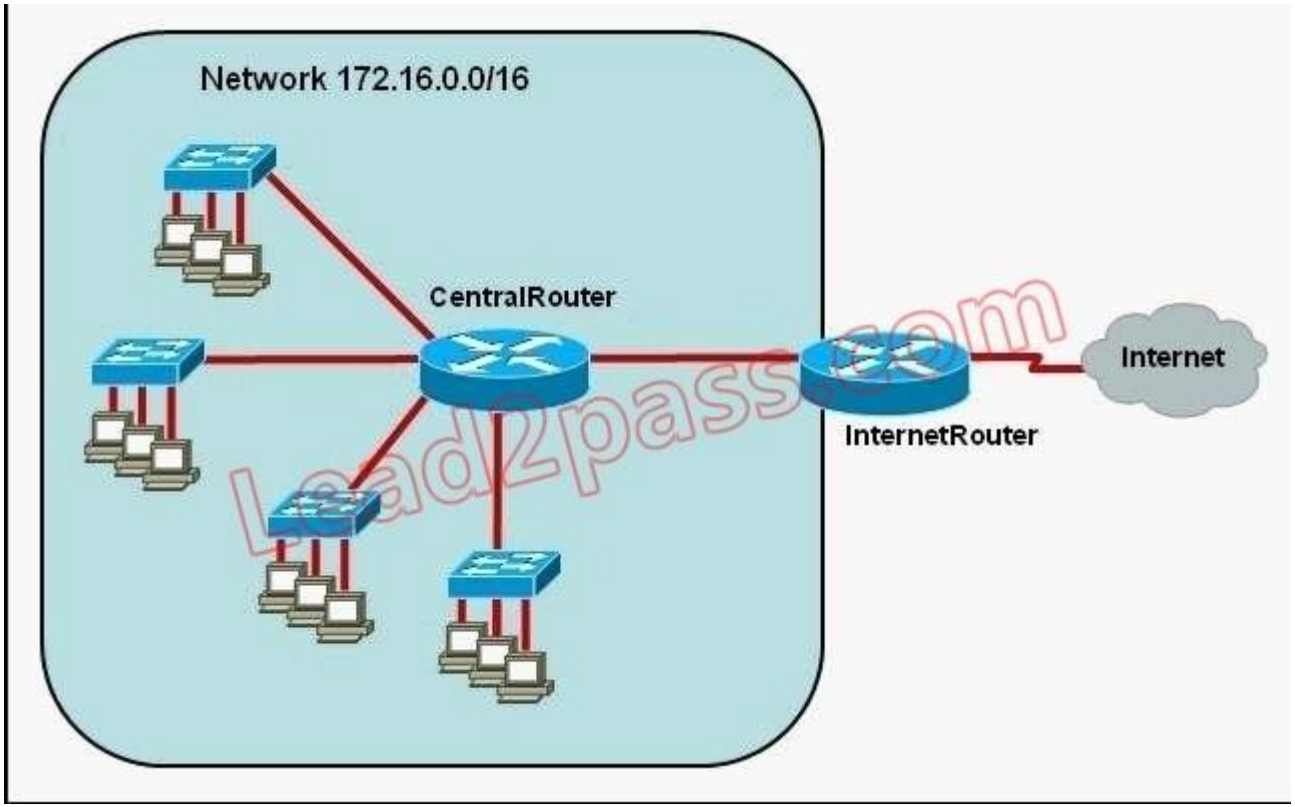
A. The router will forward packets from R3 to R1.

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

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:
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 17
Refer to the exhibit.



The network administrator requires easy configuration options and minimal routing protocol traffic.
What two options provide adequate routing table information for traffic that passes between the two routers and satisfy the requests of the network administrator? (Choose two)

A. a dynamic routing protocol on InternetRouter to advertise all routes to CentralRouter.
B. a dynamic routing protocol on InternetRouter to advertise summarized routes to CentralRouter.
C. a static route on InternetRouter to direct traffic that is destined for 172.16.0.0/16 to CentralRouter.
D. a dynamic routing protocol on CentralRouter to advertise all routes to InternetRouter.
E. a dynamic routing protocol on CentralRouter to advertise summarized routes to InternetRouter.
F. a static, default route on CentralRouter that directs traffic to InternetRouter.

Correct Answer: CF
Section: Routing
Explanation

Explanation/Reference:

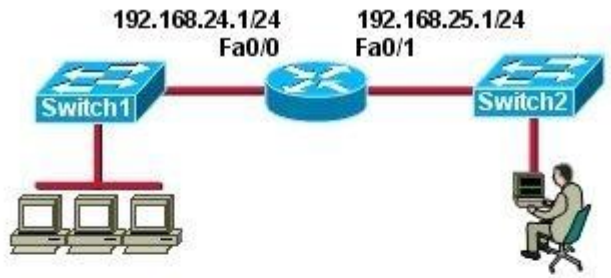
QUESTION 18
What is the effect of using the service password-encryption command?

A. Only the enable password will be encrypted.
B. It will encrypt all current and future passwords.
C. It will encrypt the secret password and remove the enable secret password from the configuration.
D. Only the enable secret password will be encrypted.
E. Only passwords configured after the command has been entered will be encrypted.

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
Enable vty, console, AUX passwords are configured on the Cisco device. Use the show run command to show most passwords in clear text.
If the service password-encryption is used, all the passwords are encrypted. As a result, the security of device access is improved.

QUESTION 19
Refer to the exhibit.




```
Switch1# show running-config
!
hostname Switch1
!
enable secret 5 $1$8V43$Vm12DE8klwUjf8EcZnFT7/
enable password guess
!
<output omitted>
!
interface Vlan1
 ip address 192.168.24.2 255.255.255.0
 no ip route-cache
!
ip http server
!
line con 0
line vty 0 4
 password cisco
 login
!
end
```


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)# interface fa0/1
   Switch1(config-if)# ip address 192.168.24.3.255.255.255.0
B. Switch1(config)# interface fa0/1
   Switch1(config-if)# switchport mode trunk

C. Switch1(config)# interface fa0/1
Switch1(config-if)# duplex full
Switch1(config-if)# speed 100

D. Switch1(config)# ip default-gateway 192.168.24.1

E. Switch1(config)# line con0
Switch1(config-line)# password cisco
Switch1(config-line)#login

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:
To route traffic to other vlans, we need to enter the IP address of the next-hop router interface that is directly connected to the switch where a default gateway is being configured.
The default gateway receives IP packets with unresolved destination IP addresses from the switch.
Once the default gateway is configured, the switch will have connectivity to the remote networks with which a host needs to communicate.

QUESTION 20
Which Layer 2 protocol encapsulation type supports synchronous and asynchronous circuits and has built-in security mechanisms?

A. Frame Relay
B. X.25
C. PPP
D. HDLC

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:

QUESTION 21
Which statement about access lists that are applied to an interface is true?

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

Correct Answer: A
Section: NAT & ACLs
Explanation

Explanation/Reference:
All access lists follow these rules:
· Routers apply lists sequentially in the order in which you type them into the router.
· Routers apply lists to packets sequentially, from top down, one line at a time.
· Packets are processed only until a match is made and then they are acted upon based on the access list criteria contained in the access list statements.
· Lists always end with an implicit deny. Routers discard any packets that do not match any of the access list statements.
· Access lists must be applied to an interface as either inbound or outbound traffic filters.
· Only one list, per protocol, per direction can be applied to an interface.

ReferencE.
http://www.sauguscenturions.com/jstephenson/CiscoNA/Ptests/Sem3/C6Notes/ACL.html

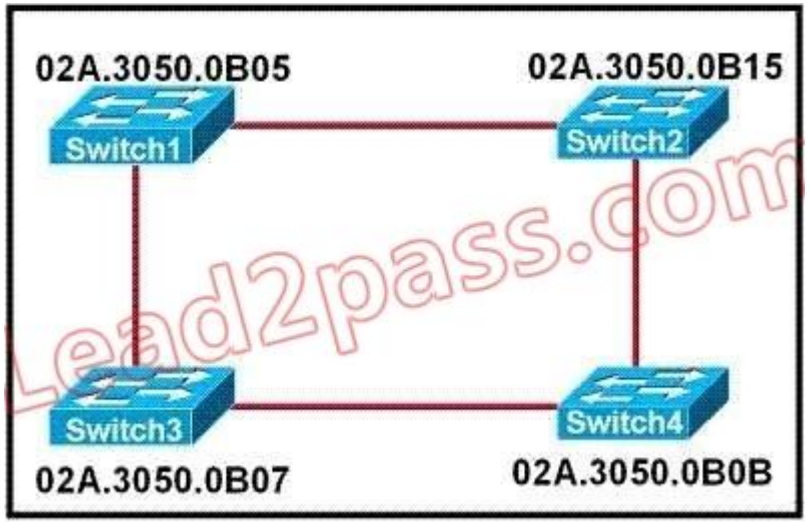
QUESTION 22
Which parameter CM parameters are used to calculate OSPF cost in Cisco routers?

A. Bandwidth. Delay, and MTU
B. Bandwidth. MTU. Reliability. Delay, and Load
C. Bandwidth
D. Bandwidth and Delay

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 23
Refer to the exhibit.



Four Cisco 2950 switches are set to their default priority settings. During the spanning-tree process, which switch will be elected as the root bridge?

A. Switch4
B. Switch2
C. Switch1
D. Switch3

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:
The first step of STP is root-bridge election. BPDU is used in this election process.
When device advertises BPDU, it will put its own switch ID in BPDU.
Switch ID is used for the election of root switch.
Switch with a minimum switch ID is selected as root. Switch ID is composed of two components:

1. Switch Priority: the default priority on Cisco switches is 32,768 (two bytes in length)
2. Switches MAC address (6 bytes in length)

By default, the switch with the lowest MAC address in switching network will be root-bridge.

QUESTION 24
A network administrator needs to configure a serial link between the main office and a remote location. The router at the remote office is a non-Cisco

router.
How should the network administrator configure the serial interface of the main office router to make the connection?

A. Main(config)# interface serial 0/0
Main(config-if)#ip address 172.16.1.1 255.255.255.252
Main(config-if)#encapsulation ietf
Main(config-if)# no shut
B. Main(config)# interface serial 0/0
Main(config-if)#ip address 172.16.1.1 255.255.255.252
Main(config-if)# no shut
C. Main(config)# interface serial 0/0
Main(config-if)#ip address 172.16.1.1 255.255.255.252
Main(config-if)#encapsulation PPP
Main(config-if)# no shut
D. Main(config)# interface serial 0/0
Main(config-if)#ip address 172.16.1.1 255.255.255.252
Main(config-if)#encapsulation frame-relay
Main(config-if)# authentication chap
Main(config-if)# no shut

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:

QUESTION 25
VLAN 3 is not yet configured on your switch. What happens if you set the switchport access vlan 3 command in interface configuration mode?

A. The command is accepted and the respective VLAN is added to vlan.dat.
B. The command is rejected.
C. The command is accepted and you must configure the VLAN manually.
D. The port turns amber.

Correct Answer: A
Section: VLAN
Explanation

Explanation/Reference:
Can be verified.

QUESTION 26
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. reflexive
B. extended
C. standard
D. dynamic

Correct Answer: D
Section: NAT & ACLs
Explanation

Explanation/Reference:

QUESTION 27
Which two privileged mode Cisco IOS commands can be used to determine a Cisco router chassis serial number? (Choose two.)

A. show inventory
B. show flash:filesys
C. dir flash:|include chassis
D. show diag
E. show controllers

Correct Answer: AD
Section: Basic device operation
Explanation

Explanation/Reference:
The ***show diag*** command returns the following information about a router and its adaptors/modules:
Hardware version
Board revision
RMA number and history
Chassis serial number
Cisco field replaceable unit (FRU) number (a good identifiable part number for the device)
Cisco part number (the actual part number of the device)
Technical registers of the backplane, including power supply and temperature status (not readable by this command)
Ports built into the motherboard of the device
Hardware versions, serial numbers, and part numbers for WIC cards in the device
Part numbers, port information, and serial numbers for network modules (NMs) inserted in the device

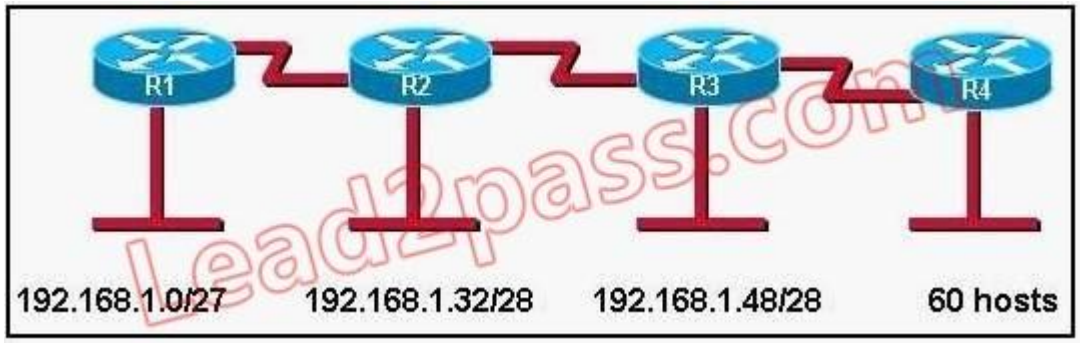
The ***show inventory*** command allows you to view the UDI for a NAM device. This identity information is stored in the NAM device's non-volatile memory.

•PID—Product identification (ID) number of the device

•VID—Version ID of the device. Displays as 0 if the version number is not available.

•SN—Serial number of the device

QUESTION 28
Refer to the exhibit. A new subnet with 60 hosts has been added to the network.
Which subnet address should this network use to provide enough usable addresses while wasting the fewest addresses?



A. 192.168.1.56/27
B. 192.168.1.64/26
C. 192.168.1.64/27
D. 192.168.1.56/26

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:
A subnet with 60 host is 2*2*2*2*2*2 = 64 -2 == 62
6 bits needed for hosts part. Therefore subnet bits are 2 bits (8-6) in fourth octet.
8bits+ 8bits+ 8bits + 2bits = /26
/26 bits subnet is 24bits + 11000000 = 24bits + 192
256 - 192 = 64
0 - 63
64 - 127

QUESTION 29
Which of the following protocols uses both TCP and UDP ports?

A. SMTP
B. Telnet
C. FTP
D. DNS

Correct Answer: D
Section: IP Services
Explanation

Explanation/Reference:

TABLE 2.2 Key Protocols That Use TCP and UDP

TCP	UDP
Telnet 23	SNMP 161
SMTP 25	TFTP 69
HTTP 80	DNS 53
FTP 21	
DNS 53	
HTTPS 443	

QUESTION 30
The network technician is planning to use the 255.255.255.224 subnet mask on the network.
Which three valid IP addresses can the technician use for the hosts? (Choose three.)

A. 172.22.243.127
B. 172.22.243.191
C. 172.22.243.190

D. 10.16.33.98
E. 10.17.64.34
F. 192.168.1.160

Correct Answer: CDE
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 31
Which IEEE standard protocol is initiated as a result of successful DTP completion in a switch over Fast Ethernet?

A. 802.3ad
B. 802.1w
C. 802.1Q
D. 802.1d

Correct Answer: C
Section: VTP
Explanation

Explanation/Reference:

QUESTION 32
Which command enhances the 802.1D convergence time on ports that are connected to hosts?

A. spanning-tree backbonefast
B. spanning-tree uplinkfast
C. spanning-tree portfast
D. spanning-tree cost512

Correct Answer: C
Section: Spanning Tree
Explanation

Explanation/Reference:

QUESTION 33
Which two statements are characteristics of a distance vector routing protocol? (Choose two)

A. RIP is an example of distance vector routing protocols.
B. Updates are periodic and include the entire routing table.
C. Routing updates are sent only after topology changes
D. The protocol can be useful in hub-and-spoke and hierarchical networks.
E. Convergence is usually faster than with link state protocols
F. Each router has its own view of the topology

Correct Answer: AB
Section: Routing
Explanation

Explanation/Reference:

QUESTION 34
Refer to the exhibit.

```
Core_Router# show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address         Interface
208.149.23.194     1   FULL/DR         00:00:33    190.172.32.10   Ethernet1
208.149.23.66      1   FULL/BDR        00:00:32    190.171.23.13   Ethernet0
208.149.23.130     1   FULL/DR         00:00:39    190.171.23.10   Ethernet0

Core_Router#
```


Why are two OSPF designated routers identified on Core_Router?

A. Core_Router is connected to more than one multiaccess network.
B. The router at 208.149.23.130 is a secondary DR in case the primary fails.
C. Two router IDs have the same OSPF priority and are therefore tied for DR election
D. The DR election is still underway and there are two contenders for the role.

Correct Answer: A
Section: Routing

Explanation

Explanation/Reference:
OSPF neighbors process multicast hello packets upon multicast address 224.0.0.5 to find neighbors dynamically.
Default hello packets sending interval is 10 seconds, and dead interval is 40 seconds.
In multi-access broadcasting network (such as Ethernet Net and Token Ring), DR/BDR elections are needed.
When electing DR/BDR, hello packets priority is considered, the highest priority is DR, then BDR.
Default priority is 1. In the circumstances when Priority is the same, RID will be considered, the highest rating RID is DR, and then BDR.
When you set the priority 0, OSPF router can not become DR/BDR, it will only turn into DROTHER.
From the above OSPF neighbors table, we learn that Ethernet1 and Ethernet0 select DR correspondingly, and Core_Router is connected two multi-access networks.

QUESTION 35
Refer to the exhibit. What could be possible causes for the "Serial0/0 is down" interface status? (Choose two.)

```
Router1# show interfaces serial 0/0

Serial0/0 is down, line protocol is down
  Hardware is MK5025
  Serial Internet address is 10.1.1.2/24
  MTU 1500 bytes, BW 1544 Kbits, DLY 20000 usec, rely 255/255 load 9/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
```


A. A Layer 1 problem exists.
B. The bandwidth is set too low.
C. A protocol mismatch exists
D. An incorrect cable is being used.
E. There is an incorrect IP address on the Serial 0/0 interface.

Correct Answer: AD
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 36

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.)

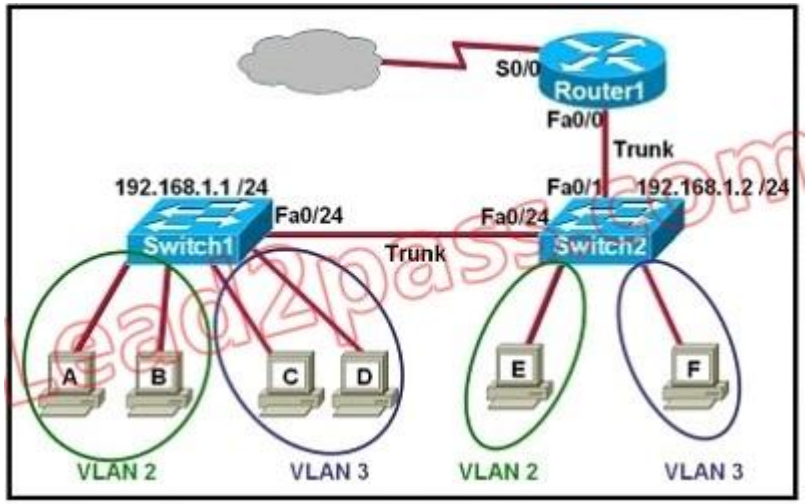
A. the amount of available ROM
B. the amount of available flash and RAM memory
C. the version of the bootstrap software present on the router
D. show version
E. show processes
F. show running-config

Correct Answer: BD
Section: Basic device operation
Explanation

Explanation/Reference:
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 37
Refer to the exhibit.
Which two statements are true about interVLAN routing in the topology that is shown in the exhibit? (Choose two.)

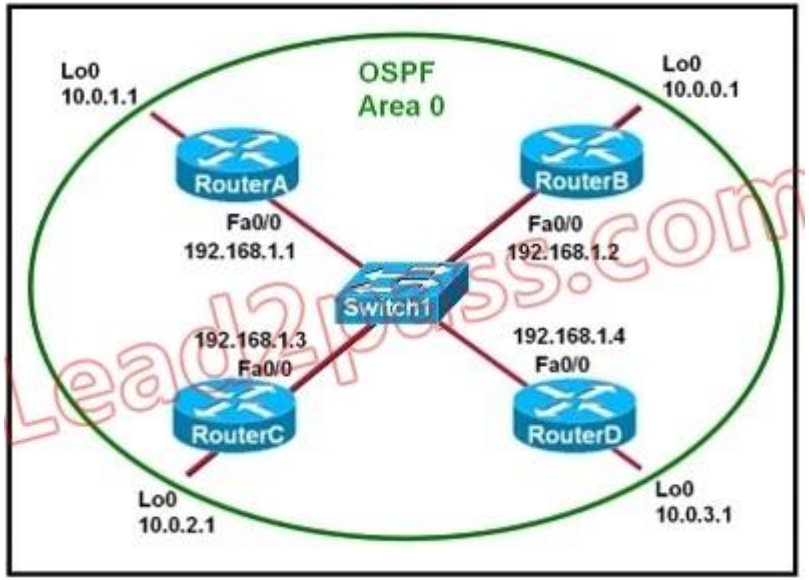


A. Host E and host F use the same IP gateway address.
B. Router1 and Switch2 should be connected via a crossover cable.
C. Router1 will not play a role in communications between host A and host D.
D. The FastEthernet 0/0 interface on Router1 must be configured with subinterfaces.
E. Router1 needs more LAN interfaces to accommodate the VLANs that are shown in the exhibit.
F. The FastEthernet 0/0 interface on Router1 and Switch2 trunk ports must be configured using the same encapsulation type.

Correct Answer: DF
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 38
Refer to the exhibit.
Which two statements are true about the loopback address that is configured on RouterB? (Choose two.)



A. It ensures that data will be forwarded by RouterB.
B. It provides stability for the OSPF process on RouterB.
C. It specifies that the router ID for RouterB should be 10.0.0.1.
D. It decreases the metric for routes that are advertised from RouterB.
E. It indicates that RouterB should be elected the DR for the LAN.

Correct Answer: BC
Section: Routing
Explanation

Explanation/Reference:

QUESTION 39
If you are a network administrator, how will you explain VTP configuration to a new technician? (Choose three.)

A. In the VTP client mode, a switch is unable to update its local VLAN database.
B. Configure a trunk link between the switches to forward VTP updates.
C. In the VTP server mode, a switch is able to update a switch in the VTP transparent mode.
D. In the VTP transparent mode, a switch will forward the received updates to other switches.

E. A switch in the VTP server mode only updates switches in the VTP client mode that have a higher VTP revision number.
F. A switch in the VTP server mode will update switches in the VTP client mode regardless of the configured VTP domain membership.

Correct Answer: ABD
Section: VTP
Explanation

Explanation/Reference:
VTP operates in one of three modes:

- **Server** - In this VTP mode you can create, remove, and modify VLANs. You can also set other configuration options like the VTP version and also turn on/off VTP pruning for the entire VTP domain.
  VTP servers advertise their VLAN configuration to other switches in the same VTP domain and synchronize their VLAN configuration with other switches based on messages received over trunk links.
  VTP server is the default mode. The VLANs information are stored on NVRAM and they are not lost after a reboot.
- **Client** - VTP clients behave the same way as VTP servers, but you cannot create, change, or delete VLANs on the local device. In VTP client mode, VLAN configurations are not saved in NVRAM.

QUESTION 40
What are two reasons a network administrator would use CDP? (Choose two.)

A. to obtain VLAN information from directly connected switches
B. to determine the status of network services on a remote device
C. to determine the status of the routing protocols between directly connected routers
D. to verify the type of cable interconnecting two devices
E. to verify Layer 2 connectivity between two devices when Layer 3 fails
F. to obtain the IP address of a connected device in order to telnet to the device

Correct Answer: EF
Section: Troubleshoot Switching
Explanation

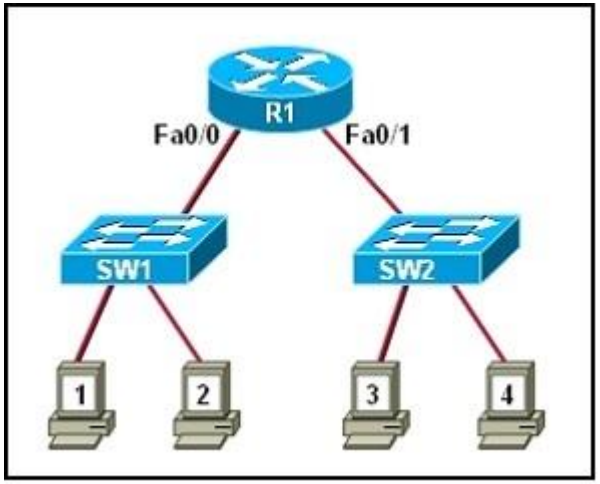
Explanation/Reference:
Cisco Discovery Protocol (CDP) is primarily used to obtain protocol addresses of neighboring devices and discover the platform of those devices. CDP can also be used to show information about the interfaces your router uses.
CDP is an independent media protocol and runs on all Cisco-manufactured devices including routers, bridges, access servers, and switches. It should be noted that CDP is a protocol which works on the layer2.
By default, multicast advertise is sent every 60 seconds to 01-00-0 c-cc-cc-cc as the destination address . When reaching the holdtime of 180 seconds , if not receiving the advertise from neighboring devices yet, the information of neighboring devices will be cleared.
Cisco Discovery Protocol (CDP) is a proprietary protocol designed by Cisco to help administrators collect information about both locally attached and remote devices.

By using CDP, you can gather hardware and protocol information about neighbor devices, which is useful info for troubleshooting and documenting the network.

You can use:

Show cdp neighbor
Show cdp neighbor details
Commands to gather the information of connected neighbors.

QUESTION 41
Refer to the exhibit.
Both switches are using a default configuration. Which two destination addresses will host 4 use to send data to host 1? (Choose two.)

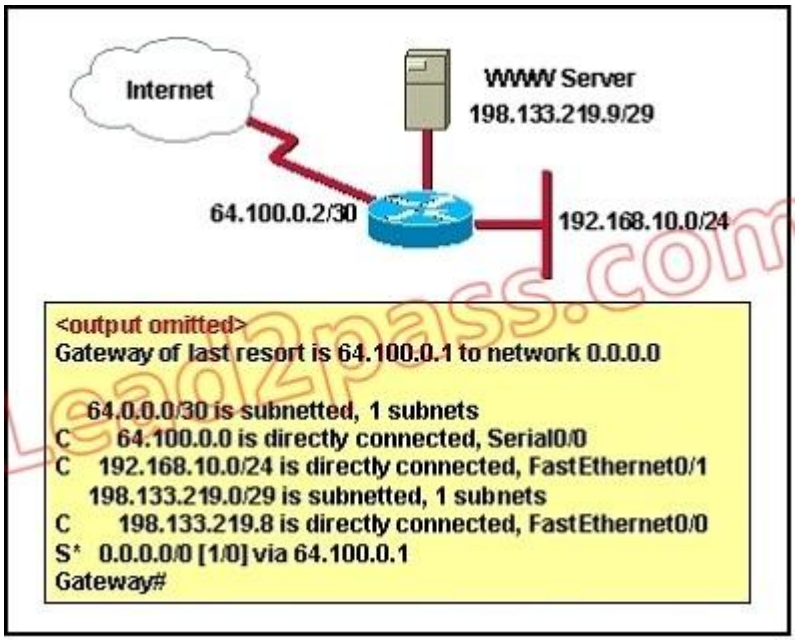


A. the IP address of host 1
B. the IP address of host 4
C. the MAC address of host 1
D. the MAC address of host 4
E. the MAC address of the Fa0/0 interface of the R1 router
F. the MAC address of the Fa0/1 interface of the R1 router

Correct Answer: AF
Section: Routing
Explanation

Explanation/Reference:

QUESTION 42
Exhibit:



Refer to the exhibit. The router has been configured with these commands:

```
hostname Gateway
interface FastEthernet 0/0
 ip address 198.133.219.14 255.255.255.248
 no shutdown
interface FastEthernet 0/1
 ip address 192.168.10.254 255.255.255.0
 no shutdown
interface Serial 0/0
 ip address 64.100.0.2 255.255.255.252
 no shutdown
ip route 0.0.0.0 0.0.0.0 64.100.0.1
```

What are the two results of this configuration? (Choose two.)

A. The default route should have a next hop address of 64.100.0.3.
B. Hosts on the LAN that is connected to FastEthernet 0/1 are using public IP addressing.
C. The address of the subnet segment with the WWW server will support seven more servers.
D. The addressing scheme allows users on the Internet to access the WWW server.
E. Hosts on the LAN that is connected to FastEthernet 0/1 will not be able to access the Internet without address translation.

Correct Answer: DE
Section: NAT & ACLs
Explanation

Explanation/Reference:
Since the hosts on the Fast Ethernet 0/1 network are using private RFC 1918 IP addressing (192.168.10.0/24) their IP addresses will need to be translated into a publicly routable address in order to access the Internet.
However, the server is using the 198.133.219.9 IP address, which is publicly routable and so Internet users can indeed access this server (assuming that the 198.133.219.9 IP address has been correctly assigned to the network)

QUESTION 43
Your Company has installed IP phones. Both the phones and the office computers connect to the same device.
The phone traffic and the office computer data traffic must be on different networks to ensure maximum throughput for the phone data.
Which network device can be best connected to the phones and computers, and which technology will be performed on this device? (Choose two.)

A. hub
B. router
C. switch
D. stp
E. subinterfaces
F. VLAN

Correct Answer: CF
Section: VoIP
Explanation

Explanation/Reference:
You can configure VLANs on the switch to distinguish two types of data traffic.

QUESTION 44
Which two addresses can be assigned to a host with a subnet mask of 255.255.254.0? (Choose two.)

A. 113.10.4.0
B. 186.54.3.0
C. 175.33.3.255
D. 26.35.2.255
E. 17.35.36.0

Correct Answer: BD
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 45
The network administrator has asked you to check the status of the workstation's IP stack by pinging the loopback address.
Which address would you ping to perform this task?

A. 10.1.1.1
B. 127.0.0.1
C. 192.168.0.1
D. 239.1.1.1

Correct Answer: B
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 46
Workstation A has been assigned an IP address of 192.0.2.24/28. Workstation B has been assigned an IP address of 192.0.2.100/28.
The two workstations are connected with a straight- through cable. Attempts to ping between the hosts are unsuccessful.
What are two things that could be attempted that would allow communications between the hosts? (Choose two.)

A. Replace the straight-through cable with a crossover cable.
B. Change the subnet mask of the hosts to /25.
C. Change the subnet mask of the hosts to /26.
D. Change the address of Workstation A to 192.0.2.15.
E. Change the address of Workstation B to 192.0.2.111.

Correct Answer: AB
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 47
Your ISP has given you the address 223.5.14.6/29 to assign to your router's interface. They have also given you the default gateway address of 223.5.14.7.
After you have configured the address, the router is unable to ping any remote devices. What is preventing the router from pinging remote devices?

A. The default gateway is not an address on this subnet.
B. The default gateway is the broadcast address for this subnet.
C. The IP address is the broadcast address for this subnet.
D. The IP address is an invalid class D multicast address.

Correct Answer: B
Section: IP addressing
Explanation

Explanation/Reference:

QUESTION 48
Which command is used to copy the configuration from RAM into NVRAM?

A. copy running-config startup-config
B. copy startup config running config
C. copy startup-config running-config
D. copy running config startup config
E. write terminal

Correct Answer: A
Section: Basic device operation
Explanation

Explanation/Reference:
The running-config is saved in RAM while the startup-config is saved in NVRAM.

So in order to copy the configuration from RAM into NVRAM we use the command “copy running-config startup-config” (syntax: copy).

QUESTION 49
Which command is used to load a configuration from a TFTP server and merge the configuration into RAM?

A. copy running-config: TFTP:
B. copy TFTP: running-config
C. copy TFTP: startup-config
D. copy startup-config: TFTP:

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
The syntax of the copy command is “copy” so to copy a configuration from a TFTP server into RAM we use the command “copy TFTP: running-config”.

QUESTION 50
A system administrator types the command to change the hostname of a router. Where on the Cisco IFS is that change stored?

A. NVRAM
B. RAM
C. FLASH
D. ROM
E. PCMCIA

Correct Answer: B
Section: Basic device operation
Explanation

Explanation/Reference:
The change is only reflected in the running-config on RAM. It can be lost if we reset the router without saving it.

QUESTION 51
Which command is used to configure a default route?

A. ip route 172.16.1.0 255.255.255.0 0.0.0.0
B. ip route 172.16.1.0 255.255.255.0 172.16.2.1
C. ip route 0.0.0.0 255.255.255.0 172.16.2.1
D. ip route 0.0.0.0 0.0.0.0 172.16.2.1

Correct Answer: D
Section: Routing
Explanation

Explanation/Reference:

QUESTION 52
If IP routing is enabled, which two commands set the gateway of last resort to the default gateway? (Choose two.)

A. ip default-gateway 0.0.0.0
B. ip route 172.16.2.1 0.0.0.0 0.0.0.0
C. ip default-network 0.0.0.0
D. ip default-route 0.0.0.0 0.0.0.0 172.16.2.1
E. ip route 0.0.0.0 0.0.0.0 172.16.2.1

Correct Answer: CE
Section: Routing
Explanation

Explanation/Reference:

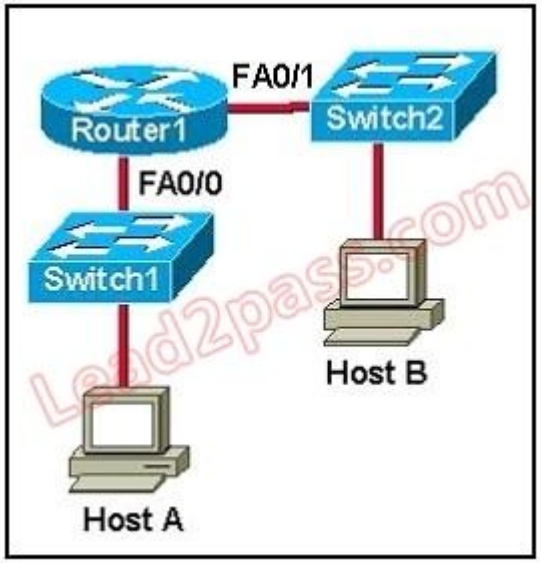
QUESTION 53
Which command can enable CDP globally on the router and show the information about directly connected Cisco devices?

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

Correct Answer: C
Section: Basic device operation
Explanation

Explanation/Reference:
The cdp run command is used to enable CDP globally on the router. To enable CDP on an interface, use the cdp enable command.
The correct answer is C.

QUESTION 54
Refer to the exhibit. Which destination addresses will Host A use to send data to Host B? (Choose two.)



A. the IP address of Switch1
B. the IP address of Router1 Fa0/0
C. the IP address of HostB
D. the MAC address of Switch1
E. the MAC address of Router1 Fa0/0
F. the MAC address of HostB

Correct Answer: CE
Section: Routing
Explanation

Explanation/Reference:

QUESTION 55
The network security policy requires that only one host be permitted to attach dynamically to each switch interface. If that policy is violated, the interface should shut down.
Which two commands must the network administrator configure on the 2950 Catalyst switch to meet this policy? (Choose two.)

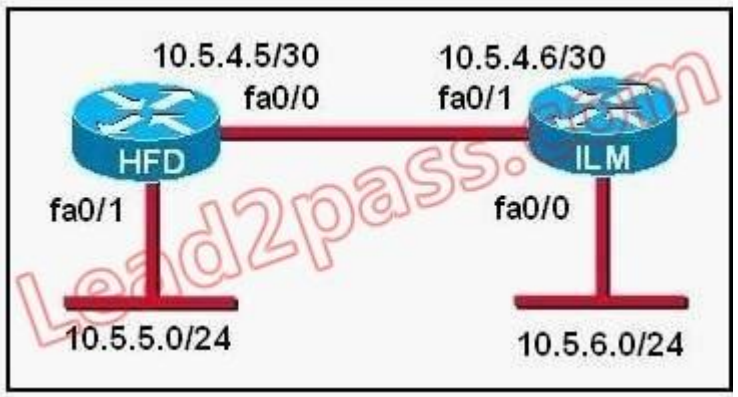
A. Switch1(config-if)# switchport port-security violation shutdown
B. Switch1(config)# mac-address-table secure
C. Switch1(config-if)# switchport port-security maximum 1
D. Switch1(config)# access-list 10 permit ip host
E. Switch1(config-if)# ip access-group 10

Correct Answer: AC
Section: Layer 2 Security
Explanation

Explanation/Reference:
1. **switchport port-security maximum{number} - [number of MAC addresses allowed]:** You can use this command to allow more than the default number of MAC addresses, default number is one.

2. **switchport port-security violation {shutdown | restrict | protect}:**
This command tells the switch what to do when the number of MAC addresses on the port has exceeded the maximum. The default is to shut down the port - See more at: http://www.orbitco-ccna-pastquestions.com/Drag-and-drop-5.php#sthash.9eUoCOzu.dpuf

QUESTION 56
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

Correct Answer: CD
Section: Routing
Explanation

Explanation/Reference:
A static route is a route that is created manually by a network administrator. The opposite of a static route is a dynamic route. Dynamic routes are created by routing protocols. Static routes have advantages and disadvantages as compares to dynamic routes. To add a static route on a Cisco router, use the ‘ip route‘ command.

QUESTION 57
What should be done prior to backing up an IOS image to a TFTP server? (Choose three.)

A. Make sure that the server can be reached across the network.
B. Check that authentication for TFTP access to the server is set.
C. Assure that the network server has adequate space for the IOS image.
D. Verify file naming and path requirements.
E. Make sure that the server can store binary files.
F. Adjust the TCP window size to speed up the transfer.

Correct Answer: ACD
Section: Basic device operation
Explanation

Explanation/Reference:
This question is to examine the Cisco IOS management.
Prior to backing up an IOS image to a TFTP server, the following actions should be taken:
Ensure the accessibility between the TFTP server and the device.
Use the show version command to examine the IOS information to ensure that the network server has adequate space for the IOS image.
So we choose A, C, D.

QUESTION 58
Which are valid modes for a switch port used as a VLAN trunk? (Choose three.)

A. transparent
B. auto
C. on
D. desirable
E. client
F. forwarding

Correct Answer: BCD
Section: VLAN
Explanation

Explanation/Reference:

QUESTION 59
The network 172.25.0.0 has been divided into eight equal subnets.
Which of the following IP addresses can be assigned to hosts in the third subnet if the ip subnet-zero command is configured on the router? (Choose three.)

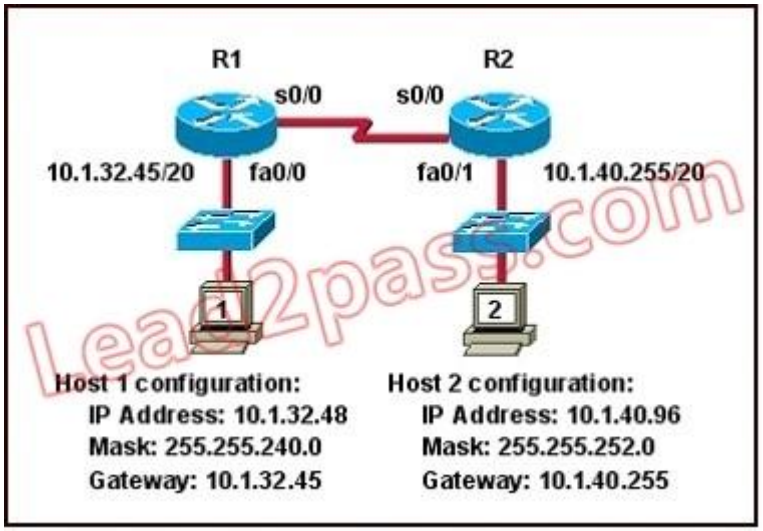
A. 172.25.78.243
B. 172.25.98.16
C. 172.25.72.0
D. 172.25.94.255
E. 172.25.96.17
F. 172.25.100.16

Correct Answer: ACD
Section: IP addressing
Explanation

Explanation/Reference:
If we divide the address 172.25.0.0 in 8 subnets, the resulting subnets will be

1. 172.25.0.0
2. 172.25.32.0
3. 172.25.64.0 This is the third subnet
4. 172.25.96.0
5. 172.25.128.0
6. 172.25.160.0
7. 172.25.192.0
8. 172.25.224.0

QUESTION 60
Refer to the graphic. Host 1 cannot receive packets from Host 2.
Assuming that RIP v1 is the routing protocol in use, what is wrong with the IP configuration information shown? (Choose two.)



A. The fa0/1 interface of router R2 has been assigned a broadcast address.
B. The fa0/1 network on router R2 overlaps with the LAN attached to R1.
C. Host 2 has been assigned the incorrect subnet mask.
D. Host 1 has been configured with the 255.255.248.0 subnet mask.

E. Host 2 on router R2 is on a different subnet than its gateway.

Correct Answer: BC
Section: IP addressing
Explanation

Explanation/Reference:
The fa0/1 interface of R2 is assigned an IP address of 10.1.40.255/20. It seems to be a broadcast address but it is not. If we calculate the range of this network we will understand why:

Network 10.1.40.255/20
Increment: 16 (/20 = 1111 1111.1111 1111.1111 0000.0000 0000)
Network address: 10.1.32.0
Broadcast address: 10.1.47.255

-> 10.1.40.255/20 is an usable host address -> A is not correct.

The IP address of host 1 (10.1.32.48) belongs to the range of interface fa0/1 on R2 as shown above -> B is correct.

In the topology above, all subnet masks are /20 (255.255.240.0) excepting the subnet mask of Host 2 (255.255.252.0) so C can be incorrect.

The subnet mask of Host 1 is 255.255.240.0, not 255.255.248.0 -> D is not correct.

Host 2 is not on a different subnet than its gateway even if the subnet mask 255.255.252.0 is used. Let's analyze the range of Host 2 network:

Network 10.1.40.96/22
Increment: 4
Network address: 10.1.40.0
Broadcast address: 10.1.43.255

Its gateway (10.1.40.255) is still belongs to this range -> E is not correct.

Note: In this question, C is the best suitable answer after eliminating A, D, E answers. But in fact Host 2 can ping its gateway because they are on the same subnet.

QUESTION 61
What are three valid reasons to assign ports to VLANs on a switch? (Choose three.)

A. to make VTP easier to implement
B. to isolate broadcast traffic
C. to increase the size of the collision domain
D. to allow more devices to connect to the network

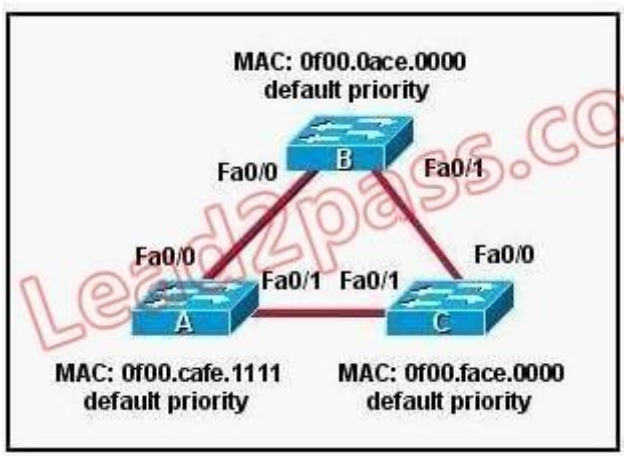
E. to logically group hosts according to function
F. to increase network security

Correct Answer: BEF
Section: VLAN
Explanation

Explanation/Reference:
VLAN has the following advantages:

1. Restrict broadcast domain. That is to say each VLAN is a Broadcast domain, which saves bandwidth and improves the network performance.
2. Enhance the LAN security. Datagrams in different VLANs transmit separately, that is to say users in one VLAN can't directly communicate with users in other VLANs, if they want to communicate, devices such as routers and layer3 switches are required.
3. Establish a virtual working group flexibly. VLAN can group different users into different working team regardless of their physical location, which makes network establishment and maintenance more flexible.

QUESTION 62
Refer to the topology shown in the exhibit.
Which ports will be STP designated ports if all the links are operating at the same bandwidth? (Choose three.)



A. Switch A - Fa0/0
B. Switch A - Fa0/1
C. Switch B - Fa0/0

D. Switch B - Fa0/1
E. Switch C - Fa0/0
F. Switch C - Fa0/1

Correct Answer: BCD
Section: Spanning Tree
Explanation

Explanation/Reference:
This question is to check the spanning tree election problem.
1.First, select the root bridge, which can be accomplished by comparing the bridge ID, the smallest will be selected. Bridge-id= bridge priority + MAC address.
The three switches in the figure all have the default priority, so we should compare the MAC address, it is easy to find that SwitchB is the root bridge.
2.Select the root port on the non-root bridge, which can be completed through comparing root path cost. The smallest will be selected as the root port.
3.Next, select the Designated Port. First, compare the path cost, if the costs happen to be the same, then compare the BID, still the smallest will be selected.
Each link has a DP. Based on the exhibit above, we can find DP on each link. The DP on the link between SwitchA and SwitchC is SwitchA'Fa0/1, because it has the smallest MAC address.

QUESTION 63
Which statements describe two of the benefits of VLAN Trunking Protocol? (Choose two.)

A. VTP allows routing between VLANs.
B. VTP allows a single switch port to carry information to more than one VLAN.
C. VTP allows physically redundant links while preventing switching loops.
D. VTP simplifies switch administration by allowing switches to automatically share VLAN configuration information.
E. VTP helps to limit configuration errors by keeping VLAN naming consistent across the VTP domain.
F. VTP enhances security by preventing unauthorized hosts from connecting to the VTP domain.

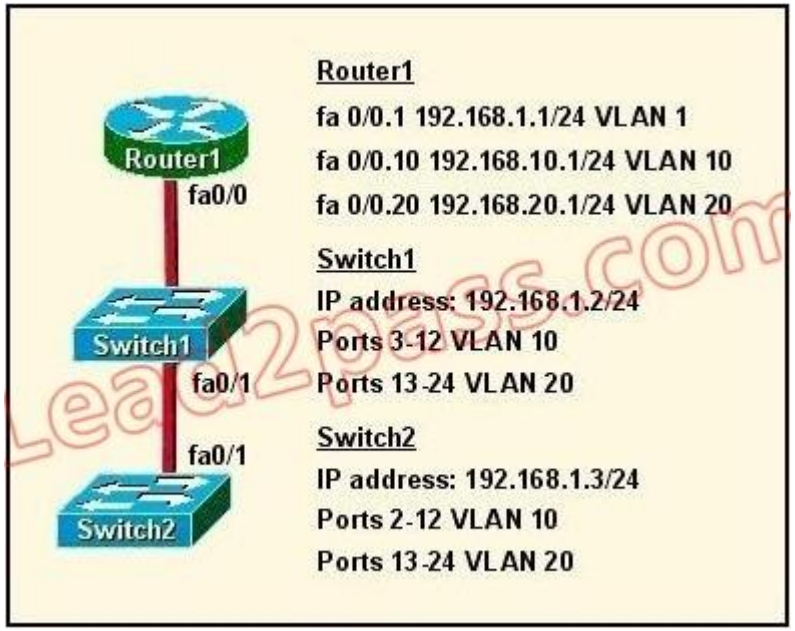
Correct Answer: DE
Section: VTP
Explanation

Explanation/Reference:
VTP has the following benefits:

1.VTP keeps VLAN configuration consistency across the network (all switches in a network use the same set of VLAN database).
2.VLANs are trunked over mixed media.
3.Accurate tracking and monitoring of VLANs.

QUESTION 64

Refer to the exhibit.
How should the FastEthernet0/1 ports on the 2950 model switches that are shown in the exhibit be configured to allow connectivity between all devices?

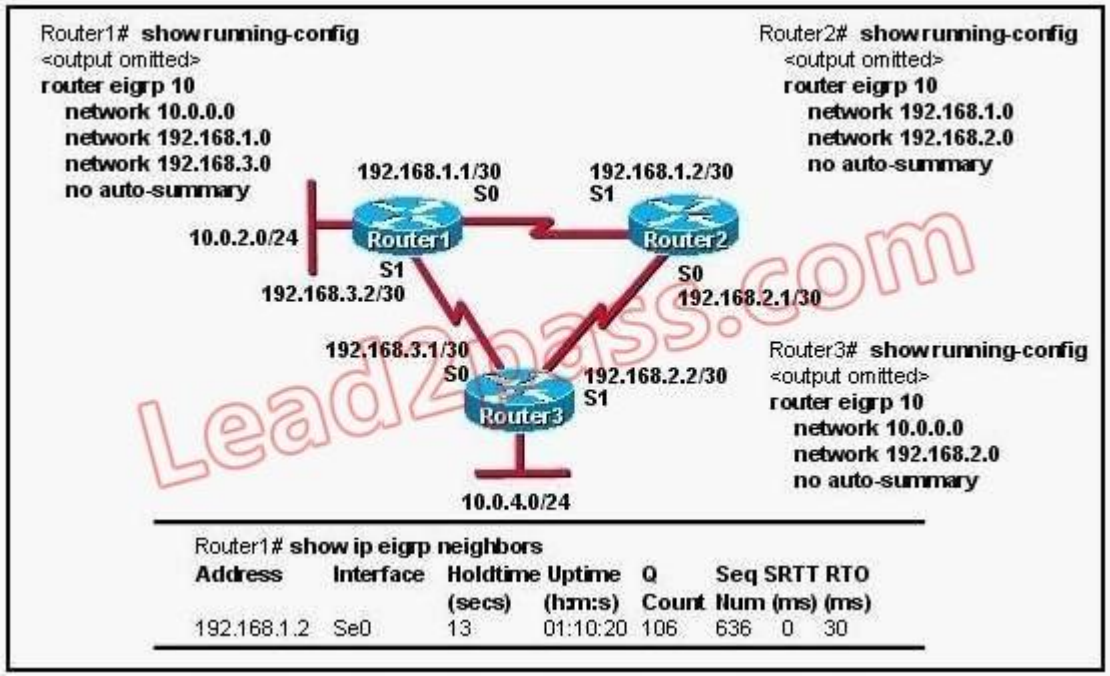


A. The ports only need to be connected by a crossover cable.
B. SwitchX(config)# interface fastethernet 0/1
SwitchX(config-if)# switchport mode trunk
C. SwitchX(config)# interface fastethernet 0/1
SwitchX(config-it)#switchport mode access
SwitchX(config-it)#switchport access vlan 1
D. SwitchX(config)#interface fastethernet 0/1
SwitchX(config-if)#switchport mode trunk
SwitchX(config-it)#switchport trunk vlan 1
SwitchX(config-if)#switchport trunk vlan 10
SwitchX(config-it)#switchport trunk vlan 20

Correct Answer: B
Section: Troubleshoot Switching
Explanation

Explanation/Reference:

QUESTION 65
IP addresses and routing for the network are configured as shown in the exhibit.
The network administrator issues the show ip eigrp neighbors command from Router1 and receives the output shown below the topology.
Which statement is true?



A. It is normal for Router1 to show one active neighbor at a time to prevent routing loops.
B. Routing is not completely configured on Router3.
C. The IP addresses are not configured properly on the Router1 and Router3 interfaces.
D. The no auto-summary command configured on the routers prevents Router1 and Router2 from forming a neighbor relationship.

Correct Answer: B
Section: Routing
Explanation

Explanation/Reference:

QUESTION 66
Refer to the exhibit.
After SwitchB was added to the network, VLAN connectivity problems started to occur. What caused this problem?

SwitchA# **show vtp status**		SwitchB# **show vtp status**	
VTP version	: 2	VTP version	: 2
Configuration Revision	: 1	Configuration Revision	: 7
Maximum VLANs supported locally	:64	Maximum VLANs supported locally	: 64
Number of existing VLANs	:8	Number of existing VLANs	: 4
VTP Operating Mode	: Server	VTP Operating Mode	: Server
VTP Domain Name	: cisco	VTP Domain Name	: cisco
VTP Pruning Mode	: disabled	VTP Pruning Mode	: disabled
V2 Mode	: disabled	VTP V2 Mode	: disabled

A. Both switches are in server mode in the same domain.
B. The revision number of SwitchB was higher than the revision number of SwitchA.
C. SwitchA was not rebooted prior to adding SwitchB to the network.
D. V2-mode is not enabled.
E. VTP pruning is not activated, so the new paths in the network have not been recalculated.

Correct Answer: B
Section: VTP
Explanation

Explanation/Reference:

QUESTION 67
Refer to the exhibit.
The output that is shown is generated at a switch. Which three of these statements are true? (Choose three.)

```
Switch# show spanning-tree vlan 30
VLAN0030
Spanning tree enabled protocol rstp
Root ID Priority 24606
Address 00d0.047b.2800
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 24606 (priority 24576 sys-id-ext 30)
Address 00d0.047b.2800
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface    Role  Sts    Cost  Prio.Nbr     Type
----------   ---------    ---   -------      ----- ----------
Fa1/1        Desg FWD     4     128.1        p2p
Fa1/2        Desg FWD     4     128.2        p2p
Fa5/1        Desg FWD     4     128.257      p2p
```

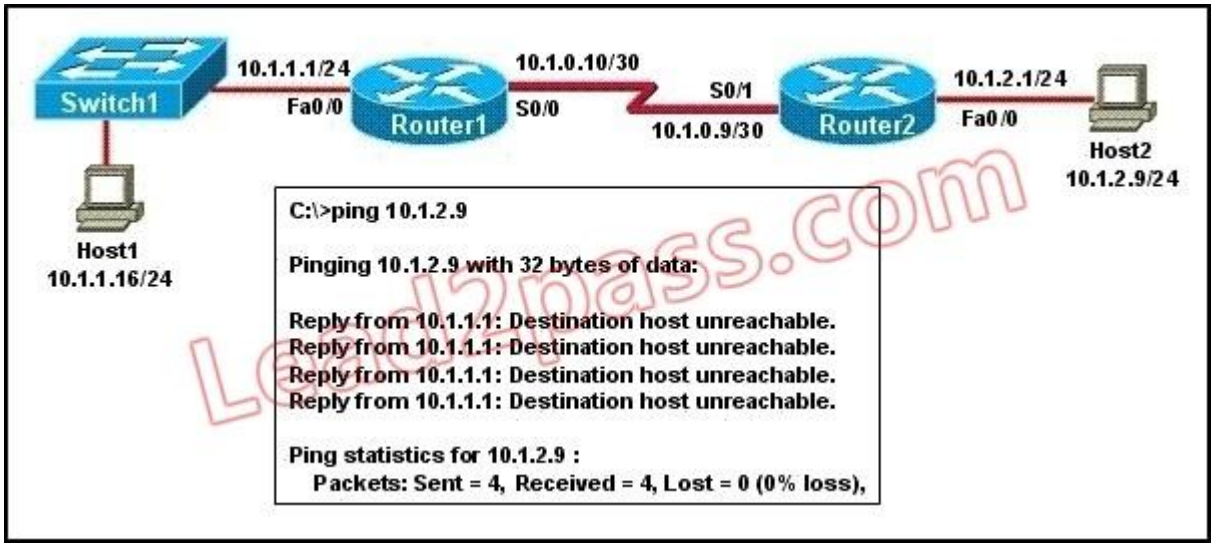
A. All ports will be in a state of discarding, learning, or forwarding.
B. Thirty VLANs have been configured on this switch.
C. The bridge priority is lower than the default value for spanning tree.
D. All interfaces that are shown are on shared media.
E. All designated ports are in a forwarding state.
F. This switch must be the root bridge for all VLANs on this switch.

Correct Answer: ACF
Section: Spanning Tree
Explanation

Explanation/Reference:
From the output, we see that all ports are in Designated role (forwarding state) -> A and E are correct.
The command “show spanning-tree vlan 30″ only shows us information about VLAN 30. We don’t know how many VLAN exists in this switch -> B is not correct.
The bridge priority of this switch is 24606 which is lower than the default value bridge priority 32768 -> C is correct.
All three interfaces on this switch have the connection type “p2p”, which means Point-to-point environment – not a shared media -> D is not correct.
The only thing we can specify is this switch is the root bridge for VLAN 3o but we can not guarantee it is also the root bridge

for other VLANs -> F is not correct.

QUESTION 68
The Company network is shown below:



Based on the information shown above, when the Company network administrator attempts to ping Host2 from Host1 and receives the results that are shown. What is a possible problem?

A. The link between Switch1 and Router1 is down.
B. Interface Fa0/0 on Router1 is shutdown.
C. The link between Router1 and Router2 is down.
D. The default gateway on Host1 is incorrect.

Correct Answer: C
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 69
Refer to the exhibit.
The Bigtime router is unable to authenticate to the Littletime router. What is the cause of the problem?


```
Bigtime(config)# username Littletime password little123
Bigtime(config)# interface serial0/0
Bigtime(config-if)# encapsulation ppp
Bigtime(config-if)# ppp authentication chap
```

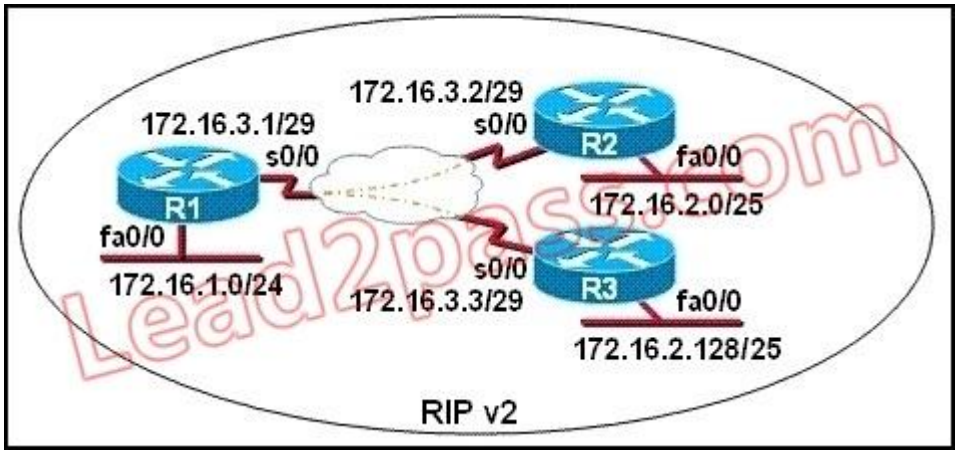
```
Littletime(config)# username Bigtime password big123
Littletime(config)# interface serial0/0
Littletime(config-if)# encapsulation ppp
Littletime(config-if)# ppp authentication chap
```


A. The usernames are incorrectly configured on the two routers.
B. The passwords do not match on the two routers.
C. CHAP authentication cannot be used on a serial interface.
D. The routers cannot be connected from interface S0/0 to interface S0/0.
E. With CHAP authentication, one router must authenticate to another router. The routers cannot be configured to authenticate to each other.

Correct Answer: B
Section: Troubleshoot Routing
Explanation

Explanation/Reference:

QUESTION 70
S0/0 on R1 is configured as a multipoint interface to communicate with R2 and R3 in the hub-and- spoke Frame Relay topology shown in the exhibit. Originally, static routes were configured between these routers to successfully route traffic between the attached networks.
What will need to be done in order to use RIP v2 in place of the static routes?



A. Configure the no ip subnet-zero command on R1, R2, and R3.
B. Dynamic routing protocols such as RIP v2 cannot be used across Frame Relay networks.
C. Configure the s0/0 interface on R1 as two subinterfaces and configure point-to-point links to R2 and R3.
D. Change the 172.16.2.0/25 and 172.16.2.128/25 subnetworks so that at least two bits are borrowed from the last octet.
E. Change the network address configurations to eliminate the discontiguous 172.16.2.0/25 and 172.16.2.128/25 subnetworks.

Correct Answer: C
Section: Routing
Explanation

Explanation/Reference:

QUESTION 71
Refer to the exhibit. A router interface is being configured for Frame Relay.
However, as the exhibit shows, the router will not accept the command to configure the LMI type. What is the problem?

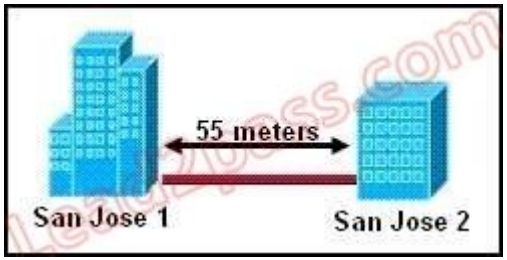
```
Router(config)# interface serial 0/0
Router(config-if)# frame-relay lmi-type cisco
                   ^
% Unrecognized command
Router(config-if)# frame-relay ?
% Unrecognized command
```

A. The interface does not support Frame Relay connections.
B. The interface does not have an IP address assigned to it yet.
C. The interface requires that the no shutdown command be configured first.
D. The interface requires that the encapsulation frame-relay command be configured first.

Correct Answer: D
Section: WAN
Explanation

Explanation/Reference:

QUESTION 72
Refer to the exhibit.
Two buildings on the San Jose campus of a small company must be connected to use Ethernet with a bandwidth of at least 100 Mbps.
The company is concerned about possible problems from voltage potential differences between the two buildings.
Which media type should be used for the connection?



A. UTP cable
B. STP cable

C. coaxial cable
D. fiber optic cable

Correct Answer: D
Section: How a network works
Explanation

Explanation/Reference:
Current Ethernet technology typically comes via either copper UTP or fiber cables.
In this scenario the distance between the buildings is only 55 meters so either copper or fiber could be used, as the distance limitation for 100M UTP Ethernet is 100 meters.
However, fiber would be a better fit as it is not prone to errors that could occur due to the voltage potential differences.
Because fiber is a dielectric material, it's not susceptible to electrical interference.
FO-product vendors also claim that fiber systems make secure communications easier.
Interference immunity and lack of emissions are givens in FO systems and in the fiber medium itself.

QUESTION 73
Users have been complaining that their Frame Relay connection to the corporate site is very slow.
The network administrator suspects that the link is overloaded. Based on the partial output of the

Router# show frame relay pvc

command shown in the graphic,
which output value indicates to the local router that traffic sent to the corporate site is experiencing congestion?

```
PVC Statistics for interface Serial0 (Frame Relay DTE)

          Active   Inactive   Deleted   Static
 Local      1        0         0         0
 Switched   0        0         0         0
 Unused     0        0         0         0

DLCI = 100, DLCI USAGE = LOCAL, PVC STATUS = ACTIVE, INTERFACE =
Serial0

 input pkts 1300        output pkts 1270        in bytes 22121000
 out bytes 21802000       dropped pkts 4          in FECN pkts 147
 in BECN pkts 192       out FECN pkts 259       out BECN pkts 214
 in DE pkts 0           out DE pkts 0
 out bcast pkts 107       out bcast bytes 19722
 pvc create time 00:25:50, last time pvc status changed 00:25:40
```

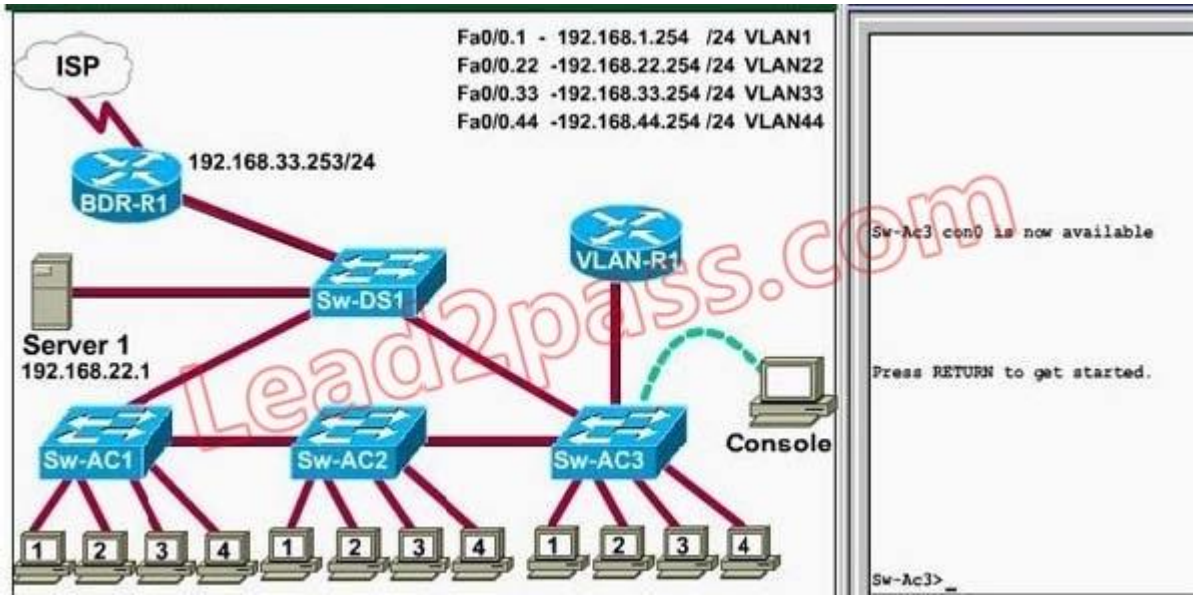
A. DLCI = 100
B. last time PVC status changed 00:25:40
C. in BECN packets 192
D. in FECN packets 147
E. in DE packets 0

Correct Answer: C
Section: WAN
Explanation

Explanation/Reference:

Hotspot

QUESTION 1
This task requires you to use the CLI of Sw-AC3 to answer multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.
What ports on Sw-AC3 are operating as trunks? (Choose three)



Sw-AC3#show trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status       Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

A. Fa0/3
B. Fa0/9
C. Fa0/1
D. Fa0/12

Correct Answer: ABD

Section: VTP
Explanation

Explanation/Reference:
Use the show interface trunk command to determine the trunking status of a link and VLAN status.
This command lists port, its mode, encapsulation and whether it is trunking. The image below shows how it works:

```
Sw-Ac3#show interface trunk

Port        Mode         Encapsulation  Status        Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1

Port      Vlans allowed on trunk
Fa0/9       1-4094
Fa0/12      1-4094

Port        Vlans allowed and active in management domain
Fa0/9       1
Fa0/12      1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/9       1
Fa0/12      1
Sw-Ac3#
```

QUESTION 2
This task requires you to use the CLI of Sw-AC3 to answer multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.

What kind of router is VLAN-R1?

A. 1720
B. 1841
C. 2611
D. 2620

Correct Answer: D
Section: Basic device operation
Explanation

Explanation/Reference:

VLAN-R1 is the router directly connected to Sw-Ac3 switch, so we can use the show cdp neighbors command to see:

1. Neighbor Device ID : The name of the neighbor device;
2. Local Interface : The interface to which this neighbor is heard
3. Capability: Capability of this neighboring device - R for router, S for switch, H for Host etc.
4. Platform: Which type of device the neighbor is
5. Port ID. The interface of the remote neighbor you receive CDP information
6. Holdtime. Decremental hold time in seconds.

Sample output of **show cdp neighbors** command:

```
Sw-Ac3#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID        Local Intrfce     Holdtme    Capability  Platform     Port ID
Sw-DS1           Fas 0/12           130              S I  WS-C2950G-   Fas 0/12
Sw-AC2           Fas 0/9            176              S I  WS-C2950T-   Fas 0/9
VLAN-R1          Fas 0/3            152              R    2620         Fas 0/0.1
```

One thing I want to notice you is "Local Interface" in the image above refers to the local interface on the device you are running the "show cdp neighbors" command.

QUESTION 3
This task requires you to use the CLI of Sw-AC3 to answer multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.
What address should be configured as the default-gateway for the host connected to interface Fa0/4 of Sw-AC3?

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                     Status    Ports
---- --------------------     ------------ -------------------------------
1    default                  active    Fa0/16
22   Servers                  active
33   Management               active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production               active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                 active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                        Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                        F0/22, Fa0/23, Fa0/24
                                         Gi0/1, Gi0/2
```

A. 192.168.1.254
B. 192.168.22.254
C. 192.168.44.254
D. 192.168.33.254

Correct Answer: C
Section: VLAN
Explanation

Explanation/Reference:
First we have to identify which VLAN interface Fa0/4 belongs to by the show vlan command

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              ---------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
```

From the exhibit we know that VLAN 44 is configured on router using sub-interface Fa0/0.44 with IP address 192.168.44.254/24

Therefore the default gateway of the host should be 192.168.44.254

QUESTION 4
This task requires you to use the CLI of Sw-AC3 to answer multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.

Out of which ports will a frame be forwarded that has source mac-address 0010.5a0c.fd86 and destination mac-address 000a.8a47.e612? (Choose three)

A. Fa0/8
B. Fa0/3
C. Fa0/1
D. Fa0/12

Correct Answer: BCD
Section: Switching
Explanation

Explanation/Reference:
First we check to see which ports the source mac-address and the destination mac-address belong to by using show mac-address-table command.

```
Sw-Ac3#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------      --------     -----
 All    000f.2485.8900    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    0009.e8b2.c28c    DYNAMIC     Fa0/12
   1    000a.b7e9.8360    DYNAMIC     Fa0/3
   1    000f.2485.8b49    DYNAMIC     Fa0/9
  22    0009.e8b2.c28c    DYNAMIC     Fa0/12
  22    000a.b7e9.8360    DYNAMIC     Fa0/3
  22    0010.5a0c.ffba    DYNAMIC     Fa0/12
  33    0009.e8b2.c28c    DYNAMIC     Fa0/12
  33    000a.b7e9.8360    DYNAMIC     Fa0/3
  33    000c.ce8d.8860    DYNAMIC     Fa0/12
  33    0010.5a0c.fd86    DYNAMIC     Fa0/6
  33    0010.5a0c.feae    DYNAMIC     Fa0/12
  33    0010.5a0c.ff9f    DYNAMIC     Fa0/1
  44    0009.e8b2.c28c    DYNAMIC     Fa0/12
 --More--
```

We notice that the source mac-address 0010.5a0c.fd86 is listed in the table and it belongs to Vlan 33 but we can't find the destination mac-address 000a.8a47.e612 in this table.

In this case, the switch will flood to all ports of Vlan 33 and flood to all the trunk links, except the port it received this frame (port Fa0/6).
Therefore from the output above, we can figure out it will flood this frame to Fa0/1, Fa0/3 and Fa0/12.
Please notice that the "show mac-address-table" command just lists information that was learned by the switch, it means that there can be other ports besides Fa0/1, Fa0/3 and Fa0/12 belong to Vlan 33.
You can use the show vlan command to see which ports belong to vlan 33

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
```

And we found other ports which belong to vlan 33, they are Fa0/2, Fa0/5 and Fa0/7. Our switch will flood the frame to these ports, too.
And we can check which trunk ports will receive this frame by the show interface trunk command

```
Sw-Ac3#show interface trunk
Port        Mode         Encapsulation  Status       Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

QUESTION 5
This task requires you to use the CLI of Sw-AC3 to answer multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.

From which switch did SW-AC3 receive the VLAN information?

A. SW-DS1
B. SW-AC1
C. SW-AC2
D. SW-AC3(locally)

Correct Answer: C
Section: VLAN
Explanation

Explanation/Reference:
to view the VTP configuration information, use the show vtp status command

```
Sw-Ac3#show vtp status
VTP Version : 2
Configuration Revision : 5
Maximum VLANs supported locally : 255
Number of existing VLANs : 7
VTP Operating Mode : Client
VTP Domain Name : home-office
VTP Pruning Mode : Enabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0x22 0x07 0xF2 0x3A 0xF1 0x28 0xA0 0x5D
Configuration last modified by 163.5.8.3 at 3-1-93 00:28:35
```

So we knew Sw-Ac3 received VLAN information from 163.5.8.3 (notice:the IP address may be different). Finally we use the show cdp neighbors detail to find out who 163.5.8.3 is:

```
Sw-Ac3#show cdp neighbor detail

<output omitted>
Device ID: Sw-AC2
Entry address(es):
IP address: 163.5.8.3
Platforn: cisco 2950, Capabilities: Switch
Interface: FastEthernet, Port ID (outgoing port): FastEthernet Holdtime : 164 sec
Version :
<output omitted>
```

QUESTION 6
This task requires you to use the CLI of Sw-AC3 to answer the multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.

What interface did SW-AC3 associate with source MAC address 0010.5a0c.ffba?

A. Fa0/1
B. Fa0/3
C. Fa0/6
D. Fa0/8
E. Fa0/9
F. Fa0/12

Correct Answer: D
Section: Switching
Explanation

Explanation/Reference:
to find out which interface associated with a given MAC address, use the show mac-address-table command. It shows the learned MAC addresses and their associated interfaces. After entering this command, you will see a MAC address table like this:

```
Sw-Ac3#show mac-address-table
                Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------      --------     -----
 All    000f.2485.8900    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    0009.e8b2.c28c    DYNAMIC     Fa0/12
   1    000a.b7e9.8360    DYNAMIC     Fa0/3
   1    000f.2485.8b49    DYNAMIC     Fa0/9
  22    0009.e8b2.c28c    DYNAMIC     Fa0/12
  22    000a.b7e9.8360    DYNAMIC     Fa0/3
  22    0010.5a0c.ffba    DYNAMIC     Fa0/8
  33    0009.e8b2.c28c    DYNAMIC     Fa0/12
  33    000a.b7e9.8360    DYNAMIC     Fa0/3
  33    000c.ce8d.8860    DYNAMIC     Fa0/12
  33    0010.5a0c.fd86    DYNAMIC     Fa0/6
  33    0010.5a0c.feae    DYNAMIC     Fa0/12
  33    0010.5a0c.ff9f    DYNAMIC     Fa0/1
  44    0009.e8b2.c28c    DYNAMIC     Fa0/12
 --More--
```

From this table we can figure out that the MAC address 0010.5a0c.ffba is associated with interface Fa0/8

QUESTION 7
This task requires you to use the CLI of Sw-AC3 to answer the multiple-choice question below.
This does not require any configuration. Refer the Explanation to see all the configuration details.

Sw-AC3#show mac-address-table

```
Sw-Ac3#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------      --------     -----
 All    000f.2485.8900    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    0009.e8b2.c28c    DYNAMIC     Fa0/12
   1    000a.b7e9.8360    DYNAMIC     Fa0/3
   1    000f.2485.8b49    DYNAMIC     Fa0/9
  22    0009.e8b2.c28c    DYNAMIC     Fa0/12
  22    000a.b7e9.8360    DYNAMIC     Fa0/3
  22    0010.5a0c.ffba    DYNAMIC     Fa0/12
  33    0009.e8b2.c28c    DYNAMIC     Fa0/12
  33    000a.b7e9.8360    DYNAMIC     Fa0/3
  33    000c.ce8d.8860    DYNAMIC     Fa0/12
  33    0010.5a0c.fd86    DYNAMIC     Fa0/6
  33    0010.5a0c.feae    DYNAMIC     Fa0/12
  33    0010.5a0c.ff9f    DYNAMIC     Fa0/1
  44    0009.e8b2.c28c    DYNAMIC     Fa0/12
 --More--
```

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              ---------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                F0/22, Fa0/23, Fa0/24
                                                 Gi0/1, Gi0/2
```

Sw-AC3#show int trunk

```
Sw-Ac3#show int trunk
Port        Mode         Encapsulation  Status       Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

Out of which ports on Sw-AC3 will a frame be forwarded that has Source MAC address 0010.5a0c.fd86 and destination MAC address 000a.8a47.e612? (Choose three)

A. Fa0/1
B. Fa0/3
C. Fa0/12
D. Fa0/8
E. Fa0/4
F. Fa0/6
G. Fa0/7

Correct Answer: ABC
Section: Switching
Explanation

Explanation/Reference:

First we check to see which ports the source mac-address and the destination mac-address belong to by using show mac-address-table command

```
Sw-Ac3#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------      --------     -----
 All    000f.2485.8900    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    0009.e8b2.c28c    DYNAMIC     Fa0/12
   1    000a.b7e9.8360    DYNAMIC     Fa0/3
   1    000f.2485.8b49    DYNAMIC     Fa0/9
  22    0009.e8b2.c28c    DYNAMIC     Fa0/12
  22    000a.b7e9.8360    DYNAMIC     Fa0/3
  22    0010.5a0c.ffba    DYNAMIC     Fa0/12
  33    0009.e8b2.c28c    DYNAMIC     Fa0/12
  33    000a.b7e9.8360    DYNAMIC     Fa0/3
  33    000c.ce8d.8860    DYNAMIC     Fa0/12
  33    0010.5a0c.fd86    DYNAMIC     Fa0/6
  33    0010.5a0c.feae    DYNAMIC     Fa0/12
  33    0010.5a0c.ff9f    DYNAMIC     Fa0/1
  44    0009.e8b2.c28c    DYNAMIC     Fa0/12
 --More--
```

We notice that the source mac-address 0010.5a0c.fd86 is listed in the table and it belongs to Vlan 33 but we can't find the destination mac-address 000a.8a47.e612 in this table. In this case, the switch will flood to all ports of Vlan 33 and flood to all the trunk links, except the port it received this frame (port Fa0/6).
Therefore from the output above, we can figure out it will flood this frame to Fa0/1, Fa0/3 and Fa0/12. Please notice that the "show mac-address-table" command just lists information that was learned by the switch, it means that there can be other ports besides Fa0/1, Fa0/3 and Fa0/12 belong to Vlan 33. You can use the show vlan command to see which ports belong to vlan 33

```
Sw-Ac3#show vlan
VLAN Name                    Status    Ports
----  --------------------   ------------ -------------------------------
1    default                 active    Fa0/16
22   Servers                 active
33   Management              active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production              active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                       Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                       F0/22, Fa0/23, Fa0/24
                                        Gi0/1, Gi0/2
```

And we found other ports which belong to vlan 33, they are Fa0/2, Fa0/5 and Fa0/7. Our switch will flood the frame to these ports, too.
And we can check which trunk ports will receive this frame by the show interface trunk command

```
Sw-Ac3#show interface trunk
Port        Mode         Encapsulation  Status       Native vlan
Fa0/3       on           802.1q         trunking      1
Fa0/9       desirable    802.1q         trunking      1
Fa0/12      desirable    802.1q         trunking      1
```

-> Port Fa0/9 will also receive this frame!

QUESTION 8
This task requires you to use the CLI of Sw-AC3 to answer the multiple-choice question below.
This does not require any configuration.
Refer to the exhibit. SwX was taken out of the production network for maintenance.
It will be reconnected to the Fa0/16 port of Sw-AC3. What happens to the network when it is reconnected and a trunk exists between the two switches?

SwX#show vlan | SwX#show vtp stat

```
SwX#show vlan
VLAN Name   Status   Ports
*************************************
1   default    active  Fa0/1, Fa0/2, Fa0/3
                       Fa0/4, Fa0/5, Fa0/6
                       Fa0/7, Fa0/8, Fa0/9
                   Fa0/10, Fa0/11, Fa0/12
                   Gi0/1, Gi0/2
2   students   active
3   admin      active
4   faculty    active
```

```
SwX#  show vtp stat
VTP Version                    : 2
Configuration Revision         : 6
Maximum VLANs supported locally : 250
Number of existing VLANs       : 8
VTP Operating Mode             : Server
VTP Domain Name                : home-office
VTP Pruning Mode               : Disabled
VTP V2 Mode                    : Disabled
VTP Traps Generation           : Disabled
MD5 digest                     : 0xD8 0xD8 0x38 0x22
                                 0x98 0xE3 0xAC 0x65
Configuration last modified by 0.0.0.0  at
                                 3-28-99  01:24:88
```

Sw-AC3#show vtp stat

```
Sw-Ac3#show vtp status
VTP Version                     :   2
Configuration Revision          :   5
Maximum VLANs supported locally :   250
Number of existing VLANs        :   9
VTP Operating Mode              :   Client
VTP Domain Name                 :   home-office
VTP Pruning Mode                :   Disabled
VTP V2 Mode                     :   Disabled
VTP Traps Generation            :   Disabled
MD5 digest                      :   0xD8 0xD8 0x38 0x22 0x98 0xE3 0xAC 0x65
Configuration last modified by 192.168.1.249 at 3-2-93 21:29:08
Sw-Ac3#
```

Sw-AC3#show vlan

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              ---------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                               Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                               F0/22, Fa0/23, Fa0/24
                                                Gi0/1, Gi0/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

A. All VLANs except the default VLAN will be removed from all switches.
B. All existing switches will have the students,admin,faculty,Servers,Management,Production,and no-where VLANs.
C. The VLANs Servers,Management,Production,and no-where will replace the VLANs on SwX.
D. The VLANs Servers,Managements,Production,and no-where will be removed from existing switches.

Correct Answer: D
Section: Switching
Explanation

Explanation/Reference:

First we should view the VTP configuration of switch Sw-Ac3 by using the show vtp status command on Sw-Ac3

```
Sw-Ac3#show vtp status
VTP Version                     :  2
Configuration Revision          :  5
Maximum VLANs supported locally :  250
Number of existing VLANs        :  9
VTP Operating Mode              :  Client
VTP Domain Name                 :  home-office
VTP Pruning Mode                :  Disabled
VTP V2 Mode                     :  Disabled
VTP Traps Generation            :  Disabled
MD5 digest                      :  0xD8 0xD8 0x38 0x22 0x98 0xE3 0xAC 0x65
Configuration last modified by 192.168.1.249 at 3-2-93 21:29:08
Sw-Ac3#
```

Notice that its configuration revision number is 5 and VTP Domain Name is home-office Next, from the exhibit we know that SwX has a revision number of 6,
which is greater than that of Sw-Ac3 switch, and both of them have same VTP Domain Name called "home-office".

```
SwX#show vlan
VLAN Name   Status   Ports
----------------------------------------
1   default    active  Fa0/1, Fa0/2, Fa0/3
                       Fa0/4, Fa0/5, Fa0/6
                       Fa0/7, Fa0/8, Fa0/9
                       Fa0/10, Fa0/11, Fa0/12
                       Gi0/1, Gi0/2
2   students   active
3   admin      active
4   faculty    active
```

```
SwX#  show vtp stat
VTP Version                     : 2
Configuration Revision          : 6
Maximum VLANs supported locally : 250
Number of existing VLANs        : 8
VTP Operating Mode              : Server
VTP Domain Name                 : home-office
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0xD8 0xD8 0x38 0x22
                                  0x98 0xE3 0xAC 0x65
Configuration last modified by 0.0.0.0  at
                                  3-28-99  01:24:88
```

Therefore SwX will replace vlan information on other switches with its own information. We should check vlan information of Sw-Ac3 switch with show vlan command

```
Sw-Ac3#show vlan
VLAN Name                             Status    Ports
---- -------------------              ---------- -------------------------------
1    default                          active    Fa0/16
22   Servers                          active
33   Management                       active    Fa0/1, Fa0/2, Fa0/5, Fa0/6, Fa0/7
44   Production                       active    Fa0/4, Fa0/8, Fa0/10, Fa0/11
99   no-where                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/17
                                               Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                               F0/22, Fa0/23, Fa0/24
                                                Gi0/1, Gi0/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

So the correct answer is D - The VLANs Servers, Management, Production and no-where will be removed from existing switches Please notice that in the real CCNA exam you may see a different configuration revision of Sw-Ac3 or of SwX. In general, which switch has a higher revision number it will become the updater and other switches will overwrite their current databases with the new information received from the updater (provided that they are on the same domain and that switch is not in transparent mode). Also, some recent comments have said that the new switch's VTP Operating Mode is Server but the answer is still the same.

QUESTION 9
This task requires you to use the CLI of Sw-AC3 to answer the multiple-choice question below.
This does not require any configuration.

Which switch is the root bridge for VLAN 1?

A. SW-DS1
B. SW-AC1
C. SW-AC2
D. SW-AC3

Correct Answer: A
Section: VLAN
Explanation

Explanation/Reference:
First we use the show spanning-tree vlan 1 to view the spanning-tree information of VLAN 1

```
Sw-Ac3#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0009.e8b2.c280
             Cost        19
             Port        12 (FastEthernet0/12)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     000f.2485.8900
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 300

Interface        Role Sts  Cost      Prio.Nbr   Type
----------------------------------------------------------------------
Fa0/3            Desg FWD  19        128.3      P2p
Fa0/9            Desg FWD  19        128.9      P2p
Fa0/12           Root FWD  19        128.12     P2p
```

From the "Cost 19, we learn that the root switch is directly connected to the Sw-Ac3 switch over a 100Mbps Ethernet link

Notice that if you see all of the interface roles are Desg (designated) then you can confirm Sw-Ac3 switch is the root bridge for this VLAN (VLAN 1).

If you see there is at least one Root port in the interface roles then you can confirm Sw-Ac3 is not the root bridge because root bridge does not have root port. In this case,
we notice that the root port on Sw-Ac3 switch is FastEthernet0/12, so we have to figure out which switch is associated with this port -> it is the root bridge.
You can verify it with the show cdp neighbors command:

```
Sw-Ac3#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID        Local Intrfce     Holdtme    Capability  Platform     Port ID
Sw-DS1           Fas 0/12           130              S I  WS-C2950G-   Fas 0/12
Sw-AC2           Fas 0/9            176              S I  WS-C2950T-   Fas 0/9
VLAN-R1          Fas 0/3            152              R    2620         Fas 0/0.1
```

The "Local Intrfce" column refers to the interface on the switch running "show cdp neighbors" command. In this case, Sw-DS1 is associated with interface FastEthernet0/12 -> Sw-DS1 is the root bridge

QUESTION 10
Out of which port on switch Sw-Ac3 would a frame containing an IP packet with destination address that is not on a local LAN be forwarded?

A.
B.
C.
D.

Correct Answer:
Section: Routing
Explanation

Explanation/Reference:
Answer: To forward any packet with destination address other then the subnet network of the switch, the switch usually forwards this IP packets to the layer 3 device example router connected to it.
Step1: Find the default-gateway(Router or layer 3 device) configured on the switch. use the Show run command to view the IP address used to configure default-gateway on the switch.
Step2: Look for the router VLAN-R1 after using the show cdp neighbor detail command Sample output of show cdp neighbor detail command for better understanding the output details Device ID. C2950-1
Entry address(es):
Platform: Cisco WS-C2950T-24,
Capabilities: Switch IGMP Interface. FastEthernet0/0,
Port ID (outgoing port): FastEthernet0/15 Holdtime. 139 sec Two things to notice from above output Interface.
FastEthernet0/0 this statement provides that the neighbor(c2950-1) is connected to fa 0/0 on the C3660-2 local switch.
Port ID (outgoing port): FastEthernet0/15 this explains that neighbor (C2950-1) uses fa 0/15 port to reach C3660-2 switch.
FOR OUR QUESTION WE SHOULD LOOK FOR THE ROUTER VLAN-R1 corresponding details and to which port it is connected on local switch Sw-Ac3.
Step3: The port number to which the routerVLAN-R1 is connected on switch Sw-Ac3 is used to forward the packets with destination address that is not on a local LAN.