

Exam: 200-301

Update: 21 Apr 2022

Vendor : Cisco

Passing Score: 825

Time Limit: 120 min

Multiple Choice Questions

1. What are two benefits of network automation? (Choose two)

- A. reduced operational costs
- B. reduced hardware footprint
- C. faster changes with more reliable results
- D. fewer network failures
- E. increased network security

Correct Answer: AC

Section: Automation and Programmability

2. Which command enables a router to become a DHCP client?

- A. ip address dhcp
- B. ip helper-address
- C. ip dhcp pool
- D. ip dhcp client

Correct Answer: A

Section: IP Services

Explanation/Reference: If we want to get an IP address from the DHCP server on a Cisco device, we can use the command “ip address dhcp”.

Note: The command “ip helper-address” enables a router to become a DHCP Relay Agent.

3. Which design element is a best practice when deploying an 802.11b wireless infrastructure?

- A. disabling TPC so that access points can negotiate signal levels with their attached wireless devices
- B. setting the maximum data rate to 54 Mbps on the Cisco Wireless LAN Controller
- C. allocating nonoverlapping channels to access points that are in close physical proximity to one another
- D. configuring access points to provide clients with a maximum of 5 Mbps

Correct Answer: C

Section: Network Access

4. When configuring IPv6 on an interface, which two IPv6 multicast groups are joined? (Choose two)

- A. 2000::/3
- B. 2002::5
- C. FC00::/7
- D. FF02::1
- E. FF02::2

Correct Answer: DE

Section: Network Fundamentals

Explanation/Reference: When an interface is configured with IPv6 address, it automatically joins the all nodes (FF02::1) and solicited-node (FF02::1:FFxx:xxxx) multicast groups. The all-node group is used to communicate with all interfaces on the local link, and the solicited-nodes multicast group is required for link-layer address resolution. Routers also join a third multicast group, the all-routers group (FF02::2).

Reference: [Click here](#)

5. Which option about JSON is true?

- A. uses predefined tags or angle brackets (<>) to delimit markup text
- B. used to describe structured data that includes arrays
- C. used for storing information
- D. similar to HTML, it is more verbose than XML

Correct Answer:B

Explanation/Reference: JSON data is written as name/value pairs. A name/value pair consists of a field name (in double quotes), followed by a colon, followed by a value:
“name” : “Mark”

JSON can use arrays. Array values must be of type string, number, object, array, boolean or null..
For example:

```
{ “name” : “John” ,  
  “age” :30,  
  “cars” :[ “Ford” , “BMW” , “Fiat” ]  
}
```

6. Which IPv6 address type provides communication between subnets and cannot route on the Internet?

- A. global unicast
- B. unique local
- C. link-local
- D. multicast

Correct Answer:B

Section: Network Fundamentals

Explanation/Reference: A IPv6 Unique Local Address is an IPv6 address in the block FC00::/7. It is the approximate IPv6 counterpart of the IPv4 private address. It is not routable on the global Internet. Note: In the past, Site-local addresses (FE00::/10) are equivalent to private IP addresses in IPv4 but now they are deprecated. Link-local addresses only used for communications within the local subnet. It is usually created dynamically using a link-local prefix of FE80::/10 and a 64-bit interface identifier (based on 48-bit MAC address).

7. Which command prevents passwords from being stored in the configuration as plaintext on a router or switch?

- A. enable secret
- B. service password-encryption
- C. username Cisco password encrypt
- D. enable password

Correct Answer: B

Section: Security Fundamentals

8. What are two southbound APIs? (Choose two)

- A. OpenFlow
- B. NETCONF
- C. Thrift
- D. CORBA
- E. DSC

Correct Answer: AB

Section: Automation and Programmability

Explanation/Reference: OpenFlow is a well-known southbound API.

OpenFlow defines the way the SDN Controller should interact with the forwarding plane to make adjustments to the network, so it can better adapt to changing business requirements.

The Network Configuration Protocol (NetConf) uses Extensible Markup Language (XML) to install, manipulate and delete configuration to network devices.

Other southbound APIs are:

- + onePK: a Cisco proprietary SBI to inspect or modify the network element configuration without hardware upgrades.
- + OpFlex: an open-standard, distributed control system. It send “summary policy” to network elements.

9. Which set of action satisfy the requirement for multifactor authentication?

- A. The user swipes a key fob, then clicks through an email link.
- B. The user enters a user name and password, and then clicks a notification in an authentication app on a mobile device.
- C. The user enters a PIN into an RSA token, and then enters the displayed RSA key on a login screen.
- D. The user enters a user name and password and then re-enters the credentials on a second screen.

Correct Answer:B

Section: Security Fundamentals

Explanation/Reference: This is an example of how two-factor authentication (2FA) works:

1. The user logs in to the website or service with their username and password.
2. The password is validated by an authentication server and, if correct, the user becomes eligible for the second factor.
3. The authentication server sends a unique code to the user's second-factor method (such as a smartphone app).
4. The user confirms their identity by providing the additional authentication for their second-factor method.

10. Which two capacities of Cisco DNA Center make it more extensible? (Choose two)

- A. adapters that support all families of Cisco IOS software
- B. SDKs that support interaction with third-party network equipment
- C. customized versions for small, medium, and large enterprises
- D. REST APIs that allow for external applications to interact natively with Cisco DNA Center
- E. modular design that is upgradable as needed

Correct Answer:BD

Section: Automation and Programmability

Explanation/Reference: Cisco DNA Center offers 360-degree extensibility through four distinct types of platform capabilities:

- + Intent-based APIs leverage the controller and enable business and IT applications to deliver intent to the network and to reap network analytics and insights for IT and business innovation.
- + Process adapters, built on integration APIs, allow integration with other IT and network systems to streamline IT operations and processes.
- + Domain adapters, built on integration APIs, allow integration with other infrastructure domains such as data center, WAN, and security to deliver a consistent intent-based infrastructure across the entire IT environment.
- + SDKs allow management to be extended to third-party vendor's network devices to offer support for diverse environments.

11. An email user has been lured into clicking a link in an email sent by their company's security organization. The webpage that

opens reports that it was safe but the link could have contained malicious code.

Which type of security program is in place?

- A. Physical access control
- B. Social engineering attack
- C. brute force attack
- D. user awareness

Correct Answer:D

Section: Security Fundamentals

Explanation/Reference: This is a training program which simulates an attack, not a real attack (as it says “The webpage that opens reports that it was safe”) so we believed it should be called a “user awareness” program.

Therefore the best answer here should be “user awareness”. This is the definition of “User awareness” from CCNA 200- 301 Official Cert Guide Book:

“User awareness: All users should be made aware of the need for data confidentiality to protect corporate information, as well as their own credentials and personal information. They should also be made aware of potential threats, schemes to mislead, and proper procedures to report security incidents.” Note: Physical access control means infrastructure locations, such as network closets and data centers, should remain securely locked.

12. Which type of wireless encryption is used for WPA2 in pre-shared key mode?

- A. TKIP with RC4
- B. RC4
- C. AES-128
- D. AES-256

Correct Answer:D

Section: Security Fundamentals

Explanation/Reference: We can see in this picture we have to type 64 hexadecimal characters (256 bit) for the WPA2 passphrase so we can deduce the encryption is AES-256, not AES-128.

13. Which two must be met before SSH can operate normally on a Cisco IOS switch? (Choose two)

- A. The switch must be running a k9 (crypto) IOS image.
- B. The ip domain-name command must be configured on the switch.
- C. IP routing must be enabled on the switch.
- D. A console password must be configured on the switch.
- E. Telnet must be disabled on the switch.

Correct Answer: AB

Section: Network Access

Explanation/Reference:

Reference: [Click here](#)

14. Which type of address is the public IP address of a NAT device?

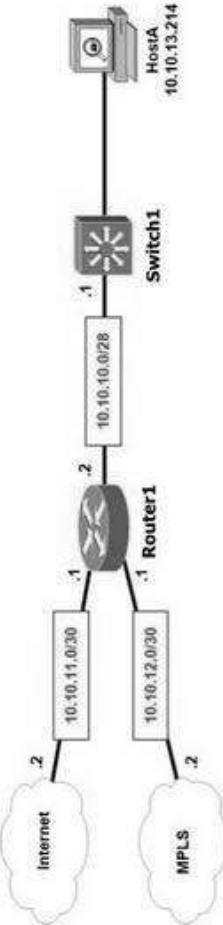
- A. outside global
- B. outsdwde local
- C. inside global
- D. insride local
- E. outside public
- F. inside public

Correct Answer: C

Explanation/Reference: NAT use four types of addresses:

- * Inside local address – The IP address assigned to a host on the inside network. The address is usually not an IP address assigned by the Internet Network Information Center (InterNIC) or service provider. This address is likely to be an RFC 1918 private address.
- * Inside global address – A legitimate IP address assigned by the InterNIC or service provider that represents one or more inside local IP addresses to the outside world.
- * Outside local address – The IP address of an outside host as it is known to the hosts on the inside network.
- * Outside global address – The IP address assigned to a host on the outside network. The owner of the host assigns this address.

15. Refer to the exhibit. Which prefix does Router 1 use for traffic to Host A?



Router1#show ip route

Gateway of last resort is 10.10.11.2 to network 0.0.0.0

```

209.165.200.0/27 is subnetted, 1 subnets
B  209.165.200.224 [20/0] via 10.10.12.2, 03:22:14
209.165.201.0/27 is subnetted, 1 subnets
B  209.165.201.0 [20/0] via 10.10.12.2, 02:26:33
209.165.202.0/27 is subnetted, 1 subnets
B  209.165.202.128 [20/0] via 10.10.12.2, 02:26:03
10.0.0.0/8 is variably subnetted, 8 subnets, 4 masks
C   10.10.10.0/28 is directly connected, GigabitEthernet0/0
C   10.10.11.0/30 is directly connected, FastEthernet2/0
C   10.10.12.0/30 is directly connected, GigabitEthernet0/1
O   10.10.13.0/25 [110/2] via 10.10.10.1, 00:00:04, GigabitEthernet0/0
O   10.10.13.128/28 [110/2] via 10.10.10.1, 00:00:04, GigabitEthernet0/0
O   10.10.13.144/28 [110/2] via 10.10.10.1, 00:00:04, GigabitEthernet0/0
O   10.10.13.160/29 [110/2] via 10.10.10.1, 00:00:04, GigabitEthernet0/0
O   10.10.13.208/29 [110/2] via 10.10.10.1, 00:00:04, GigabitEthernet0/0
S*  0.0.0.0/11 [11/0] via 10.10.11.2
  
```

- A. 10.10.10.0/28
- B. 10.10.13.0/25
- C. 10.10.13.144/28
- D. 10.10.13.208/29

Correct Answer: D

Section: Network Fundamentals

Explanation/Reference: Host A address fall within the address range.

However, if more than one route to the same subnet exist (router will use the longest stick match, which match more specific route to the subnet). If there are route 10.10.13.192/26 and 10.10.13.208/29, the router will forward the packet to /29 rather than /28.

16. How does HSRP provide first hop redundancy?

- A. It load-balances traffic by assigning the same metric value to more than one route to the same destination in the IP routing table.
- B. It load-balances Layer 2 traffic along the path by flooding traffic out all interfaces configured with the same VLAN.

- C. It forwards multiple packets to the same destination over different routed links in the data path.
- D. It uses a shared virtual MAC and a virtual IP address to a group of routers that serve as the default gateway for hosts on a LAN.

Correct Answer: D

Section: IP Connectivity

Explanation/Reference:

Reference: [Click here](#)

- 17. In Which way does a spine-and-leaf architecture allow for scalability in a network when additional access ports are required?**

- A. A spine switch and a leaf switch can be added with redundant connections between them.
- B. A spine switch can be added with at least 40 GB uplinks.
- C. A leaf switch can be added with a single connection to a core spine switch.
- D. A leaf switch can be added with connections to every spine switch.

Correct Answer: D

Section: Network Fundamentals

Explanation/Reference:

Spine–leaf architecture is typically deployed as two layers: spines (such as an aggregation layer), and leaves (such as an access layer). Spine–leaf topologies provide high-bandwidth, low-latency, nonblocking server-to-server connectivity.

Leaf (aggregation) switches are what provide devices access to the fabric (the network of spine and leaf switches) and are typically deployed at the top of the rack. Generally, devices connect to the leaf switches. Devices can include servers, Layer 4–7 services (firewalls and load balancers), and WAN or Internet routers. Leaf switches do not connect to other leaf switches. In spine-and-leaf architecture, every leaf should connect to every spine in a full mesh.

Spine (aggregation) switches are used to connect to all leaf switches and are typically deployed at the end or middle of the row. Spine switches do not connect to other spine switches.

- 18. Which two actions are performed by the Weighted Random Early Detection mechanism? (Choose two)**

- A. It drops lower-priority packets before it drops higher-priority packets.
- B. It can identify different flows with a high level of granularity.
- C. It guarantees the delivery of high-priority packets.
- D. It can mitigate congestion by preventing the queue from filling up.
- E. It supports protocol discovery.

Correct Answer: AD

Section: IP Services

Explanation/Reference: Weighted Random Early Detection (WRED) is just a congestion avoidance mechanism. WRED drops packets selectively based on IP precedence. Edge routers assign IP precedences to packets as they enter the network. When a packet arrives, the following events occur:

1. The average queue size is calculated.
2. If the average is less than the minimum queue threshold, the arriving packet is queued.
3. If the average is between the minimum queue threshold for that type of traffic and the maximum threshold for the interface, the packet is either dropped or queued, depending on the packet drop probability for that type of traffic.
4. If the average queue size is greater than the maximum threshold, the packet is dropped. WRED reduces the chances of tail drop (when the queue is full, the packet is dropped) by selectively dropping packets when the output interface begins to show signs of congestion (thus it can mitigate congestion by preventing the queue from filling up). By dropping some packets early rather than waiting until the queue is full, WRED avoids dropping large numbers of packets at once and minimizes the chances of global synchronization. Thus, WRED allows the transmission line to be used fully at all times.

WRED generally drops packets selectively based on IP precedence. Packets with a higher IP precedence are less likely to be dropped than packets with a lower precedence. Thus, the higher the priority of a packet, the higher the probability that the packet will be delivered (→ answer A is correct).

- 19. A network engineer must back up 20 network router configurations globally within a customer environment. Which protocol allows the engineer to perform this function using the Cisco IOS MIB?**

- A. CDP
- B. SNMP
- C. SMTP
- D. ARP

*Correct Answer: B
Section: IP Services*

Explanation/Reference: SNMP is an application-layer protocol that provides a message format for communication between SNMP managers and agents. SNMP provides a standardized framework and a common language used for the monitoring and management of devices in a network. The SNMP framework has three parts:

- + An SNMP manager
 - + An SNMP agent
 - + A Management Information Base (MIB)
- The Management Information Base (MIB) is a virtual information storage area for network management information, which consists of collections of managed objects. With SNMP, the network administrator can send commands to multiple routers to do the backup.

20. Refer to the exhibit. What is the effect of this configuration?

```
ip arp inspection vlan 2
interface fastethernet 0/1
switchport mode access
switchport access vlan 2
```

- A. The switch port interface trust state becomes untrusted.
- B. The switch port remains administratively down until the interface is connected to another switch.
- C. Dynamic ARP inspection is disabled because the ARP ACL is missing.
- D. The switch port remains down until it is configured to trust or untrust incoming packets.

*Correct Answer: A
Section: Security Fundamentals*

Explanation/Reference: Dynamic ARP inspection (DAI) is a security feature that validates ARP packets in a network. It intercepts, logs, and discards ARP packets with invalid IP-to-MAC address bindings.

This capability protects the network from certain man-in-the-middle attacks. After enabling DAI, all ports become untrusted ports.

- 21. A frame that enters a switch fails the Frame Check Sequence. Which two interface counters are incremented? (Choose two)**

- A. runts
- B. giants
- C. frame
- D. CRC
- E. input errors

Correct Answer: DE

Section: Network Fundamentals

Explanation/Reference: Whenever the physical transmission has problems, the receiving device might receive a frame whose bits have changed values. These frames do not pass the error detection logic as implemented in the FCS field in the Ethernet trailer. The receiving device discards the frame and counts it as some kind of input error. Cisco switches list this error as a CRC error. Cyclic redundancy check (CRC) is a term related to how the FCS math detects an error. The “input errors” includes runts, giants, no buffer, CRC, frame, overrun, and ignored counts.
The output below show the interface counters with the “show interface s0/0/0” command:

- 22. How do TCP and UDP differ in the way that they establish a connection between two endpoints?**

- A. TCP uses synchronization packets, and UDP uses acknowledgment packets.
- B. UDP uses SYN, SYN ACK and FIN bits in the frame header while TCP uses SYN, SYN ACK and ACK bits.
- C. UDP provides reliable message transfer and TCP is a connectionless protocol.
- D. TCP uses the three-way handshake and UDP does not guarantee message delivery.

Correct Answer: D

Section: Network Fundamentals

23. When OSPF learns multiple paths to a network, how does it select a route?

- A. It multiplies the active K value by 256 to calculate the route with the lowest metric.
- B. For each existing interface, it adds the metric from the source router to the destination to calculate the route with the lowest bandwidth.
- C. It divides a reference bandwidth of 100 Mbps by the actual bandwidth of the existing interface to calculate the router with the lowest cost.
- D. It counts the number of hops between the source router and the destination to determine the router with the lowest metric.

Correct Answer: C

Section: IP Connectivity

24. Refer to the exhibit. Which password must an engineer use to enter the enable mode?

```
Atlanta#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Atlanta(config)#aaa new-node
Atlanta(config)#aaa authentication login default local
Atlanta(config)#line vty 0 4
Atlanta(config-line)#login authentication default
Atlanta(config-line)#exit
Atlanta(config)#username ciscoadmin password adminadmin123
Atlanta(config)#username ciscoadmin privilege 15
Atlanta(config)#enable password cisco123
Atlanta(config)#enable secret testing1234
Atlanta(config)#end
```

- A. adminadmin123
- B. default
- C. testing1234
- D. cisco123

Correct Answer: C

Section: Network Access

Explanation/Reference: If neither the enable password command nor the enable secret command is configured, and if there is a line password configured for the console, the console line password serves as the enable password for all VTY sessions -> The “enable secret” will be used first if available, then “enable password” and line password.

25. Which configuration is needed to generate an RSA key for SSH on a router?

- A. Configure the version of SSH.
- B. Configure VTY access.
- C. Create a user with a password.
- D. Assign a DNS domain name.

Correct Answer: D

Section: Security Fundamentals

Explanation/Reference: In order to generate an RSA key for SSH, we need to configure the hostname and a DNS domain name on the router (a username and password is also required). Therefore in fact both answer C and answer D are correct.

26. Which output displays a JSON data representation?

A. {
 "response": {
 "taskId": 0,
 "url": "string"
 },
 "version": "string"
}

B. {
 "response": {
 "taskId": 0,
 "url": "string"
 },
 "version": "string"
}

C. {
 "response": {
 "taskId": 0,
 "url": "string"
 },
 "version": "string"
}

D. {
 "response": {
 "taskId": 0,
 "url": "string"
 },
 "version": "string"
}

- A. Option A
- B. Option B
- C. Option C
- D. Option D

Correct Answer:C

Section: Automation and Programmability

Explanation/Reference: JSON data is written as name/value pairs.

A name/value pair consists of a field name (in double quotes), followed by a colon, followed by a value:
“name” : “Mark”

JSON can use arrays. Array values must be of type string, number, object, array, boolean or null.

For example:

```
{ “name” : “John” ,  
  “age” :30,  
  “cars” :[ “Ford” , “BMW” , “Fiat” ]  
}
```

JSON can have empty object like “taskId” : {}

27. What is the primary difference between AAA authentication and authorization?

- A. Authentication verifies a username and password, and authorization handles the communication between the authentication agent and the user database.
- B. Authentication identifies a user who is attempting to access a system, and authorization validates the users password.
- C. Authentication identifies and verifies a user who is attempting to access a system, and authorization controls the tasks the user can perform.
- D. Authentication controls the system processes a user can access and authorization logs the activities the user initiates.

Correct Answer:C

Section: Security Fundamentals

Explanation/Reference: AAA stands for Authentication, Authorization and Accounting

- + Authentication: Specify who you are (usually via login username & password)
- + Authorization: Specify what actions you can do, what resource you can access
 - + Accounting: Monitor what you do, how long you do it (can be used for billing and auditing)

An example of AAA is shown below:

- + Authentication: “I am a normal user. My username/password is

user_tom/learnforever”

+ Authorization: “user_tom can access LearnCCNA server via HTTP and FTP”

+ Accounting: “user_tom accessed LearnCCNA server for 2 hours” .

This user only uses “show” commands.

28. A Cisco IP phone receive untagged data traffic from an attached PC. Which action is taken by the phone?

- A. It allows the traffic to pass through unchanged.
- B. It drops the traffic.
- C. It tags the traffic with the default VLAN.
- D. It tags the traffic with the native VLAN.

Correct Answer: A

Section: Network Access

Explanation/Reference: Untagged traffic from the device attached to the Cisco IP Phone passes through the phone unchanged, regardless of the trust state of the access port on the phone.

Reference: [Click here](#)

29. An engineer must configure a /30 subnet between two routers. Which usable IP address and subnet mask combination meets this criteria?

- A. interface e0/0 description to HQ-A370:98968 ip address 10.2.1.3 255.255.255.252
- B. interface e0/0 description to HQ-A370:98968 ip address 192.168.1.1 255.255.248
- C. interface e0/0 description to HQ-A370:98968 ip address 172.16.1.4 255.255.255.248
- D. interface e0/0 description to HQ-A370:98968 ip address 209.165.201.2 255.255.255.252

Correct Answer: D

Section: Network Fundamentals

Explanation/Reference: A /30 subnet means subnet mask of 255.255.255.252. But 10.2.1.3 255.255.255.252 is a broadcast IP address; only 209.165.201.2/30 is the usable IP address.

30. What is a benefit of using a Cisco Wireless LAN Controller?

- A. Central AP management requires more complex configurations.
- B. Unique SSIDs cannot use the same authentication method.
- C. It supports autonomous and lightweight APs.
- D. It eliminates the need to configure each access point individually.

Correct Answer: D

Section: Network Fundamentals

**31. What are two characteristics of a controller-based network?
(Choose two)**

- A. The administrator can make configuration updates from the CLI.
- B. It uses northbound and southbound APIs to communicate between architectural layers.
- C. It moves the control plane to a central point.
- D. It decentralizes the control plane, which allows each device to make its own forwarding decisions.
- E. It uses Telnet to report system issues.

Correct Answer: BC

Section: Automation and Programmability

32. Which attribute does a router use to select the best path when two or more different routes to the same destination exist from two different routing protocols?

- A. dual algorithm
- B. metric
- C. administrative distance
- D. hop count

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: Administrative distance is the feature used by routers to select the best path when there are two or more different routes to the same destination from different routing protocols. Administrative distance defines the reliability of a routing protocol.

33. Refer to Exhibit. How does SW2 interact with other switches in this VTP domain?

```
SW2
vtp domain cisco
vtp mode transparent
vtp password ciscotest
interface fastethernet0/1
description connection to sw1
switchport mode trunk
switchport trunk encapsulation dot1q
```

- A. It processes VTP updates from any VTP clients on the network on its access ports.
- B. It receives updates from all VTP servers and forwards all locally configured VLANs out all trunk ports.
- C. It forwards only the VTP advertisements that it receives on its trunk ports.
- D. It transmits and processes VTP updates from any VTP Clients on the network on its trunk ports.

Correct Answer: C

Section: Network Access

Explanation/Reference: The VTP mode of SW2 is transparent so it only forwards the VTP updates it receives to its trunk links without processing them.

Reference: [Click here](#)

34. Which unified access point mode continues to serve wireless clients after losing connectivity to the Cisco Wireless LAN Controller?

- A. sniffer
- B. mesh
- C. flexconnect
- D. local

Correct Answer: C

Section: Network Access

Explanation/Reference:
Reference: [Click here](#)

35. Which two encoding methods are supported by REST APIs? (Choose two)

- A. YAML
- B. JSON
- C. EBCDIC
- D. SGML
- E. XML

Correct Answer: BE

Section: Automation and Programmability

Explanation/Reference: The Application Policy Infrastructure Controller (APIC) REST API is a programmatic interface that uses REST architecture. The API accepts and returns HTTP (not enabled by default) or HTTPS messages that contain JavaScript Object Notation (JSON) or Extensible Markup Language (XML) documents.
Reference: [Click here](#)

36. What are two reasons that cause late collisions to increment on an Ethernet interface? (Choose two)

- A. when the sending device waits 15 seconds before sending the frame again
- B. when the cable length limits are exceeded
- C. when one side of the connection is configured for half-duplex
- D. when Carrier Sense Multiple Access/Collision Detection is used
- E. when a collision occurs after the 32nd byte of a frame has been transmitted

Correct Answer: BC

Section: Network Fundamentals

Explanation/Reference: A late collision is defined as any collision that occurs after the first 512 bits (or 64th byte) of the frame have been transmitted. The usual possible causes are full-duplex/half-duplex mismatch, exceeded Ethernet cable length limits, or defective hardware such as incorrect cabling, noncompliant number of hubs in the network, or a bad NIC.

Late collisions should never occur in a properly designed Ethernet network. They usually occur when Ethernet cables are too long or when there are too many repeaters in the network.
Reference: [Click here](#)

37. Router A learns the same route from two different neighbors, one of the neighbor routers is an OSPF neighbor and the other is an EIGRP neighbor. What is the administrative distance of the route that will be installed in the routing table?

- A. 20
- B. 90
- C. 110
- D. 115

Correct Answer: B

Section: IP Connectivity

Explanation/Reference: The Administrative distance (AD) of EIGRP is 90 while the AD of OSPF is 110 so EIGRP route will be chosen to install into the routing table.

38. What is the primary effect of the spanning-tree portfast command?

- A. It enables BPDU messages
- B. It minimizes spanning-tree convergence time
- C. It immediately puts the port into the forwarding state when the switch is reloaded
- D. It immediately enables the port in the listening state

Correct Answer: B

Section: Network Access

Explanation/Reference: This comment

39. What is the default behavior of a Layer 2 switch when a frame with an unknown destination MAC address is received?

- A. The Layer 2 switch drops the received frame.
- B. The Layer 2 switch floods packets to all ports except the receiving port in the given VLAN.
- C. The Layer 2 switch sends a copy of a packet to CPU for destination MAC address learning.
- D. The Layer 2 switch forwards the packet and adds the destination MAC address to its MAC address table.

Correct Answer: B

Section: Network Fundamentals

Explanation/Reference: If the destination MAC address is not in the CAM table (unknown destination MAC address), the switch sends the frame out all other ports that are in the same VLAN as the received frame. This is called flooding. It does not flood the frame out the same port on which the frame was received.

40. Refer to the exhibit. What is the effect of this configuration?

```
ip arp inspection vlan 5-10
interface fastethernet 0.1
switchport mode access
switchport access vlan 5
```

- A. All ARP packets are dropped by the switch.
- B. Egress traffic is passed only if the destination is a DHCP server.
- C. All ingress and egress traffic is dropped because the interface is untrusted.
- D. The switch discard all ingress ARP traffic with invalid MAC-to-IP address bindings.

Correct Answer: D

Section: Security Fundamentals

Explanation/Reference: Dynamic ARP inspection is an ingress security feature; it does not perform any egress checking.

41. Refer to the exhibit. An engineer configured NAT translations and has verified that the configuration is correct. Which IP address is the source IP?

```
R2#show ip nat translations
pro Inside global Inside local Outside local Outside global
pro 172.23.104.3:43268 10.4.4.4:43268 172.23.103.10:23 172.23.103.10:23
tcp 172.23.104.4:45507 10.4.4.5:45507 172.23.103.10:80 172.23.103.10:80
```

- A. 10.4.4.4
- B. 10.4.4.5
- C. 172.23.103.10
- D. 172.23.104.4

Correct Answer: D

Section: IP Services

42. Refer to the exhibit. Which route does R1 select for traffic that is destined to 192.168.16.2?

```
CertBus-R1#show ip route
D 192.168.16.0/26 [90/2679326] via 192.168.1.1
R 192.168.16.0/24 [120/3] via 192.168.1.2
O 192.168.16.0/21 [110/3] via 192.168.1.3
I L1 192.168.16.0/27 [115/3] via 192.168.1.4
```

- A. 192.168.16.0/21
- B. 192.168.16.0/24
- C. 192.168.26.0/26
- D. 192.168.16.0/27

Correct Answer: D

Section: IP Connectivity

Explanation/Reference: The destination IP addresses match all four entries in the routing table but the 192.168.16.0/27 has the longest prefix so it will be chosen. This is called the “longest prefix match” rule.

43. Which IPv6 address block sends packets to a group address rather than a single address?

- A. 2000::/3
- B. FC00::/7
- C. FE80::/10
- D. FF00::/8

Correct Answer: D

Section: Network Fundamentals

Explanation/Reference: FF00::/8 is used for IPv6 multicast and this is the IPv6 type of address the question wants to ask. FE80::/10 range is used for link-local addresses. Link-local addresses only used for communications within the local subnet (automatic address configuration, neighbor discovery, router discovery, and by many routing protocols). It is only valid on the current subnet.
It is usually created dynamically using a link-local prefix of

FE80::/10 and a 64-bit interface identifier (based on 48-bit MAC address).

44. Which two values or settings must be entered when configuring a new WLAN in the Cisco Wireless LAN Controller GUI? (Choose two)

- A. management interface settings
- B. QoS settings
- C. IP address of one or more access points
- D. SSID
- E. Profile name

Correct Answer: DE

Section: Network Access

45. Which two actions influence the EIGRP route selection process? (Choose two)

- A. The router calculates the reported distance by multiplying the delay on the exiting Interface by 256.
- B. The router calculates the best backup path to the destination route and assigns it as the feasible successor.
- C. The router calculates the feasible distance of all paths to the destination route.
- D. The advertised distance is calculated by a downstream neighbor to inform the local router of the bandwidth on the link.
- E. The router must use the advertised distance as the metric for any given route.

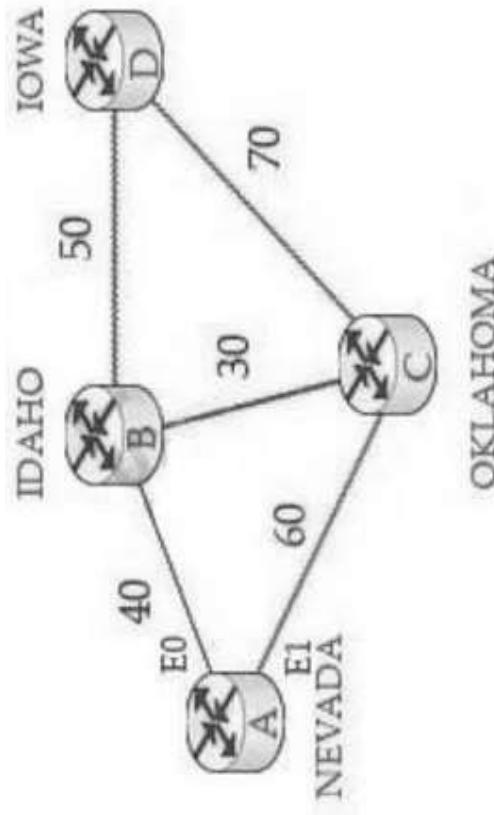
Correct Answer: BC

Section: IP Connectivity

Explanation/Reference: The reported distance (or advertised distance) is the cost from the neighbor to the destination. It is calculated from the router advertising the route to the network. For example in the topology below, suppose router A & B are exchanging their routing tables for the first time. Router B says “Hey, the best metric (cost) from me to IOWA is 50 and the metric from you to IOWA is 90” and advertises it to router A.

Router A considers the first metric (50) as the Advertised distance. The second metric (90), which is from NEVADA to IOWA (through IDAHO),

is called the Feasible distance.



The reported distance is calculated in the same way of calculating the metric. By default ($K1 = 1$, $K2 = 0$, $K3 = 1$, $K4 = 0$, $K5 = 0$), the metric is calculated as follows:

$$\text{metric} = \left[\frac{10,000,000}{\text{slowest bandwidth}[in kbps]} + \frac{\text{sum of delay}[in \mu\text{sec}]}{10} \right] * 256$$

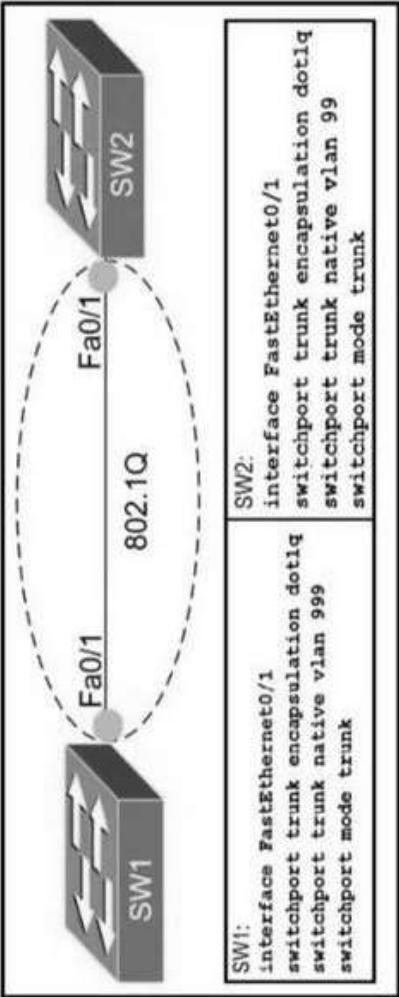
→ Answer A is not correct.

Feasible successor is the backup route. To be a feasible successor, the route must have an Advertised distance (AD) less than the Feasible distance (FD) of the current successor route → Answer B is correct.

Feasible distance (FD): The sum of the AD plus the cost between the local router and the next-hop router.
The router must calculate the FD of all paths to choose the best path to put into the routing table.

Note: Although the new CCNA exam does not have EIGRP topic but you should learn the basic knowledge of this routing protocol.

46. Refer to Exhibit. Which action do the switches take on the trunk link?



- A. The trunk does not form and the ports go into an err-disabled status.
- B. The trunk forms but the mismatched native VLANs are merged into a single broadcast domain.
- C. The trunk does not form, but VLAN 99 and VLAN 999 are allowed to traverse the link.
- D. The trunk forms but VLAN 99 and VLAN 999 are in a shutdown state.

Correct Answer: B

Section: Network Access

Explanation/Reference: The trunk still forms with mismatched native VLANs and the traffic can actually flow between mismatched switches. But it is absolutely necessary that the native VLANs on both ends of a trunk link match; otherwise a native VLAN mismatch occurs, causing the two VLANs to effectively merge.

For example with the above configuration, SW1 would send untagged frames for VLAN 999. SW2 receives them but would think they are for VLAN 99 so we can say these two VLANs are merged.

- 47. Which command is used to specify the delay time in seconds for LLDP to initialize on any interface?**

- A. lldp timer
- B. lldp holdint
- C. lldp reinit
- D. lldp tlv-select

Correct Answer: C

Section: Network Access

Explanation/Reference:

- + **lldp holdtime seconds**: Specify the amount of time a receiving device should hold the information from your device before discarding it
- + **lldp reinit delay**: Specify the delay time in seconds for LLDP to initialize on an interface
- + **lldp timer rate**: Set the sending frequency of LLDP updates in seconds

Reference: [Click here](#)

- 48.** An engineer configured an OSPF neighbor as a designated router. Which state verifies the designated router is in the proper mode?

- A. Exchange
- B. 2-way
- C. Full
- D. Init

Correct Answer: C

Section: IP Connectivity

- 49.** Refer to the exhibit. The show ip ospf interface command has been executed on R1. How is OSPF configured?

```
Designated Router (ID) 10.11.11.11, Interface address 10.10.10.1
Backup Designated router (ID) 10.3.3.3, Interface address 10.10.10.3
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
oob-resync timeout 40
Hello due in 00:00:08
Supports Link-local Signaling(LLS)
Cisco NSF helper support enabled
IETF NSF helper support enabled
Index 1/1/1, flood queue length 0
Next 0x0(0)/0x0(0)/0x0(0)
Last flood scan time is 0 msec, maximum is 6
Last flood scan time is 0 msec, maximum is 1 msec
Neighbor Count is 3, Adjacent neighbor count is 3
Adjacent with neighbor 10.1.1.4
Adjacent with neighbor 10.2.2.2
Adjacent with neighbor 10.3.3.3(Backup Designated Router)
Suppress hello for 0 neighbor(s)
```

- A. The interface is not participating in OSPF.
- B. A point-to-point network type is configured.
- C. The default Hello and Dead timers are in use.

- D. There are six OSPF neighbors on this interface.

Correct Answer: C

Section: IP Connectivity

Explanation/Reference:

From the output we can see there are Designated Router & Backup Designated Router for this OSPF domain so this is a broadcast network (point-to-point and point-to-multipoint networks do not elect DR & BDR)
-> Answer B is not correct.

By default, the timers on a broadcast network (Ethernet, point-to-point and point-to-multipoint) are 10 seconds hello and 40 seconds dead (therefore answer C is correct). The timers on a non-broadcast network are 30 seconds hello 120 seconds dead.

From the line “Neighbor Count is 3”, we learn there are four OSPF routers in this OSPF domain -> Answer D is not correct.

Reference: [Click here](#)

- 50. An engineer is asked to protect unused ports that are configured in the default VLAN on a switch. Which two steps will fulfill the request? (Choose two)**

- A. Configure the ports in an EtherChannel.
- B. Administratively shut down the ports.
- C. Configure the port type as access and place in VLAN 99.
- D. Configure the ports as trunk ports.
- E. Enable the Cisco Discovery Protocol.

Correct Answer: BC

Section: Security Fundamentals

- 51. Which QoS Profile is selected in the GUI when configuring a voice over WLAN deployment?**

- A. Bronze
- B. Platinum
- C. Silver
- D. Gold

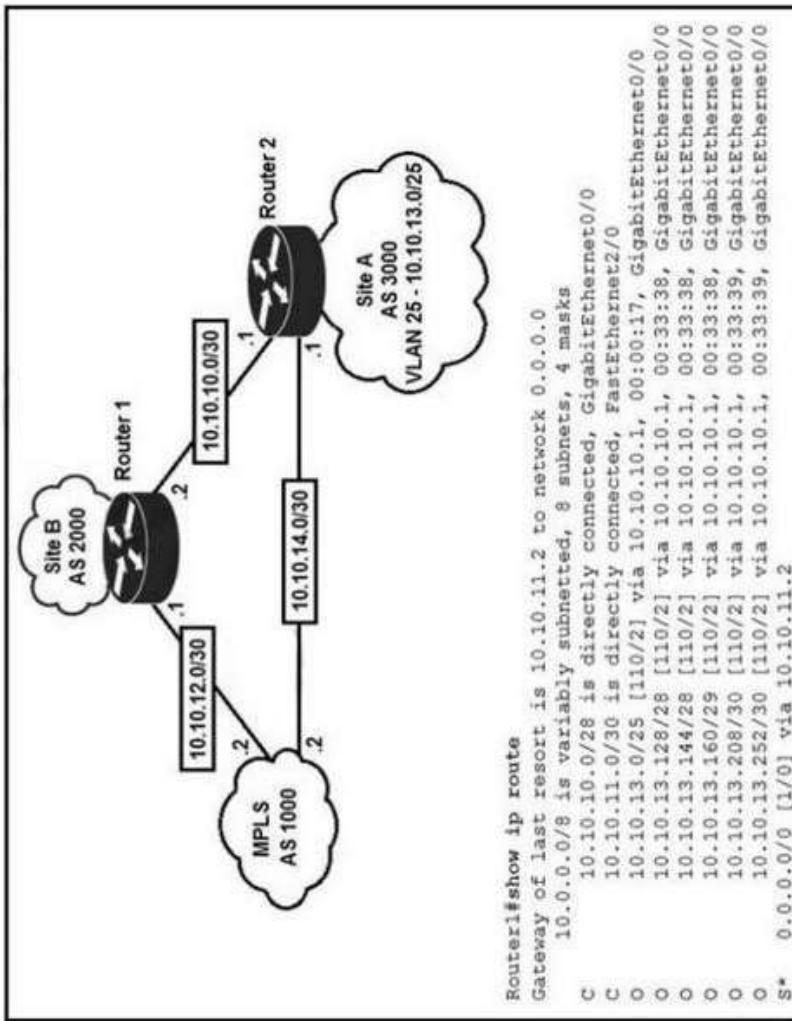
Correct Answer: B

Section: Network Access

Explanation/Reference: Cisco Unified Wireless Network solution WLANs support four levels of QoS: Platinum/Voice, Gold/Video, Silver/Best Effort (default), and Bronze/Background.

Reference: [Click here](#)

52. Refer to the exhibit. An engineer is bringing up a new circuit to the MPLS provider on the Gi0/1 interface of Router1. The new circuit uses eBGP and teams the route to VLAN25 from the BGP path. What is the expected behavior for the traffic flow for route 10.10.13.0/25?



- A. Traffic to 10.10.13.0.25 is load balanced out of multiple interfaces
- B. Route 10.10.13.0/25 is updated in the routing table as being learned from interface Gi0/1.
- C. Traffic to 10.10.13.0/25 is a symmetrical
- D. Route 10.10.13.0/25 learned via the Gi0/0 interface remains in the routing table

*Correct Answer: D
Section: IP Connectivity*

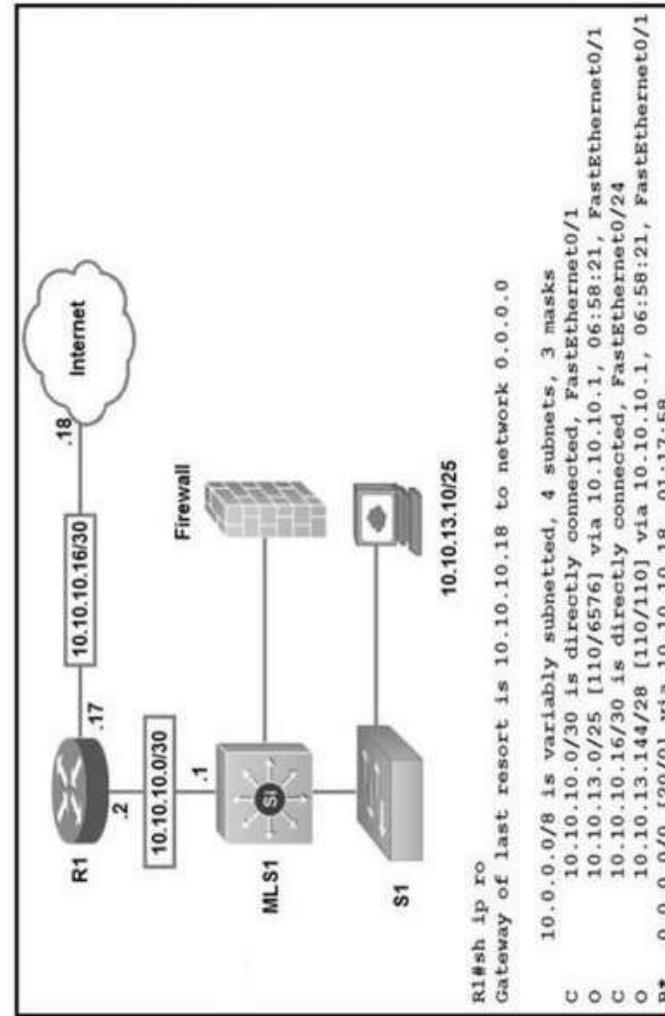
53. Which statement identifies the functionality of virtual machines?

- A. Virtualized servers run most efficiently when they are physically connected to a switch that is separate from the hypervisor.
- B. The hypervisor can virtualize physical components including CPU, memory, and storage.
- C. Each hypervisor can support a single virtual machine and a single software switch.
- D. The hypervisor communicates on Layer 3 without the need for additional resources.

Correct Answer: B

Section: Network Fundamentals

54. Refer to the exhibit. Which type of route does R1 use to reach host 10.10.13.10/32?



- A. floating static route
- B. host route
- C. default route
- D. network route

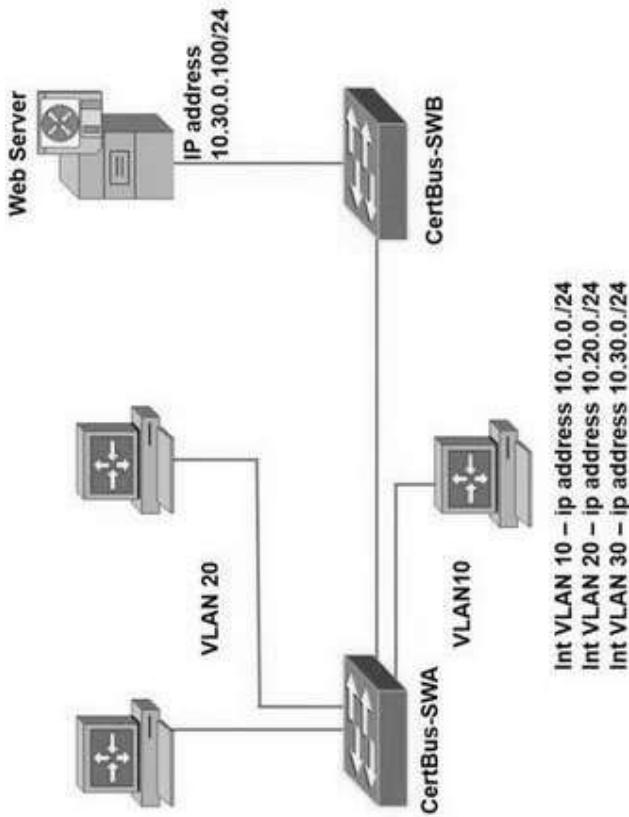
Correct Answer: D

Section: Network Fundamentals

Explanation/Reference: From the output, we see R1 will use the entry “`0 10.10.13.0/25 [110/4576] via 10.10.1. ...`” to reach host 10.10.13.10. This is a network route.

Note: “`B* 0.0.0.0/0 ...`” is a default route.

55. Refer to the exhibit. A network engineer must block access for all computers on VLAN 20 to the web server via HTTP. All other computers must be able to access the web server. Which configuration when applied to switch A accomplishes this task?



Int VLAN 10 – ip address 10.10.0./24
Int VLAN 20 – ip address 10.20.0./24
Int VLAN 30 – ip address 10.30.0./24

A network engineer must block access for all computers on VLAN 20 to the web server via HTTP. All other computers must be able to access the web server.

Config t
A ip access-list extended wwwblock
deny tcp any host 10.30.0.100 eq 80
int vlan 10
ip address-group wwwblock in

Config t
B ip access-list extended wwwblock
deny tcp any host 10.30.0.100 eq 80
permit ip any any
int vlan 20
ip address-group wwwblock in

Config t
C ip access-list extended wwwblock
permit ip any any
deny tcp any host 10.30.0.100 eq 80
int vlan 30
ip address-group wwwblock in

Config t
D ip access-list extended wwwblock
permit ip any any
deny tcp any host 10.30.0.100 eq 80
int vlan 20
ip address-group wwwblock in

- A. Option A
- B. Option B
- C. Option C
- D. Option D

Correct Answer: B

Section: Security Fundamentals

56. Two switches are connected and using Cisco Dynamic Trunking Protocol. SW1 is set to Dynamic Desirable. What is the result of this configuration?

- A. The link is in a down state.
- B. The link is in an error disabled state
- C. The link becomes an access port.
- D. The link becomes a trunk port.

Correct Answer: D

Section: Network Access

57. Which feature on the Cisco Wireless LAN Controller when enabled restricts management access from specific networks?

- A. CPU ACL
- B. TACACS
- C. Flex ACL
- D. RADIUS

Correct Answer: A

Section: Security Fundamentals

Explanation/Reference: Whenever you want to control which devices can talk to the main CPU, a CPU ACL is used.

Note: CPU ACLs only filter traffic towards the CPU, and not any traffic exiting or generated by the CPU.

Reference: [Click here](#)

58. A user configured OSPF in a single area between two routers A serial interface connecting R1 and R2 is running encapsulation PPP, by default, which OSPF network type is seen on this interface when the user types show ip ospf interface on R1 or R2?

- A. port-to-multipoint
- B. broadcast
- C. point-to-point
- D. nonbroadcast

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: The default OSPF network type for HDLC and PPP on Serial link is point-to-point (while the default OSPF network type for Ethernet link is Broadcast).

59. Refer to the exhibit. Based on the LACP neighbor status, in which mode is the SW1 port channel configured?

Channel group 35 neighbors						
Partner's information:						
Port	Flags	LACP port	Priority	Dev ID	Age	Admin key
Et1/0	SP	32768	aabb.cc80.7000	8s	0x0	0x23
Et1/1	SP	32768	aabb.cc80.7000	8s	0x0	0x102

- A. passive
- B. mode on
- C. auto
- D. active

Correct Answer: D

Section: Network Access

Explanation/Reference: From the neighbor status, we notice the “Flags” are SP. “P” here means the neighbor is in Passive mode. In order to create an Etherchannel interface, the (local) SW1 ports should be in Active mode. Moreover, the “Port State” in the exhibit is “0x3c” (which equals to “00111100 in binary format). Bit 3 is “1” which means the ports are synchronizing → the ports are working so the local ports should be in Active mode.

60. A user configured OSPF and advertised the Gigabit Ethernet interface in OSPF by default, which type of OSPF network does this interface belong to?

- A. point-to-multipoint
- B. point-to-point
- C. broadcast
- D. nonbroadcast

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: The Broadcast network type is the default for an OSPF enabled ethernet interface (while Point-toPoint is the default OSPF network type for Serial interface with HDLC and PPP

encapsulation).

Reference: [Click here](#)

61. An organization has decided to start using cloud-provided services. Which cloud service allows the organization to install its own operating system on a virtual machine?

- A. platform-as-a-service
- B. software-as-a-service
- C. network-as-a-service
- D. infrastructure-as-a-service

Correct Answer:D

Section: Automation and Programmability

Explanation/Reference: Below are the 3 cloud supporting services cloud providers provide to customer:

- + SaaS (Software as a Service) : SaaS uses the web to deliver applications that are managed by a thirdparty vendor and whose interface is accessed on the clients' side. Most SaaS applications can be run directly from a web browser without any downloads or installations required, although some require plugins.
- + PaaS (Platform as a Service) : are used for applications, and other development, while providing cloud components to software. What developers gain with PaaS is a framework they can build upon to develop or customize applications. PaaS makes the development, testing, and deployment of applications quick, simple, and cost-effective. With this technology, enterprise operations, or a thirdparty provider, can manage OSes, virtualization, servers, storage, networking, and the PaaS software itself. Developers, however, manage the applications.
- + IaaS (Infrastructure as a Service) : self-service models for accessing, monitoring, and managing remote datacenter infrastructures, such as compute (virtualized or bare metal), storage, networking, and networking services (e.g. firewalls). Instead of having to purchase hardware outright, users can purchase IaaS based on consumption, similar to electricity or other utility billing.

In general, IaaS provides hardware so that an organization can install their own operating system.

62. Which mode allows access points to be managed by Cisco Wireless LAN Controllers?

- A. autonomous

- B. lightweight
- C. bridge
- D. mobility express

Correct Answer: B

Section: Network Access

Explanation/Reference: A Lightweight Access Point (LAP) is an AP that is designed to be connected to a wireless LAN (WLAN) controller (WLC). APs are “lightweight,” which means that they cannot act independently of a wireless LAN controller (WLC). The WLC manages the AP configurations and firmware. The APs are “zero touch” deployed, and individual configuration of APs is not necessary.

Reference: [Click here](#)

63. Which command automatically generates an IPv6 address from a specified IPv6 prefix and MAC address of an interface?

- A. ipv6 address dhcp
- B. ipv6 address 2001:DB8:5:112::/64 eui-64
- C. ipv6 address autoconfig
- D. ipv6 address 2001:DB8:5:112::2/64 link-local

Correct Answer: C

Section: Network Fundamentals

Explanation/Reference: The “`ipv6 address autoconfig`” command causes the device to perform IPv6 stateless address autoconfiguration to discover prefixes on the link and then to add the EUI-64 based addresses to the interface.

Addresses are configured depending on the prefixes received in Router Advertisement (RA) messages.

The device will listen for RA messages which are transmitted periodically from the router (DHCP Server).

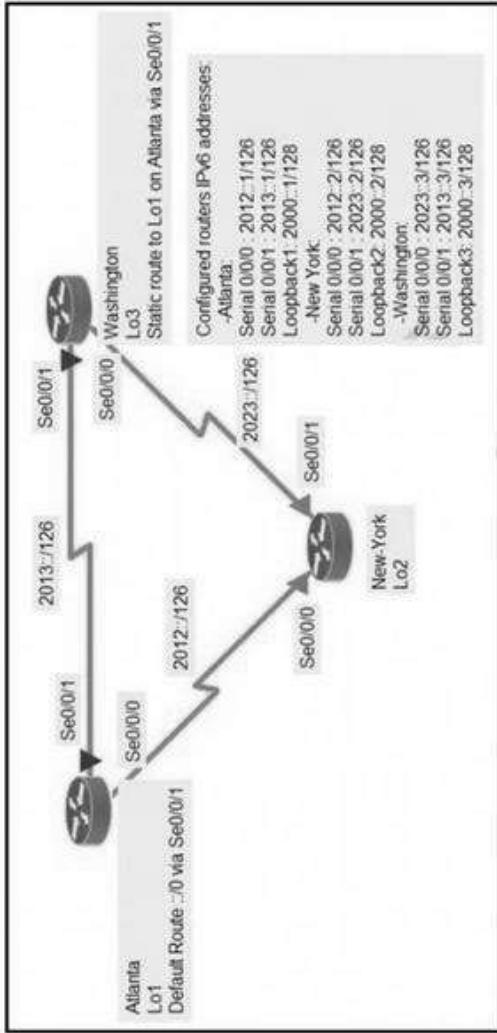
This RA message allows a host to create a global IPv6 address from:

- + Its interface identifier (EUI-64 address)
- + Link Prefix (obtained via RA)

Note: Global address is the combination of Link Prefix and EUI-64 address

64. Refer to Exhibit. An engineer is configuring the NEW York router to reach the Lo1 interface of the Atlanta router using interface

Se0/0/0 as the primary path. Which two commands must be configured on the New York router so that it can reach the Lo1 interface of the Atlanta router via Washington when the link between New York and Atlanta goes down? (Choose two)



- A. ipv6 router 2000::1/128 2012::1
- B. ipv6 router 2000::1/128 2012::1 5
- C. ipv6 router 2000::1/128 2012::2
- D. ipv6 router 2000::1/128 2023::2 5
- E. ipv6 router 2000::1/128 2023::3 5

Correct Answer: AE

Section: IP Connectivity

Explanation/Reference: Floating static routes are static routes that have an administrative distance greater than the administrative distance (AD) of another static route or dynamic routes. By default a static route has an AD of 1 then floating static route must have the AD greater than 1. Floating static route has a manually configured administrative distance greater than that of the primary route and therefore would not be in the routing table until the primary route fails.

65. Refer to the exhibit. Which command provides this output?

Router#

Capability Codes: R – Router, T – Trans Bridge, B – Source Route Bridge
S – Switch, H – Host, I – IGMP, r – Repeater, P – Phone,
D – Remote, C – CVTA, M – Two-port Mac Relay

Device ID	Local Interface	Holdtime	Capability	Platform	Port ID
10.1.1.2	Gig 37/3	176	R I	CPT	600 Gig 36/41
10.1.1.2	Gig 37/1	174	R I	CPT	600 Gig 36/43
10.1.1.2	Gig 36/41	134	R I	CPT	600 Gig 37/3
10.1.1.2	Gig 36/43	134	R I	CPT	600 Gig 37/1
10.1.1.2	Gig 3/2	132	R I	CPT	600 Gig 4/2
10.1.1.2	Gig 4/2	174	R I	CPT	600 Gig 3/2

- A. show ip route
- B. show ip interface
- C. show interface
- D. show cdp neighbor

Correct Answer: D

Section: Network Access

66. Which two outcomes are predictable behaviors for HSRP? (Choose two)

- A. The two routers share a virtual IP address that is used as the default gateway for devices on the LAN.
- B. The two routers negotiate one router as the active router and the other as the standby router.
- C. Each router has a different IP address both routers act as the default gateway on the LAN, and traffic is load balanced between them.
- D. The two routers synchronize configurations to provide consistent packet forwarding.
- E. The two routers share the same IP address, and default gateway traffic is load-balanced between them.

Correct Answer: AB

Section: IP Connectivity

67. Which action is taken by a switch port enabled for PoE power classification override?

- A. When a powered device begins drawing power from a PoE switch port a syslog message is generated.

- B. As power usage on a PoE switch port is checked data flow to the connected device is temporarily paused.
- C. If a switch determines that a device is using less than the minimum configured power it assumes the device has failed and disconnects.
- D. If a monitored port exceeds the maximum administrative value for power, the port is shutdown and err disabled.

Correct Answer:D

Section: Network Fundamentals

Explanation/Reference: PoE monitoring and policing compares the power consumption on ports with the administrative maximum value (either a configured maximum value or the port's default value). If the power consumption on a monitored port exceeds the administrative maximum value, the following actions occur:

- A syslog message is issued.
- The monitored port is shut down and error-disabled.
- The allocated power is freed.

Reference: [Click here](#)

68. Which 802.11 frame type is association response?

- A. management
- B. protected frame
- C. control
- D. action

Correct Answer:A

Section: Network Fundamentals

Explanation/Reference: There are three main types of 802.11 frames: the Data Frame, the Management Frame and the Control Frame. Association Response belongs to Management Frame. Association response is sent in response to an association request.
Reference: [Click here](#)

69. Which two tasks must be performed to configure NTP to a trusted server in client mode on a single network device? (Choose two)

- A. Enable NTP authentication.
- B. Verify the time zone.
- C. Disable NTP broadcasts.
- D. Specify the IP address of the NTP server.
- E. Set the NTP server private key.

Correct Answer: AD
Section: IP Services

Explanation/Reference: To configure authentication, perform this task in privileged mode:

Step 1: Configure an authentication key pair for NTP and specify whether the key will be trusted or untrusted.

Step 2: Set the IP address of the NTP server and the public key.

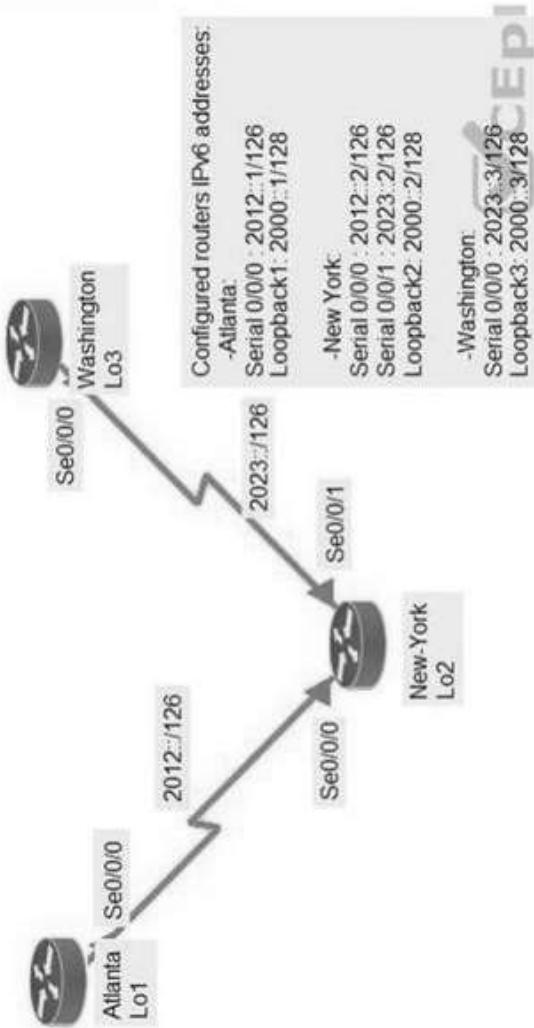
Step 3: Enable NTP client mode.

Step 4: Enable NTP authentication.

Step 5: Verify the NTP configuration.

Reference: [Click here](#)

70. Refer to the exhibit. The New York router is configured with static routes pointing to the Atlanta and Washington sites. Which two tasks must be performed so that the Serial0/0/0 interfaces on the Atlanta and Washington routers can reach one another? (Choose two.)



- A. Configure the ipv6 route 2012::/126 2023::1 command on the Washington router.
- B. Configure the ipv6 route 2023::/126 2012::1 command on the Atlanta router.
- C. Configure the Ipv6 route 2012::/126 s0/0/0 command on the Atlanta router.
- D. Configure the ipv6 route 2023::/126 2012::2 command on the Atlanta router.
- E. Configure the ipv6 route 2012::/126 2023::2 command on the Washington router.

Correct Answer: DE
Section: IP Connectivity

Explanation/Reference: The short syntax of static IPv6 route is:
ipv6 route <destination-IPv6-address> {next-hop-IPv6-address | exit-interface}

71. Which result occurs when PortFast is enabled on an interface that is connected to another switch?

- A. Spanning tree may fail to detect a switching loop in the network that causes broadcast storms.
- B. VTP is allowed to propagate VLAN configuration information from switch to switch automatically.
- C. Root port choice and spanning tree recalculation are accelerated when a switch link goes down.
- D. After spanning tree converges PortFast shuts down any port that receives BPDU's.

Correct Answer: A

Section: Network Access

Explanation/Reference: Enabling the PortFast feature causes a switch or a trunk port to enter the STP forwarding-state immediately or upon a linkup event, thus bypassing the listening and learning states. Note: To enable portfast on a trunk port you need the trunk keyword “spanning-tree portfast trunk”

72. Refer to exhibit. Which statement explains the configuration error message that is received?

```
Router(config)#interface GigabitEthernet 1/0/1
Router(config-if)#ip address 192.168.16.143 255.255.240
Bad mask /28 for address 192.168.16.143
```

- A. It is a broadcast IP address.
- B. The router does not support /28 mask.
- C. It belongs to a private IP address range.
- D. It is a network IP address.

Correct Answer: A
Section: Network Fundamentals

73. When a floating static route is configured, which action ensures that the backup route is used when the primary route fails?

- A. The floating static route must have a higher administrative distance than the primary route so it is used as a backup.
- B. The administrative distance must be higher on the primary route so that the backup route becomes secondary
- C. The floating static route must have a lower administrative distance than the primary route so it is used as a backup.
- D. The default-information originate command must be configured for the route to be installed into the routing table.

Correct Answer: A

Section: IP Connectivity

74. What makes Cisco DNA Center different from traditional network management applications and their management of networks?

- A. It only supports auto-discovery of network elements in a greenfield deployment.
- B. It modular design allows someone to implement different versions to meet the specific needs of an organization.
- C. It abstracts policy from the actual device configuration.
- D. It does not support high availability of management functions when operating in cluster mode.

Correct Answer: C

Section: Automation and Programmability

75. Which network allows devices to communicate without the need to access the Internet?

- A. 172.9.0.0/16
- B. 172.28.0.0/16
- C. 192.0.0.0/8
- D. 209.165.201.0/24

Correct Answer: B

Section: Network Fundamentals

Explanation/Reference: This question asks about the private ranges of IPv4 addresses. The private ranges of each class of IPv4 are listed below:
Class A private IP address ranges from 10.0.0.0 to 10.255.255.255
Class B private IP address ranges from 172.16.0.0 to 172.31.255.255

Class C private IP address ranges from 192.168.0.0 to 192.168.255.255
Only the network 172.28.0.0/16 belongs to the private IP address (of class B).

76. Refer to the exhibit. What does router R1 use as its OSPF router-ID?

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	NVRAM	administratively down	down
GigabitEthernet1/0	192.168.0.1	YES	NVRAM	up	up
GigabitEthernet1/2/0	10.10.10.10	YES	manual	up	up
GigabitEthernet3/0	10.10.10.20	YES	manual	up	up
GigabitEthernet4/0	unassigned	YES	NVRAM	administratively down	down
Loopback0	172.16.15.10	YES	manual	down	down

- A. 10.10.1.10
- B. 10.10.10.20
- C. 172.16.15.10
- D. 192.168.0.1

Correct Answer: C

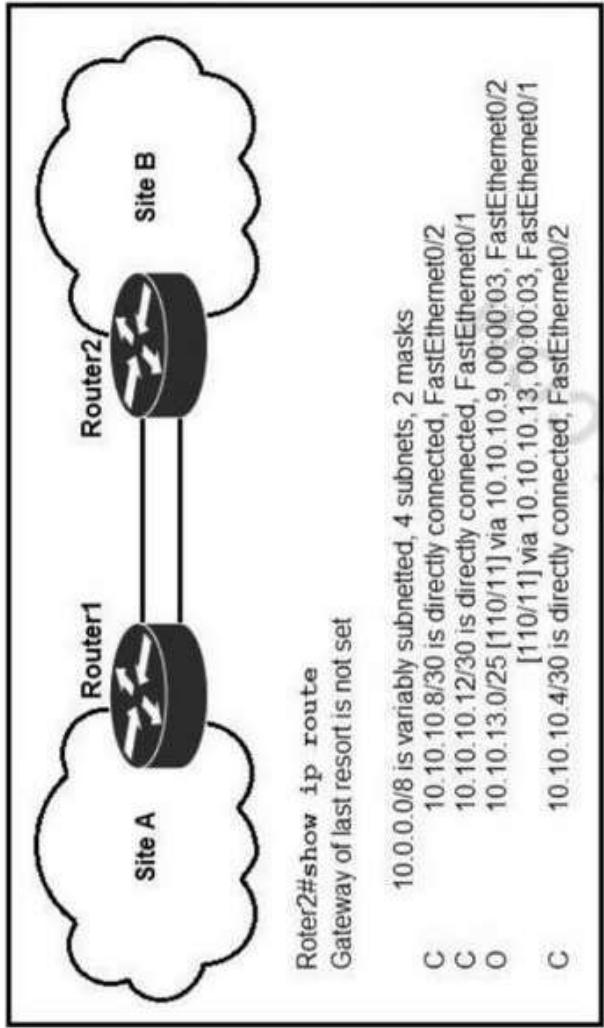
Section: IP Connectivity

Explanation/Reference: OSPF uses the following criteria to select the router ID:

1. Manual configuration of the router ID (via the “router-id x.x.x” command under OSPF router configuration mode).
2. Highest IP address on a loopback interface.
3. Highest IP address on a non-loopback and active (no shutdown) interface.

77. Refer to the exhibit. If OSPF is running on this network, how does Router 2 handle traffic from Site B to 10.10.13.128/25 at Site

A?



- A. It sends packets out of interface Fa0/2 only.
- B. It sends packets out of interface Fa0/1 only.
- C. It cannot send packets to 10.10.13.128/25.
- D. It load-balances traffic out of Fa0/1 and Fa0/2.

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: Router2 does not have an entry for the subnet 10.10.13.128/25. It only has an entry for 10.10.13.0/25, which ranges from 10.10.13.0 to 10.10.13.127

78. When a site-to-site VPN is used, which protocol is responsible for the transport of user data?

- A. IKEv2
- B. IKEv1
- C. IPsec
- D. MD5

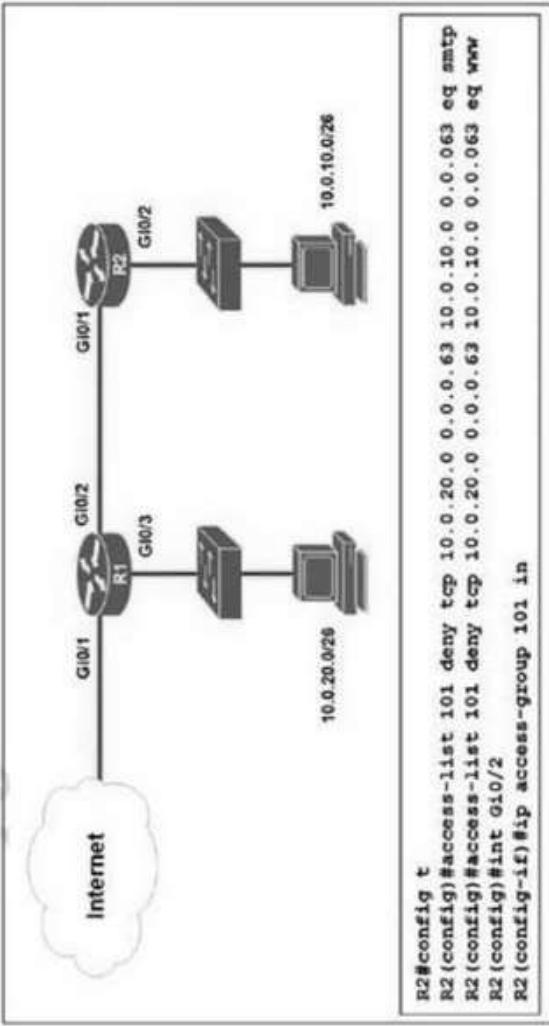
Correct Answer: C

Section: Security Fundamentals

Explanation/Reference: A site-to-site VPN allows offices in multiple fixed locations to establish secure connections with each other over a public network such as the Internet. A site-to-site VPN means that two sites create a VPN tunnel by encrypting and sending data between

two devices. One set of rules for creating a site-to-site VPN is defined by IPsec.

79. Refer to the exhibit. An extended ACL has been configured and applied to router R2. The configuration started to work as intended. Which two changes stop outbound traffic on TCP ports 25 and 80 to 10.0.20.0/26 from the 10.0.10.0/26 subnet while still allowing all other traffic? (Choose two)



- A. Add a “permit ip any any” statement to the beginning of ACL 101 for allowed traffic.
- B. Add a “permit ip any any” statement at the end of ACL 101 for allowed traffic.
- C. The source and destination IPs must be swapped in ACL 101.
- D. The ACL must be configured the Gi0/2 interface inbound on R1.
- E. The ACL must be moved to the Gi0/1 interface outbound on R2.

Correct Answer: BC

Section: Security Fundamentals

80. Which mode must be used to configure EtherChannel between two switches without using a negotiation protocol?

- A. on
- B. auto
- C. active
- D. desirable

Correct Answer: A

Section: Network Access

Explanation/Reference: The Static Persistence (or “on” mode) bundles the links unconditionally and no negotiation protocol is used. In this mode, neither PAgP nor LACP packets are sent or received.

81. A router running EIGRP has learned the same route from two different paths. Which parameter does the router use to select the best path?

- A. cost
- B. administrative distance
- C. metric
- D. as-path

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: If a router learns two different paths for the same network from the same routing protocol, it has to decide which route is better and will be placed in the routing table. Metric is the measure used to decide which route is better (lower number is better). Each routing protocol uses its own metric.

For example, RIP uses hop counts as a metric, while OSPF uses cost.
Reference: [Click here](#)

82. R1 has learned route 192.168.12.0/24 via IS-IS. OSPF, RIP, and Internal EIGRP. Under normal operating conditions, which routing protocol is installed in the routing table?

- A. IS-IS
- B. RIP
- C. Internal EIGRP
- D. OSPF

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: With the same route (prefix), the router will choose the routing protocol with lowest Administrative Distance (AD) to install into the routing table. The AD of Internal EIGRP (90) is lowest so it would be chosen. The table below lists the ADs of popular routing protocols.

Route Source	Administrative Distance
Directly Connected	0
Static	1
EIGRP	90
EIGRP Summary route	5
OSPF	110
RIP	120

Note: The AD of IS-IS is 115. The “EIGRP” in the table above is “Internal EIGRP”. The AD of “External EIGRP” is 170. An EIGRP external route is a route that was redistributed into EIGRP.

83. Which MAC address is recognized as a VRRP virtual address?

- A. 0000.5E00.010a
- B. 0005.3711.0975
- C. 0000.0C07.AC99
- D. 0007.C070/AB01

Correct Answer: A

Section: IP Connectivity

Explanation/Reference: With VRRP, the virtual router’s MAC address is 0000.5E00.01xx , in which xx is the VRRP group.

84. Which statement correctly compares traditional networks and controller-based networks?

- A. Only traditional networks offer a centralized control plane.
- B. Only traditional networks natively support centralized management.
- C. Traditional and controller-based networks abstract policies from device configurations.
- D. Only controller-based networks decouple the control plane and the data plane.

Correct Answer: D

Section: Automation and Programmability

Explanation/Reference: Most traditional devices use a distributed architecture, in which each control plane is resided in a networking device. Therefore they need to communicate with each other via messages to work correctly.

In contrast to distributed architecture, centralized (or controller-based) architectures centralizes the control of networking devices into one device, called SDN controller → Answer D is correct.

85. If a notice-level messaging is sent to a syslog server, which event has occurred?

- A. A network device has restarted.
- B. An ARP inspection has failed.
- C. A routing instance has flapped.
- D. A debug operation is running.

Correct Answer: C

Section: IP Services

Explanation/Reference: Usually no action is required when a route flaps so it generates the notification syslog level message (level 5).

86. Refer to the exhibit. With which metric was the route to host 172.16.0.202 learned?

```
CertBus-R1#show ip route | begin gateway
Gateway of last resort is 209.165.200.246 to network 0.0.0.0
S* 0.0.0.0 [1/0] via 209.165.200.246, Serial0/1/0 is directly connected, Serial0/1/0

172.16.0.0/16 is variably subnetted, 3 subnets, 3 masks
S 172.16.0.0/24 [1/0] via 207.165.200.250, Serial0/0/0
O 172.16.0.128/25 [110/38443] via 207.165.200.254, 00:00:23, Serial0/0/1
D 172.16.0.192/29 [90/3184439] via 207.165.200.254, 00:00:25, Serial0/0/1
  209.165.200.0/24 is variably subnetted, 4 subnets, 2 masks
C 209.165.200.248/30 is directly connected, Serial0/0/0
  209.165.200.249/32 is directly connected, Serial0/0/0
C 209.165.200.252/30 is directly connected, Serial0/0/1
L 209.165.200.253/32 is directly connected, Serial0/0/1
```

- A. 0
- B. 110
- C. 38443
- D. 3184439

Correct Answer: C

Section: IP Connectivity

Explanation/Reference: Both the line “0 172.16.0.128/25” and “S 172.16.0.0/24” cover the host 172.16.0.202 but with the “longest (prefix) match” rule the router will choose the first route.

87. Refer to the exhibit. If configuring a static default route on the router with the ip route 0.0.0.0 0.0.0.0 10.13.0.1 120 command, how does the router respond?

Gateway of last resort is 10.12.0.1 to network 0.0.0.0

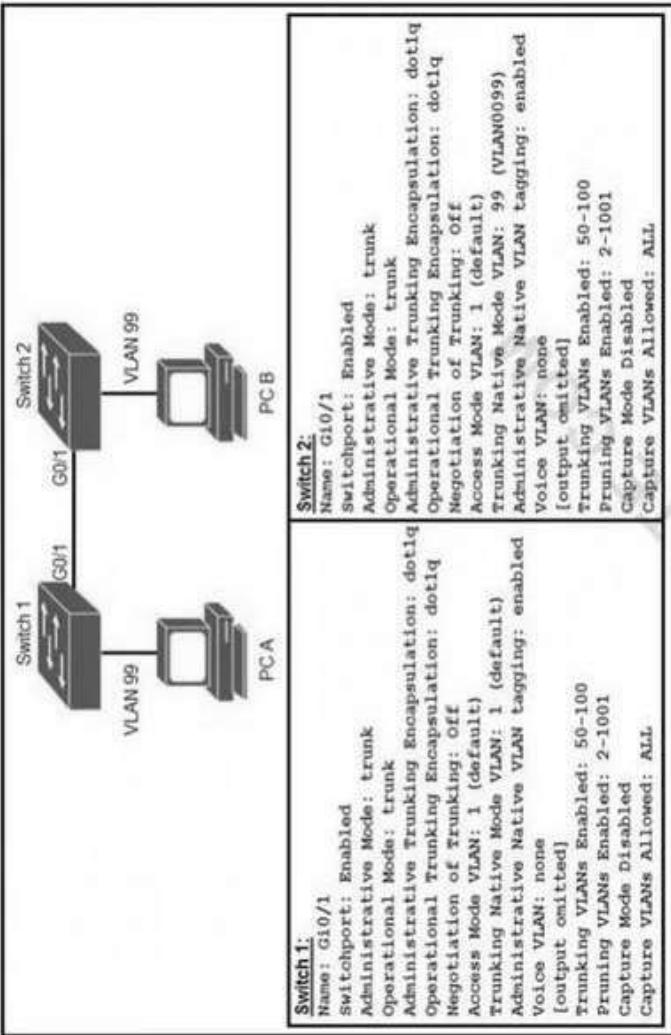
O*E2	0.0.0.0/0 [110/1] via 10.12.0.1 00:00:01, GigabitEthernet0/0
C	10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
L	10.0.0.0/24 is directly connected, GigabitEthernet0/0
C	10.0.0.2/32 is directly connected, GigabitEthernet0/0
L	10.13.0.0/24 is directly connected, GigabitEthernet0/1
L	10.13.0.2/32 is directly connected, GigabitEthernet0/0

- A. It ignores the new static route until the existing OSPF default route is removed.
- B. It immediately replaces the existing OSPF route in the routing table with the newly configured static route.
- C. It starts load-balancing traffic between the two default routes.
- D. It starts sending traffic without a specific matching entry in the routing table to GigabitEthernet0/1.

*Correct Answer: A
Section: IP Connectivity*

Explanation/Reference: Our new static default route has the Administrative Distance (AD) of 120, which is bigger than the AD of OSPF External route (O*E2) so it will not be pushed into the routing table until the current OSPF External route is removed. For your information, if you don’t type the AD of 120 (using the command “ip route 0.0.0.0 0.0.0.0 10.13.0.1”) then the new static default route would replace the OSPF default route as the default AD of static route is 1. You will see such line in the routing table:
S* 0.0.0.0/0 [1/0] via 10.13.0.1

88. Refer to the Exhibit. After the switch configuration the ping test fails between PC A and PC B Based on the output for switch 1. Which error must be corrected?



- A. There is a native VLAN mismatch.
- B. Access mode is configured on the switch ports.
- C. The PCs are in the incorrect VLAN.
- D. All VLANs are not enabled on the trunk.

Correct Answer: A

Section: Network Access

Explanation/Reference: From the output we see the native VLAN of Switch1 on Gi0/1 interface is VLAN 1 while that of Switch2 is VLAN 99 so there would be a native VLAN mismatch.

89. An engineer must configure a WLAN using the strongest encryption type for WPA2-PSK. Which cipher fulfills the configuration requirement?

- A. WEP
- B. RC4
- C. AES
- D. TKIP

Correct Answer: C

Section: Security Fundamentals

Explanation/Reference: Many routers provide WPA2-PSK (TKIP), WPA2-PSK (AES), and WPA2-PSK (TKIP/AES) as options.

TKIP is actually an older encryption protocol introduced with WPA to replace the very-insecure WEP encryption at the time. TKIP is actually quite similar to WEP encryption. TKIP is no longer considered secure, and is now deprecated. In other words, you shouldn't be using it.

AES is a more secure encryption protocol introduced with WPA2 and it is currently the strongest encryption type for WPA2-PSK/

90. Which statement about Link Aggregation when implemented on a Cisco Wireless LAN Controller is true?

- A. To pass client traffic two or more ports must be configured.
- B. The EtherChannel must be configured in “mode active” .
- C. When enabled, the WLC bandwidth drops to 500 Mbps.
- D. One functional physical port is needed to pass client traffic.

Correct Answer: D

Section: Network Access

Explanation/Reference: Link aggregation (LAG) is a partial implementation of the 802.3ad port aggregation standard. It bundles all of the controller's distribution system ports into a single 802.3ad port channel.

Restriction for Link aggregation:

- LAG requires the EtherChannel to be configured for ` mode on` on both the controller and the Catalyst switch → Answer B is not correct.

- If the recommended load-balancing method cannot be configured on the Catalyst switch, then configure the LAG connection as a single member link or disable LAG on the controller → Answer A is not correct while answer D is correct.

Reference: [Click here](#)

91. When configuring a WLAN with WPA2 PSK in the Cisco Wireless LAN Controller GUI, which two formats are available to select? (Choose two)

- A. ASCII
- B. base64
- C. binary
- D. decimal
- E. hexadecimal

Correct Answer: AE

Section: Security Fundamentals

Explanation/Reference: When configuring a WLAN with WPA2 Preshared Key (PSK), we can choose the encryption key format as either ASCII or HEX.

Reference: [Click here](#)

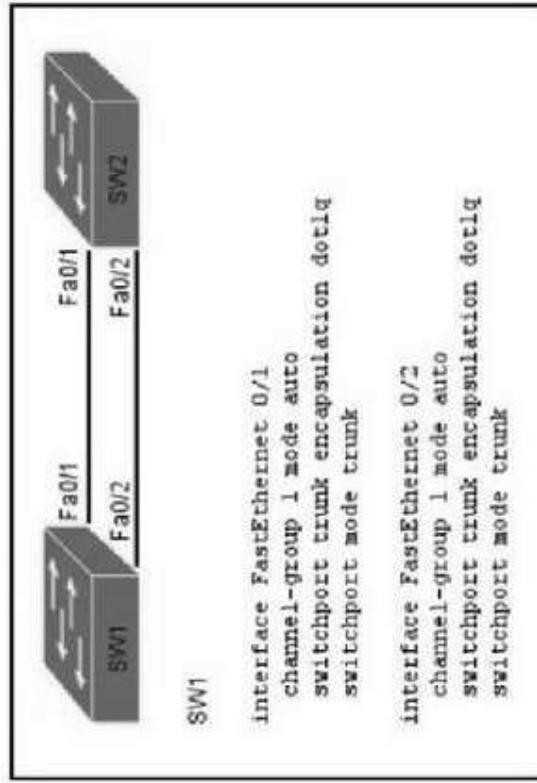
92. Which API is used in controller-based architectures to interact with edge devices?

- A. overlay
- B. northbound
- C. underlay
- D. southbound

Correct Answer: D

Section: Automation and Programmability

93. Refer to the exhibit. A network administrator is configuring an EtherChannel between SW1 and SW2. The SW1 configuration is shown. What is the correct configuration for SW2?



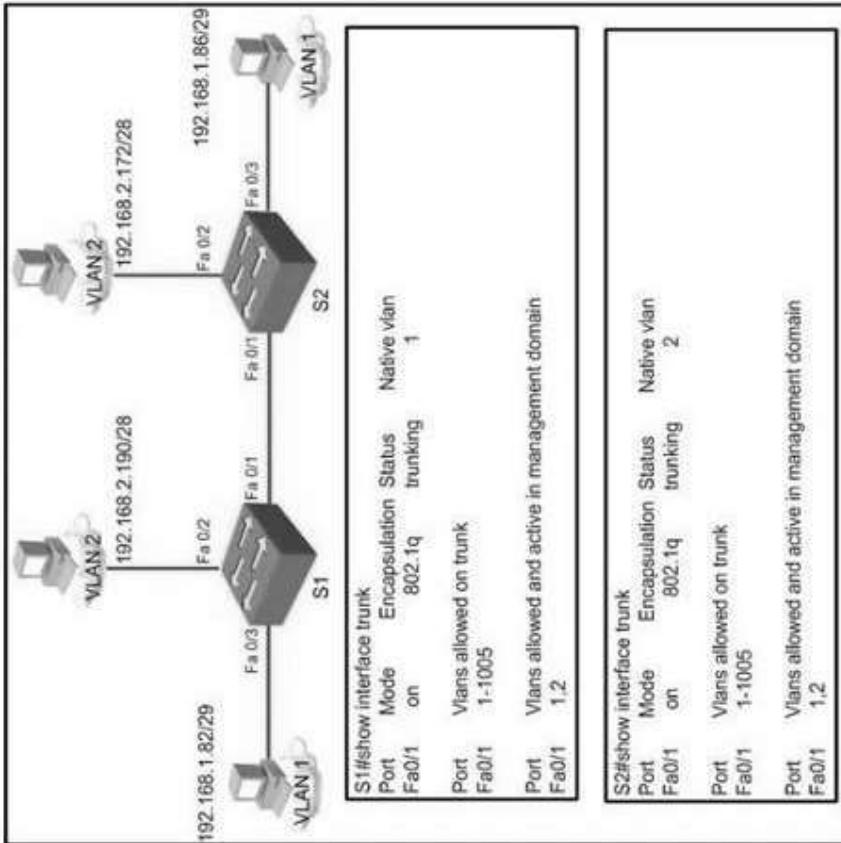
- A. interface FastEthernet 0/1
channel-group 1 mode active
switchport trunk encapsulation dot1q
switchport mode trunk
interface FastEthernet 0/2
channel-group 1 mode active

```
switchport trunk encapsulation dot1q
switchport mode trunk
• B. interface FastEthernet 0/1
channel-group 2 mode auto
switchport trunk encapsulation dot1q
switchport mode trunk
interface FastEthernet 0/2
channel-group 2 mode auto
switchport trunk encapsulation dot1q
switchport mode trunk
• C. interface FastEthernet 0/1
channel-group 1 mode desirable
switchport trunk encapsulation dot1q
switchport mode trunk
interface FastEthernet 0/2
channel-group 1 mode desirable
switchport trunk encapsulation dot1q
switchport mode trunk
• D. interface FastEthernet 0/1
channel-group 1 mode passive
switchport trunk encapsulation
dot1q switchport mode trunk
interface FastEthernet 0/2
channel-group 1 mode passive
switchport trunk encapsulation dot1q
switchport mode trunk
```

Explanation: If the etherchannel was configured with mode “auto”, it was using PAgP, so, we need to configure the other switch with “desirable” mode.

PAgP modes: auto | Desirable
LACP modes: active | passive

94. Refer to the exhibit. A frame on VLAN 1 on switch S1 is sent to switch S2 where the frame is received on VLAN 2. What causes this behavior?



- A. trunk mode mismatches
- B. allowing only VLAN 2 on the destination
- C. native VLAN mismatches
- D. VLANs that do not correspond to a unique IP subnet

Correct Answer: C

Explanation: Untagged frames are encapsulated with the native VLAN. In this case, the native VLANs are different so although S1 will tag it as VLAN 1 it will be received by S2.

95. What are two enhancements that OSPFv3 supports over OSPFv2?
(Choose two.)

- A. It requires the use of ARP.
- B. It can support multiple IPv6 subnets on a single link.
- C. It supports up to 2 instances of OSPFv3 over a common link.
- D. It routes over links rather than over networks.

Correct Answer: BD

96. Which option is a valid IPv6 address?

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

Correct Answer: D

Explanation: An IPv6 address is represented as eight groups of four hexadecimal digits, each group representing 16 bits (two octets). The groups are separated by colons (:). An example of an IPv6 address is 2001:0db8:85a3:0000:0000:8a2e:0370:7334.

The leading 0's in a group can be collapsed using ::, but this can only be done once in an IP address.

97. Which three are characteristics of an IPv6 anycast address?
(Choose three.)

- A. one-to-many communication model
- B. one-to-nearest communication model
- C. any-to-many communication model
- D. a unique IPv6 address for each device in the group
- E. the same address for multiple devices in the group
- F. delivery of packets to the group interface that is closest to the sending device

Correct Answer: BEF

Explanation: A new address type made specifically for IPv6 is called the Anycast Address. These IPv6 addresses are global addresses, these addresses can be assigned to more than one interface unlike an IPv6 unicast address. Anycast is designed to send a packet to the nearest interface that is a part of that anycast group. The sender creates a packet and forwards the packet to the anycast address as the destination address which goes to the nearest router. The nearest router or interface is found by using the metric of a routing protocol currently running on the network. However in a LAN setting the nearest interface is found depending on the order the neighbors were learned. The anycast packet in a LAN setting forwards the packet to the neighbor it learned about first.

98. Which two statements describe 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

Explanation: 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

99. What is the alternative notation for the IPv6 address

B514:82C3:0000:0000:0029:EC7A:0000:EC72?

- A. B514 : 82C3 : 0029 : EC7A : EC72
- B. B514 : 82C3 : : 0029 : EC7A : EC72
- C. B514 : 82C3 : 0029 :: EC7A : 0000 : EC72
- D. B514 : 82C3 :: 0029 : EC7A : 0 : EC72

Correct Answer: D

Explanation: There are two ways that an IPv6 address can be additionally compressed: compressing leading zeros and substituting a group of consecutive zeros with a single double colon (::). Both of these can be used in any number of combinations to notate the same address. It is important to note that the double colon (::) can only be used once within a single IPv6 address notation. So, the extra 0's can only be compressed once.

100. Which IPv6 address is valid?

- A. 2001:0db8:0000:130F:0000:08GC:140B
- B. 2001:0db8:0:130H::87C:140B
- C. 2031::130F::9C0:876A:130B
- D. 2031:0:130F::9C0:876A:130B

Correct Answer: D

Explanation: An IPv6 address is represented as eight groups of four hexadecimal digits, each group representing 16 bits (two octets). The

groups are separated by colons (:). An example of an IPv6 address is 2001:0db8:85a3:0000:0000:8a2e:0370:7334.

The leading 0's in a group can be collapsed using ::, but this can only be done once in an IP address.

101. Which two are features of IPv6? (Choose two.)

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

Correct Answer: AC

Explanation: IPv6 addresses are classified by the primary addressing and routing methodologies common in networking: unicast addressing, anycast addressing, and multicast addressing. A unicast address identifies a single network interface. The Internet Protocol delivers packets sent to a unicast address to that specific interface. An anycast address is assigned to a group of interfaces, usually belonging to different nodes. A packet sent to an anycast address is delivered to just one of the member interfaces, typically the nearest host, according to the routing protocol's definition of distance. Anycast addresses cannot be identified easily, they have the same format as unicast addresses, and differ only by their presence in the network at multiple points. Almost any unicast address can be employed as an anycast address.

A multicast address is also used by multiple hosts, which acquire the multicast address destination by participating in the multicast distribution protocol among the network routers. A packet that is sent to a multicast address is delivered to all interfaces that have joined the corresponding multicast group.

102. Which command enables IPv6 forwarding on a Cisco router?

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

Correct Answer: C

Explanation: To enable IPv6 routing on the Cisco router use the following command: ipv6 unicast-routing

If this command is not recognized, your version of IOS does not support IPv6.

103. Which IPv6 address is the equivalent of the IPv4 interface loopback address 127.0.0.1?

- A. ::1
- B. ::
- C. 2000::/3
- D. 0::/10

Correct Answer: A

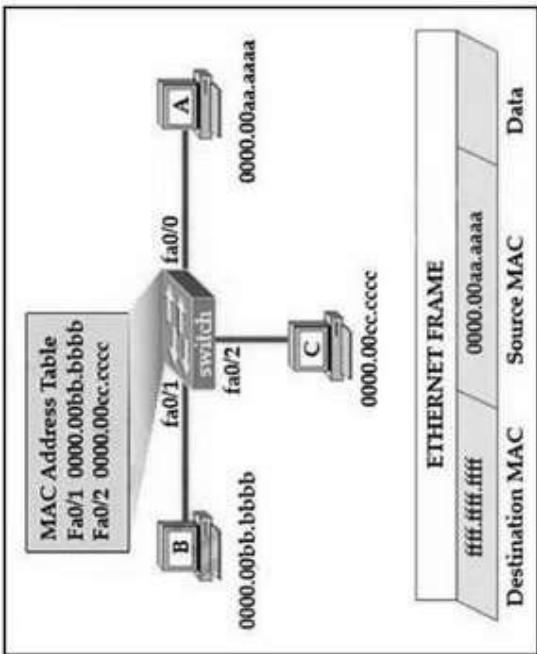
Explanation: In IPv6 the loopback address is written as, ::1 This is a 128bit number, with the first 127 bits being ‘0’ and the 128th bit being ‘1’. It’s just a single address, so could also be written as ::1/128.

104. In which two formats can the IPv6 address fd15:0db8:0000:0000:0700:0003:400F:572B be written? (Choose two.)

- A. fd15:0db8:0000:0000:700:3:400F:572B
- B. fd15::db8::700:3:400F:572B
- C. fd15:db8:0::700:3:4F:572B
- D. fd15:0db8::7:3:4F:572B
- E. fd15:db8::700:3:400F:572B

Correct Answer: AE

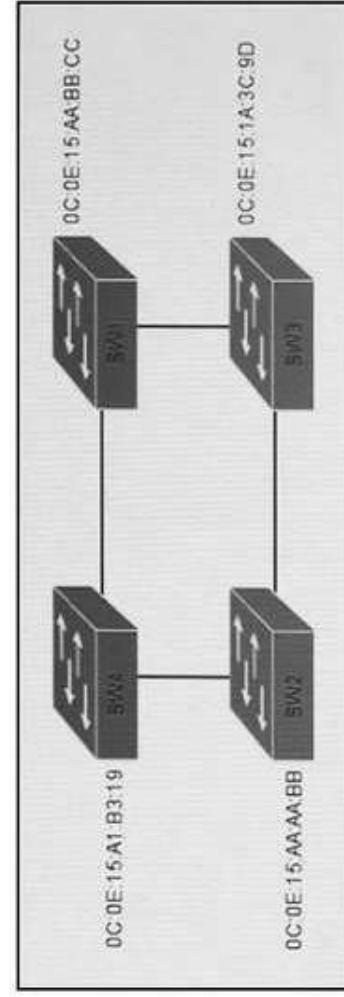
105. Refer to the exhibit. The MAC address table is shown in its entirety. The Ethernet frame that is shown arrives at the switch. What two operations will the switch perform when it receives this frame? (Choose two.)



- A. The switch will not forward a frame with this destination MAC address.
- B. The frame will be forwarded out of all the ports on the switch.
- C. The MAC address of ffff.ffff will be added to the MAC address table.
- D. The frame will be forwarded out of all the active switch ports except for port fa0/0.
- E. The MAC address of 0000.00aa.aaaa will be added to the MAC Address Table.
- F. The frame will be forwarded out of fa0/0 and fa0/1 only.

Correct Answer: DE

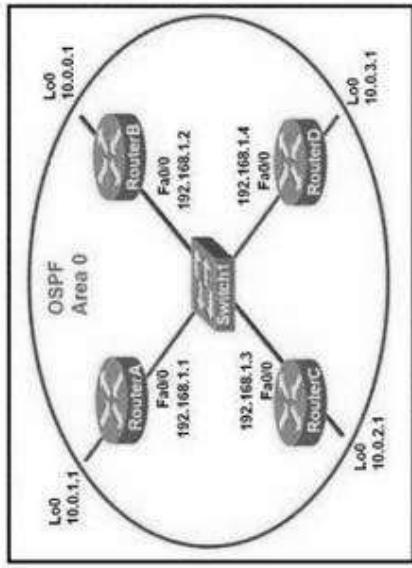
106. Refer to the exhibit. Which switch in this configuration becomes the root bridge?



- A. SW1
- B. SW2
- C. SW3
- D. SW4

Correct Answer: C

107. 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

Explanation: A loopback interface never comes down even if the link is broken so it provides stability for the OSPF process (for example we use that loopback interface as the router-id) – 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.
→ The loopback interface will be chosen as the router ID of RouterB ?

108. Refer to the exhibit. Which two statements about the interface that generated the output are true? (Choose two.)

```

Port Security
Port Status : Enabled
Violation Mode : Secure-shutdown
Aging Time : 0 mins
Aging Type : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses : 2
Total MAC Addresses : 2
Configured MAC Addresses : 0
Sticky MAC Addresses : 2
Last Source Address:Vlan : 0001.00AA.33BB:1
Security Violation Count : 1
  
```

- A. Two secure MAC address are manually configured on the interface.
- B. A syslog message is generated when the maximum number of secure MAC addresses is on the interface.
- C. The interface is error-disabled.
- D. The interface dynamically learned two secure MAC addresses.
- E. An SNMP trap is generated when the maximum number of secure MAC addresses is reached on the interface.

Correct Answer: C D

109. Refer to the exhibit. Which two statements about the interface that generated the output are true? (Choose two.)

Port Security	: Enabled
Port Status	: Secure-up
Violation Mode	: Protect
Aging Time	: 5 mins
Aging Type	: Inactivity
SecureStatic Address Aging	: Disabled
Maximum MAC Addresses	: 3
Total MAC Addresses	: 3
Configured MAC Addresses	: 1
Sticky MAC Addresses	: 2
Last Source Address:Vlan	: 0001.00AA.33BB:1
Security Violation Count	: 0

- A. Learned MAC addresses are deleted after five minutes of inactivity
- B. the interface is error-disabled if packets arrive from a new unknown source address
- C. it has dynamically learned two secure MAC addresses
- D. it has dynamically learned three secure MAC addresses
- E. the security violation counter increments if packets arrive from a new unknown source address

Correct Answer: AC

110. Refer to the exhibit. Which two events occur on the interface, if packets from an unknown Source address arrive after the interface learns the maximum number of secure MAC address? (Choose two.)

Port Security	:	Enabled
Port Status	:	Secure-up
Violation Mode	:	Protect
Aging Time	:	0 mins
Aging Type	:	Absolute
SecureStatic Address Aging	:	Disabled
Maximum MAC Addresses	:	4
Total MAC Addresses	:	3
Configured MAC Addresses	:	1
Sticky MAC Addresses	:	2
Last Source Address:Vlan	:	0001.0fAA.33BB:1
Security Violation Count	:	0

- A. The security violation counter does not increment
- B. The port LED turns off
- C. The interface is error-disabled
- D. A syslog message is generated
- E. The interface drops traffic from unknown MAC address

Correct Answer: AE

111. Refer to the exhibit. Which two statements about the network environment of router R1 must be true? (Choose two.)

```
R1#show ip route
Gateway of last resort is 10.85.33.14 to network 0.0.0.0
D EX 0.0.0.0
    [170/257024] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
        [170/257024] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        10.0.0.0/8 is variably subnetted, 6692 subnets, 20 masks
        B   10.0.0.0/8 [20/0] via 10.48.144.14, 1w5d
        D EX 10.0.1.0/24
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.0.2.0/24
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.0.4.0/24
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.0.8.0/24
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.0.16.0/24
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.0.32.0/24
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.1.96.0/24
            [170/0] via 10.111.33.217, 2w3d
            10.1.96.0/24 [20/0] via 10.111.33.217, 2w3d
        B   10.1.97.0/24 [20/0] via 10.111.33.217, 2w3d
        B   10.1.255.240/28
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        D EX 10.2.0.0/16
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        B   10.2.0.0/24 [20/0] via 10.48.144.14, 4w5d
        B   10.2.96.0/23 [20/0] via 10.48.144.14, 4w5d
        B   10.2.96.0/24 [20/0] via 10.48.144.14, 3w1d
        B   10.2.97.0/24 [20/0] via 10.48.144.14, 4w5d
        D EX 10.3.0.0/16
            [170/51968] via 10.85.33.14, 7w0d, TenGigabitEthernet0/2/0, 100
            [170/51968] via 10.85.33.10, 7w0d, TenGigabitEthernet0/1/0, 100
        B   10.5.1.0/24 [20/0] via 10.111.33.217, 1w4d
        B   10.5.5.0/24 [20/0] via 10.111.33.217, 4w3d
        B   10.6.0.0/24 [20/0] via 10.111.33.217, 3w5d
```

- A. there are 20 different network masks within the 10.0.0.0/8 network
- B. A static default route to 10.85.33.14 was defined
- C. Ten routes are equally load-balanced between Te0/1/0, 100 and Te0/2/0, 100
- D. The 10.0.0.0/8 network was learned via external EIGRP
- E. The EIGRP administrative distance was manually changed from 90 to 170

Correct Answer: AC

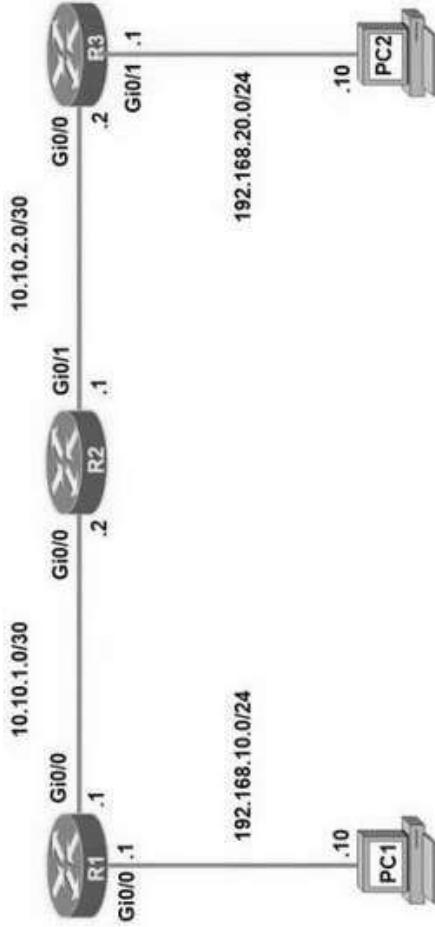
112. Refer to the exhibit. Which statement about the interface that generated the output is true?

Port Security	:	Enabled
Port Status	:	Secure-up
Violation Mode	:	Shutdown
Aging Time	:	0 mins
Aging Type	:	Absolute
Secure/Static Address Aging	:	Disabled
Maximum MAC Addresses	:	5
Total MAC Addresses	:	1
Configured MAC Addresses	:	1
Sticky MAC Addresses	:	0
Last Source Address:Vlan	:	0001.0fAA.33BB:1
Security Violation Count	:	0

- A. Five secure MAC addresses are dynamically learned on the interface.
- B. A syslog message is generated when a violation occurs.
- C. One secure MAC address is manually configured on the interface.
- D. One secure MAC address is dynamically configured on the interface.

Correct Answer: C

113. Refer to the exhibit. When PC 1 sends a packet to PC2, the packet has. Which source and destination IP address when it arrives at interface Gi0/0 on router R2?

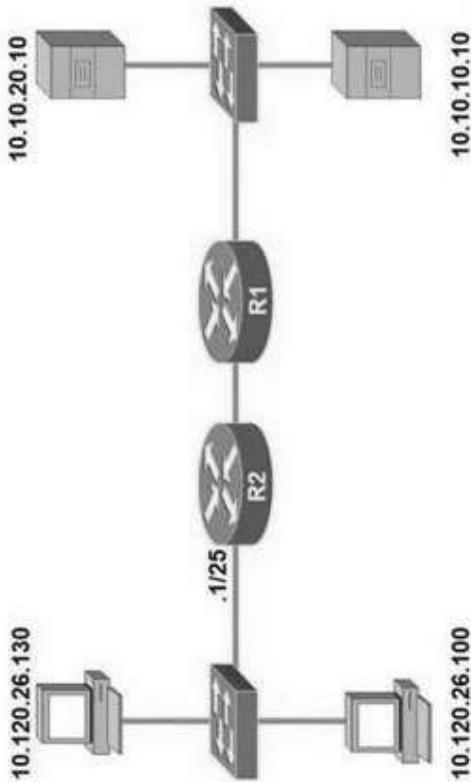


- A. source 192.168.10.10 and destination 10.10.2.2
- B. source 192.168.20.10 and destination 192.168.20.1
- C. source 192.168.10.10 and destination 192.168.20.10
- D. source 10.10.1.1 and destination 10.10.2.2

Correct Answer: C

Explanation/Reference: The source and destination IP addresses of the packets are unchanged on all the way. Only source and destination MAC addresses are changed.

114. Refer to the exhibit. Users in your office are complaining that they cannot connect to the servers at a remote site. When troubleshooting, you find that you can successfully reach the servers from router R2. What is the most likely reason that the other users are experiencing connection failure?



```
R2
ip dhcp excluded-address 10.120.26.1 10.120.26.10
ip dhcp pool WLAN120
  network 10.120.26.0 255.255.255.0
  default-router 10.120.26.1
```

- A. interface ports are shut down on the remote servers
- B. The DHCP address pool has been exhausted
- C. The ip helper-address command is missing on the R2 interface that connects to the switch
- D. VLSM is misconfigured between the router interface and the DHCP pool.

Correct Answer: D

115. After you deploy a new WLAN controller on your network, which two additional tasks should you consider? (Choose two)

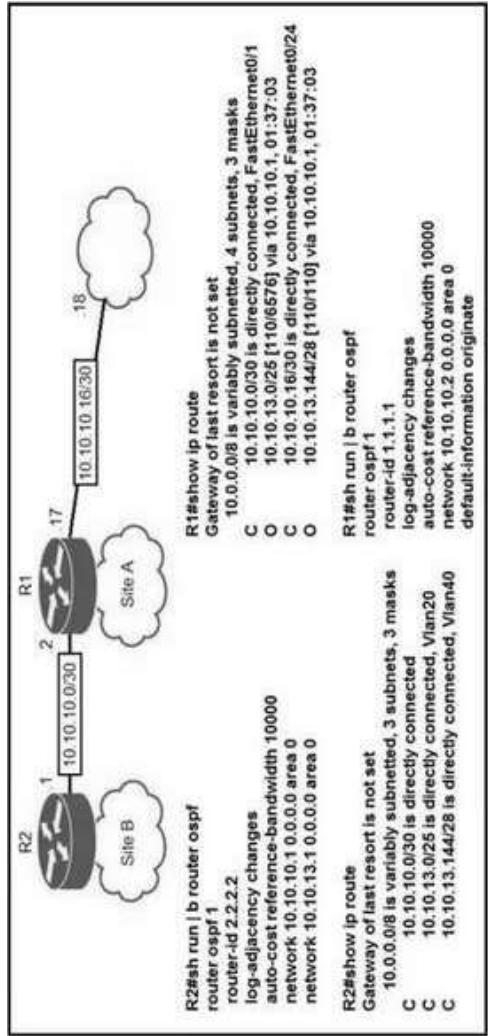
- A. deploy load balancers
- B. configure additional vlans

- C. configure multiple VRRP groups
- D. deploy POE switches
- E. configure additional security policies

Correct Answer: AE

116. Refer to the exhibit. The *default-information originate* command is configured under the R1 OSPF configuration. After testing, workstations on VLAN 20 at Site B cannot reach a DNS server on the Internet.

Which action corrects the configuration issue?



- A. Add the *default-information originate* command on R2.
- B. Add the *always* keyword to the *default-information originate* command on R1.
- C. Configure the *ip route 0.0.0.0 0.0.0.0 10.10.10.18* command on R1.
- D. Configure the *ip route 0.0.0.0 0.0.0.0 10.10.2* command on R2.

Correct Answer: C

Section: IP Connectivity

117. Which of the following is the JSON encoding of a dictionary or hash?

- A. { "key" : "value" }
- B. ["key" , "value"]
- C. { "key" , "value" }
- D. ("key" : "value")

Correct Answer: A

118. Which option best describes an API?

- A. A contract that describes how various components communicate and exchange data with each other.
- B. an architectural style (versus a protocol) for designing applications
- C. a stateless client-server model
- D. request a certain type of data by specifying the URL path that models the data

Correct Answer: A

119. Which command verifies whether any IPv6 ACLs are configured on a router?

- A. show ipv6 interface
- B. show access-list
- C. show ipv6 access-list
- D. show ipv6 route

Correct Answer: C

120. Which command can you enter to allow Telnet to be supported in addition to SSH?

- A. transport input telnet ssh
- B. transport input telnet
- C. no transport input telnet
- D. privilege level 15

Correct Answer: A

121. AAA stands for authentication, authorization, and accounting

- A. False
- B. True

Correct Answer: B

122. What will happen if you configure the logging trap debug command on a router?

- A. It causes the router to send messages with lower severity levels to the syslog server.

- B. It causes the router to send all messages with the severity levels Warning, Error, Critical, and Emergency to the syslog server.
- C. It causes the router to send all messages to the syslog server
- D. It causes the router to stop sending all messages to the syslog server.

Correct Answer: C

123. Which Cisco IOS command will indicate that interface Gigabit Ethernet 0/0 is configured via DHCP?

- A. show ip interface GigabitEthernet 0/0 dhcp
- B. show interface GigabitEthernet 0/0
- C. show ip interface dhcp
- D. show ip interface GigabitEthernet 0/0
- E. show ip interface GigabitEthernet 0/0 brief

Correct Answer: D

124. Which statement about the nature of NAT overload is true?

- A. applies a one-to-many relationship to internal IP addresses
- B. applies a one-to-one relationship to internal IP addresses
- C. applies a many-to-many relationship to internal IP addresses
- D. can be configured only on Gigabit interface

Correct Answer: A

125. Which command is used to configure an IPv6 static default route?

- A. ipv6 route ::/0 interface next-hop5
- B. ipv6 route default interface next-hop
- C. ipv6 route 0.0.0.0/0 interface next-hop
- D. ip route 0.0.0.0/0 interface next-hop

Correct Answer: A

126. Which statement about static and dynamic routes is true?

- A. Dynamic routes are manually configured by a network administrator, while static routes are automatically learned and adjusted by a routing protocol.

- B. Static routes are manually configured by a network administrator, while dynamic routes are automatically learned and adjusted by a routing protocol.
- C. Static routes tell the router how to forward packets to networks that are not directly connected, while dynamic routes tell the router how to forward packets to networks that are directly connected.
- D. Dynamic routes tell the router how to forward packets to networks that are not directly connected, while static routes tell the router how to forward packets to networks that are directly connected.

Correct Answer: B

127. What is the purpose of the show ip ospf interface command?

- A. displaying OSPF-related interface information
- B. displaying general information about OSPF routing processes
- C. displaying OSPF neighbor information on a per-interface basis
- D. displaying OSPF neighbor information on a per-interface-type basis

Correct Answer: A

128. How can the Cisco Discovery Protocol be used?

- A. to allow a switch to discover the devices that are connected to its ports
- B. to determine the hardware platform of the device
- C. to determine the IP addresses of connected Cisco devices
- D. all of the above

Correct Answer: D

129. How does STP prevent forwarding loops at OSI Layer 2?

- A. TTL
- B. MAC address forwarding
- C. Collision avoidance
- D. Port blocking

Correct Answer: D

**130. Which two statements about EtherChannel technology are true?
(Choose two.)**

- A. EtherChannel provides increased bandwidth by bundling existing FastEthernet or Gigabit Ethernet interfaces into a single EtherChannel.
- B. STP does not block EtherChannel links.
- C. You can configure multiple EtherChannel links between two switches, using up to a limit of sixteen physical ports.
- D. EtherChannel does not allow load sharing of traffic among the physical links within the EtherChannel.
- E. EtherChannel allows redundancy in case one or more links in the EtherChannel fail.

Correct Answer: AE

131. Which three statements about MAC addresses are correct? (Choose three.)

- A. To communicate with other devices on a network, a network device must have a unique MAC address.
- B. The MAC address is also referred to as the IP address.
- C. The MAC address of a device must be configured in the Cisco IOS CLI by a user with administrative privileges.
- D. A MAC address contains two main components, the first of which identifies the manufacturer of the hardware and the second of which uniquely identifies the hardware.
- E. An example of a MAC address is 0A:26:B8:D6:65:90.
- F. A MAC address contains two main components, the first of which identifies the network on which the host resides and the second of which uniquely identifies the host on the network.

Correct Answer: ADE

**132. Which three statements about network characteristics are true?
(Choose three.)**

- A. Speed is a measure of the data rate in bits per second of a given link in the network.
- B. Scalability indicates how many nodes are currently on the network.
- C. The logical topology is the arrangement of cables, network devices, and end systems.
- D. Availability is a measure of the probability that the network will be available for use when it is required.

- E. Reliability indicates the dependability of the components that make up the network.

Correct Answer: ADE

133. Which two statements about the purpose of the OSI model are accurate? (Choose two.)

- A. Defines the network functions that occur at each layer
- B. Facilitates an understanding of how information travels throughout a network
- C. Changes in one layer do not impact other layer
- D. Ensures reliable data delivery through its layered approach

Correct Answer: AB

134. You have two paths for the 10.10.0 network – one that has a feasible distance of 3072 and the other of 6144. What do you need to do to load balance your EIGRP routes?

- A. Change the maximum paths to 2
- B. Change the configuration so they both have the same feasible distance
- C. Change the variance for the path that has a feasible distance of 3072 to 2
- D. Change the IP addresses so both paths have the same source IP address

Correct Answer: BC

135. Which of the following dynamic routing protocols are Distance Vector routing protocols?

- A. IS-IS
- B. EIGRP
- C. OSPF
- D. BGP
- E. RIP

Correct Answer: BE

136. Refer to the exhibit. If R1 receives a packet destined to 172.16.1.1, to which IP address does it send the packet?

```
R1#show ip route
Codes: C - connected, S - static, 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
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
      ia - IS-IS inter area, * - candidate default, ? - per-user static route
      o - ODR, p - periodic downloaded static route

Gateway of last resort is 192.168.14.4 to network 0.0.0.0

C 192.168.12.0/24 is directly connected, FastEthernet0/0
C 192.168.13.0/24 is directly connected, FastEthernet0/1
C 192.168.14.0/24 is directly connected, FastEthernet1/0
C 192.168.10.0/24 is variably subnetted, 3 subnets, 3 masks
O 192.168.10.0/24 [110/2] via 192.168.14.4, 00:02:01, FastEthernet1/0
O 192.168.10.32/27 [110/11] via 192.168.13.3, 00:00:52, FastEthernet0/1
O 192.168.0.0/16 [110/2] via 192.168.15.5, 00:05:01, FastEthernet1/1
D 192.168.10.1/32 [90/52778] via 192.168.12.2, 00:03:44, FastEthernet0/0
O*E2 0.0.0.0/0 [110/1] via 192.168.14.4, 00:00:10, FastEthernet1/0
```

Gateway of last resort is 192.168.14.4 to network 0.0.0.0

- A. 192.168.14.4
- B. 192.168.12.2
- C. 192.168.13.3
- D. 192.168.15.5
- E. 4096

Correct Answer: A

137. Which two VLAN IDs indicate a default VLAN? (Choose two.)

- A. 0
- B. 1
- C. 1005
- D. 1006
- E. 4096

Correct Answer: BC

Explanation/Reference: VLAN 1 is a system default VLAN, you can use this VLAN but you cannot delete it. By default VLAN 1 is use for every port on the switch.

Standard VLAN range from 1002–1005 it's Cisco default for FDDI and Token Ring. You cannot delete VLANs 1002–1005. mostly we don't use VLAN in this range.

138. Refer to the exhibit. If RTR01 is configured as shown, which three addresses will be received by other routers that are running EIGRP on the network? (Choose three)

```
RTR01 (config) #router eigrp 103
RTR01 (config-router) #network 10.4.3.0
RTR01 (config-router) #network 172.16.4.0
RTR01 (config-router) #network 192.168.2.0
RTR01 (config-router) #auto-summary
```

- A. 192.168.2.0
- B. 10.4.3.0
- C. 10.0.0.0
- D. 172.16.0.0
- E. 172.16.4.0
- F. 192.168.0.0

Correct Answer: ACD

139. Which two options are the best reasons to use an IPv4 private IP space? (choose two)

- A. to enable intra-enterprise communication
- B. to implement NAT
- C. to connect applications
- D. to conserve global address space
- E. to manage routing overhead

Correct Answer: AD

140. Which technique can you use to route IPv6 traffic over an IPv4 infrastructure?

- A. NAT
- B. 6to4 tunneling
- C. L2TPv3
- D. dual-stack

Correct Answer: B

141. Which three describe the reasons large OSPF networks use a hierarchical design? (Choose Three)

- A. to speed up convergence
- B. to reduce routing overhead
- C. to lower costs by replacing routers with distribution layer switches.

- D. to decrease latency by increasing bandwidth.
- E. to confine network instability to single areas of the network.
- F. to reduce the complexity of router configuration.

Correct Answer: ABE

142. 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

Explanation/Reference: The OSPF protocol is based on link-state technology, which is a departure from the Bellman–Ford vector based algorithms used in traditional Internet routing protocols such as RIP. OSPF has introduced new concepts such as authentication of routing updates, Variable Length Subnet Masks (VLSM), route summarization, and so forth.

OSPF uses flooding to exchange link-state updates between routers. Any change in routing information is flooded to all routers in the network. Areas are introduced to put a boundary on the explosion of link-state updates. Flooding and calculation of the Dijkstra algorithm on a router is limited to changes within an area.

143. Which command should you enter to view the error log in an EIGRP for IPv6 environment?

- A. show ipv6 eigrp neighbors
- B. show ipv6 eigrp topology
- C. show ipv6 eigrp traffic
- D. show ipv6 eigrp events

Correct Answer: D

144. Which component of an Ethernet frame is used to notify a host that traffic is coming?

- A. start of frame delimiter

- B. Type field
- C. preamble
- D. Data field

Correct Answer: C

145. Which command must you enter to guarantee that an HSRP router with higher priority becomes the HSRP primary router after it is reloaded?
- A. standby 10 preempt
 - B. standby 10 version 1
 - C. standby 10 priority 150
 - D. standby 10 version 2

Correct Answer: A

Explanation/Reference: The “preempt” command enables the HSRP router with the highest priority to immediately become the active router.

146. Which configuration command can you apply to a HSRP router so that its local interface becomes active if all other routers in the group fail?
- A. no additional config is required
 - B. standby 1 track ethernet
 - C. standby 1 preempt
 - D. standby 1 priority 250

Correct Answer: A

Explanation/Reference: Simply because that will be the default behavior routers would follow in the event all other routers in the HSRP group fail, then it would not keep attributes such as priority or preemption.

What preemption does in summary is to make sure that the configured Priority on all routers within the same HSRP group is always respected. That is, if R1 is configured on the HSRP group with a priority of 150 but he stands as active since all other routers currently subscribed to that group have a priority 150, then will router will preempt the current active router and will take over hence becoming the new active router.
With preemption disabled, the new router does not preempt the current

active router, unless routers in the group have to renegotiate their roles based on each router's priority at the time of negotiation.

147. You are configuring your edge routers interface with a public IP address for Internet connectivity.

The router needs to obtain the IP address from the service provider dynamically. Which command is needed on interface FastEthernet 0/0 to accomplish this?

- A. ip default-gateway
- B. ip route
- C. ip default-network
- D. ip address dhcp
- E. ip address dynamic

Correct Answer: D

148. Which type does a port become when it receives the best BPDU on a bridge?

- A. The designated port
- B. The backup port
- C. The alternate port
- D. The root port

Correct Answer: D

149. Which two command sequences must you configure on a switch to establish a Layer 3 EtherChannel with an open-standard protocol? (Choose two.)

- A. interface GigabitEthernet0/0/1
channel-group 10 mode on
- B. interface GigabitEthernet0/0/1
channel-group 10 mode active
- C. interface GigabitEthernet0/0/1
channel-group 10 mode auto
- D. interface port-channel1 10
switchport
switchport mode trunk

E. interface port-channel 10
no switchport
ip address 172.16.0.1 255.255.255.0

Correct Answer: BE

150. Which statement about VLAN configuration is true?

- A. The switch must be in VTP server or transparent mode before you can configure a VLAN
- B. The switch must be in config-vlan mode before you configure an extended VLAN
- C. Dynamic inter-VLAN routing is supported on VLAN2 through VLAN 4094
- D. A switch in VTP transparent mode save the VLAN databases to the running configuration only

Correct Answer: A

151. Refer to the exhibit. After you apply the given configuration to a router, the DHCP clients behind the device cannot communicate with hosts outside of their subnet. Which action is most likely to correct the problem?

```
ip dhcp pool test
network 192.168.10.0 /27
domain-name cisco.com
dns-server 172.16.1.1 172.16.2.1
netbios-name-server 172.16.1.10 172.16.2.10
```

- A. Configure the dns server on the same subnet as the clients
- B. Activate the dhcp pool
- C. Correct the subnet mask
- D. configure the default gateway

Correct Answer: D

152. Refer to the exhibit. How will the router handle a packet destined for 192.0.2.156?

router#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, * - candidate default, U - per-user
static route, o - ODR

Gateway of last resort is 192.168.4.1 to network 0.0.0.0

```
10.0.0.0/24 is subnetted, 3 subnets
C 10.0.2.0 is directly connected, Ethernet1
D 10.0.3.0 [90/2195456] via 192.168.1.2, 00:03:01, Serial0
D 10.0.4.0 [90/2195456] via 192.168.3.1, 00:03:01, Serial1
C 192.168.1.0/24 is directly connected, Serial0
D 192.168.2.0/24 [90/2681856] via 192.168.1.2, 00:03:01, Serial0
[90/2681856] via 192.168.3.1, 00:03:01, Serial1
C 192.168.3.0/24 is directly connected, Serial1
C 192.168.4.0/24 is directly connected, Serial2
```

- A. The router will forward the packet via either Serial0 or Serial1.
- B. The router will return the packet to its source.
- C. The router will forward the packet via Serial2.
- D. The router will drop the packet.

Correct Answer: C

153. Which unified access point mode continues to serve wireless clients after losing connectivity to the Cisco Wireless LAN Controller?

- A. sniffer
- B. mesh
- C. flexconnect
- D. local

Correct Answer: C

Explanation/Reference: In previous releases, whenever a FlexConnect access point disassociates from a controller, it moves to the standalone mode. The clients that are centrally switched are disassociated.

However, the FlexConnect access point continues to serve locally switched clients. When the FlexConnect access point rejoins the controller (or a standby controller), all clients are disconnected and are authenticated again. This functionality has been enhanced and the connection between the clients and the FlexConnect access points are maintained intact and the clients experience seamless

connectivity. When both the access point and the controller have the same configuration, the connection between the clients and APs is maintained.

Reference: [Click here](#)

154. Refer to exhibit. What Administrative distance has route to 192.168.10.1?

```
R1#show ip route
Codes: C - connected, S - static, 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
      i - IS-IS, su - IS-IS summary, 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

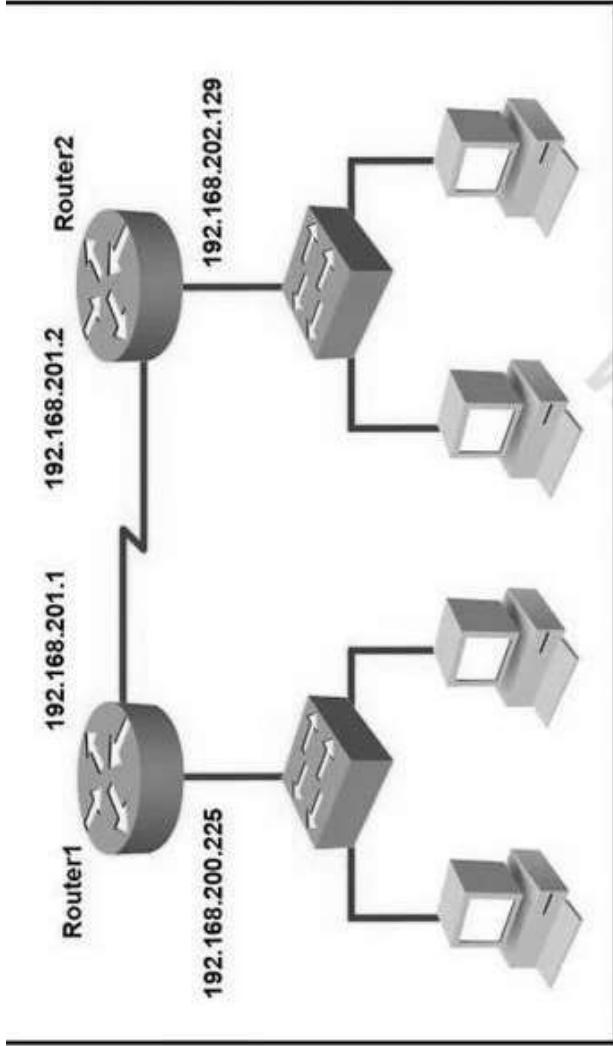
Gateway of last resort is 192.168.14.4 to network 0.0.0.0

C 192.168.12.0/24 is directly connected, FastEthernet0/0
C 192.168.13.0/24 is directly connected, FastEthernet0/1
C 192.168.14.0/24 is directly connected, FastEthernet1/0
C 192.168.10.0/24 is variably subnetted, 3 subnets, 3 masks
      0    192.168.10.0/24 [110/2] via 192.168.14.4, 00:02:01, FastEthernet1/0
      0    192.168.10.32/27 [110/11] via 192.168.13.3, 00:00:52, FastEthernet0/1
      0    192.168.0.0/16 [110/2] via 192.168.15.5, 00:05:01, FastEthernet1/1
D 192.168.10.1/32 [90/52778] via 192.168.12.2, 00:03:44, FastEthernet0/0
O*E2 0.0.0.0/0 [110/11] via 192.168.14.4, 00:00:10, FastEthernet1/0
```

- A. 1
- B. 90
- C. 110
- D. 120

Correct Answer: B

155. Refer to the exhibit. Which command would you use to configure a static route on Router1 to network 192.168.202.0/24 with a nondefault administrative distance?



- A. router1(config)#ip route 192.168.202.0 255.255.255.0 192.168.201.2 1
- B. router1(config)#ip route 192.168.202.0 255.255.255.0 192.168.201.2 5
- C. router1(config)#ip route 1 192.168.201.1 255.255.255.0 192.168.201.2
- D. router1(config)#ip route 5 192.168.202.0 255.255.255.0 192.168.201.2

Correct Answer: B

Explanation/Reference: The default AD of static route is 1 so we need to configure another number for the static route.

156. Which feature or protocol is required for an IP SLA to measure UDP jitter?

- A. LLDP
- B. EEM
- C. CDP
- D. NTP

Correct Answer: D

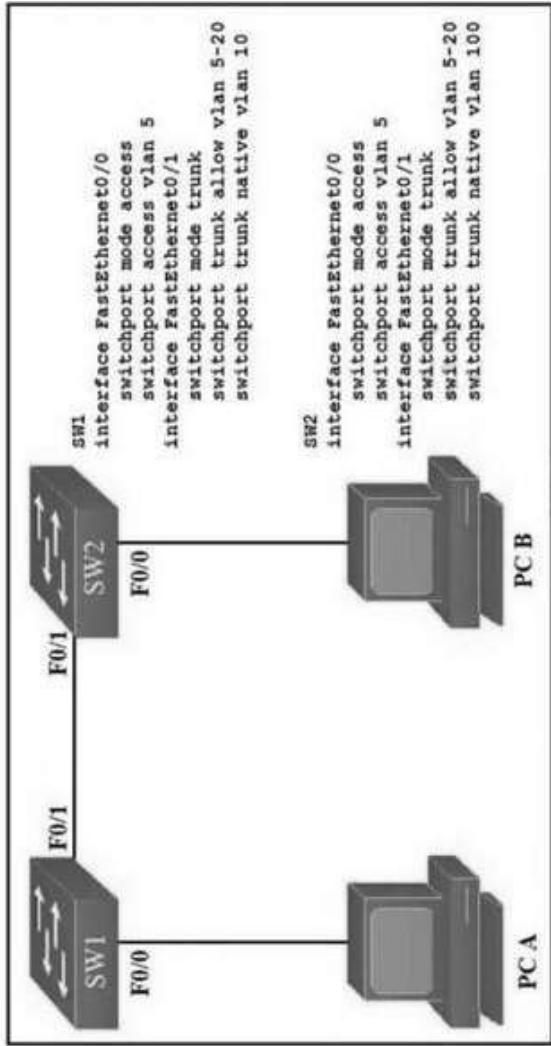
157. Which effect does the aaa new-model configuration command have?

- A. It enables AAA services on the device

- B. It configures the device to connect to a RADIUS server for AAA
- C. It associates a RADIUS server to an group.
- D. It configures a local user on the device.

Correct Answer: A

158. Refer to the exhibit. How will switch SW2 handle traffic from VLAN 10 on SW1?



- A. It sends the traffic to VLAN 10.
- B. It sends the traffic to VLAN 100.
- C. It drops the traffic.
- D. It sends the traffic to VLAN 1.

Correct Answer: B

Explanation/Reference: Since SW-1 is configured native VLAN is VLAN10, so traffic coming out of VLAN-10 is untagged, & goes directly to SW-2 Native VLAN: VLAN100, due to VLAN mismatch.

159. Which two commands can you use to configure an actively negotiate EtherChannel? (Choose two)

- A. channel-group 10 mode on
- B. channel-group 10 mode auto
- C. channel-group 10 mode passive
- D. channel-group 10 mode desirable
- E. channel-group 10 mode active

Correct Answer: D E

160. What is the binary pattern of unique ipv6 unique local address?

- A. 00000000
- B. 11111100
- C. 11111111
- D. 11111101

Correct Answer: B

Explanation/Reference: A IPv6 Unique Local Address is an IPv6 address in the block FC00::/7, which means that IPv6 Unique Local addresses begin with 7 bits with exact binary pattern as 1111 110 → Answer B is correct.

Note: IPv6 Unique Local Address is the approximate IPv6 counterpart of the IPv4 private address. It is not routable on the global Internet.

161. Which two statements about exterior routing protocols are true?
(Choose two.)

- A. They determine the optimal within an autonomous system.
- B. They determine the optimal path between autonomous systems.
- C. BGP is the current standard exterior routing protocol.
- D. Most modern networking supports both EGP and BGP for external routing.
- E. Most modern network routers support both EGP and EIGRP for external routing.

Correct Answer: BC

162. What is the destination MAC address of a broadcast frame?

- A. 00:00:0c:07:ac:01
- B. ff:ff:ff:ff:ff:ff
- C. 43:2e:08:00:00:0c
- D. 00:00:0c:43:2e:08
- E. 00:00:0c:ff:ff:ff

Correct Answer: B

163. You have configured a router with an OSPF router ID, but its IP address still reflects the physical interface. Which action can you take to correct the problem in the least disruptive way?

- A. Reload the OSPF process.
- B. Specify a loopback address
- C. Reboot the router.
- D. Save the router configuration

Correct Answer: A

Explanation/Reference: Once an OSPF Router ID selection is done, it remains there even if you remove it or configure another OSPF Router ID. So the least disruptive way is to correct it using the command “clear ip ospf process” .

164. Which two statements about VTP are true? (Choose two.)

- A. All switches must be configured with the same VTP domain name
- B. All switches must be configured to perform trunk negotiation.
- C. All switches must be configured with a unique VTP domain name
- D. The VTP server must have the highest revision number in the domain
- E. All switches must use the same VTP version.

Correct Answer: AE

Explanation/Reference:

Reference: [Click here](#)

165. Which two pieces of information about a Cisco device can Cisco Discovery Protocol communicate? (Choose two.)

- A. the native VLAN
- B. the trunking protocol
- C. the VTP domain
- D. the spanning-tree priority
- E. the spanning tree protocol

Correct Answer: AC

166. Refer to the exhibit. On R1 which routing protocol is in use on the route to 192.168.10.1?

```
R1#show ip route
Codes: C - connected, S - static, 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
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
      ia - IS-IS inter area, * - candidate default, ? - per-user static route
      o - ODR, p - periodic downloaded static route

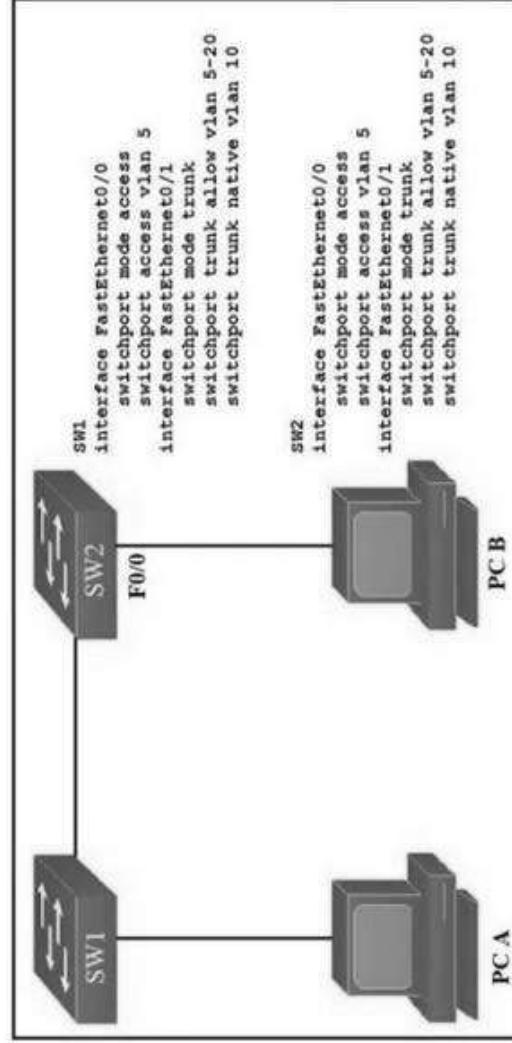
Gateway of last resort is 192.168.14.4 to network 0.0.0.0

C 192.168.12.0/24 is directly connected, FastEthernet0/0
C 192.168.13.0/24 is directly connected, FastEthernet0/1
C 192.168.14.0/24 is directly connected, FastEthernet1/0
192.168.10.0/24 is variably subnetted, 3 subnets, 3 masks
   0    192.168.10.0/24 [110/2] via 192.168.14.4, 00:02:01, FastEthernet1/0
   0    192.168.10.32/27 [110/11] via 192.168.13.3, 00:00:52, FastEthernet0/1
   0    192.168.0.0/16 [110/2] via 192.168.15.5, 00:05:01, FastEthernet1/1
D 192.168.10.1/32 [90/52778] via 192.168.12.2, 00:03:44, FastEthernet0/0
*E2 0.0.0.0/0 [110/1] via 192.168.14.4, 00:00:10, FastEthernet1/0
```

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

Correct Answer: D

167. Refer to the exhibit. Which VLAN ID is associated with the default VLAN in the given environment?



- A. VLAN 1
- B. VLAN 5

- C. VLAN 10
- D. VLAN 20

Correct Answer: A

168. Which two circumstances can prevent two routers from establishing an OSPF neighbor adjacency? (Choose two.)

- A. mismatched autonomous system numbers
- B. an ACL blocking traffic from multicast address 224.0.0.10
- C. mismatched process IDs
- D. mismatched hello timers and dead timers
- E. use of the same router ID on both devices

Correct Answer: DE

169. Which two statements about eBGP neighbor relationships are true? (Choose two)

- A. The two devices must reside in different autonomous systems
- B. Neighbors must be specifically declared in the configuration of each device
- C. They can be created dynamically after the network statement is configured.
- D. The two devices must reside in the same autonomous system
- E. The two devices must have matching timer settings

Correct Answer: AB

170. Which two pieces of information can you determine from the output of the show ntp status command? (Choose two)

- A. whether the NTP peer is statically configured
- B. the IP address of the peer to which the clock is synchronized
- C. the configured NTP servers
- D. whether the clock is synchronized
- E. the NTP version number of the peer

Correct Answer: BD

Explanation/Reference: Below is the output of the “show ntp status” command. From this output we learn that R1 has a stratum of 10 and it is getting clock from 10.1.2.1.

171. Which keyword in a NAT configuration enables the use of one outside IP address for multiple inside hosts?

- A. source
- B. static
- C. pool
- D. overload

Correct Answer: D

Explanation/Reference: By adding the keyword “overload” at the end of a NAT statement, NAT becomes PAT (Port Address Translation). This is also a kind of dynamic NAT that maps multiple private IP addresses to a single public IP address (many-to-one) by using different ports. Static NAT and Dynamic NAT both require a one-to-one mapping from the inside local to the inside global address. By using PAT, you can have thousands of users connect to the Internet using only one real global IP address. PAT is the technology that helps us not run out of public IP address on the Internet.

This is the most popular type of NAT.

An example of using “overload” keyword is shown below:

```
R1(config)# ip nat inside source list 1 interface ethernet1 overload
```

172. Which two pieces of information can you learn by viewing the routing table? (Choose two)

- A. whether an ACL was applied inbound or outbound to an interface
- B. the EIGRP or BGP autonomous system
- C. whether the administrative distance was manually or dynamically configured
- D. Which neighbor adjacencies are established
- E. the length of time that a route has been known

Correct Answer: CE

173. Which NAT term is defined as a group of addresses available for NAT use?

- A. NAT pool
- B. dynamic NAT
- C. static NAT
- D. one-way NAT

Correct Answer: A

174. Which command is used to enable LLDP globally on a Cisco IOS ISR?

- A. lldp run
- B. lldp enable
- C. lldp transmit
- D. cdp run
- E. cdp enable

Correct Answer: A

Explanation/Reference: Link Layer Discovery Protocol (LLDP) is a industry standard protocol that allows devices to advertise, and discover connected devices, and their capabilities (same as CDP of Cisco). To enable it on Cisco devices, we have to use this command under global configuration mode:
Sw(config)# lldp run

175. Refer to the exhibit. After you apply the given configurations to R1 and R2 you notice that OSPFv3 fails to start. Which reason for the problem is most likely true ?

```
R1
ipv6 unicast-routing
interface FastEthernet0/0
no ip address
ipv6 enable
 ipv6 address 3001:DBB:13::1/64
 ipv6 ospf 1 area 0
ipv6 router ospf 1
router-id 172.16.1.1

R2
ipv6 unicast-routing

interface FastEthernet0/0
no ip address
ipv6 enable
 ipv6 address 2001:DBB:12::12/64
 ipv6 ospf 1 area 3
ipv6 router ospf 1
router-id 172.16.3.3
```

- A. The area numbers on R1 and R2 are mismatched
- B. The IPv6 network addresses on R1 and R2 are mismatched
- C. The autonomous system numbers on R1 and R2 are mismatched
- D. The router ids on R1 and R2 are mismatched

Correct Answer: A

- 176. Which command must be entered when a device is configured as an NTP server?**

- A. ntp sever
- B. ntp peer
- C. ntp authenticate
- D. ntp master

Correct Answer: D

Explanation/Reference: To configure a Cisco device as an Authoritative NTP Server, use the `ntp master [stratum]` command. To configure a Cisco device as a NTP client, use the command `ntp server <IP address>`. For example:
Router(config)#ntp server 192.168.1.1. This command will instruct the router to query 192.168.1.1 for the time.

- 177. Which feature or protocol determines whether the QoS on the network is sufficient to support IP services?**

- A. LLDP

- B. CDP
- C. IP SLA
- D. EEM

Correct Answer: C

Explanation/Reference: IP SLA allows an IT professional to collect information about network performance in real time. Therefore it helps determine whether the QoS on the network is sufficient for IP services or not.

Cisco IOS Embedded Event Manager (EEM) is a powerful and flexible subsystem that provides realtime network event detection and onboard automation. It gives you the ability to adapt the behavior of your network devices to align with your business needs.

178. Refer to the exhibit. Which feature is enabled by this configuration?

```
R1(config)#ip nat pool cisco 10.1.1.0 10.1.1.50 255.255.255.0
```

- A. static NAT translation
- B. a DHCP pool
- C. a dynamic NAT address pool
- D. PAT

Correct Answer: C

179. In a CDP environment, what happens when the CDP interface on an adjacent device is configured without an IP address?

- A. CDP becomes inoperable on that neighbor
- B. CDP uses the IP address of another interface for that neighbor
- C. CDP operates normally, but it cannot provide IP address information for that neighbor
- D. CDP operates normally, but it cannot provide any information for that neighbor

Correct Answer: C

Explanation/Reference: Although CDP is a Layer 2 protocol but we can check the neighbor IP address with the “show cdp neighbor detail” command. If the neighbor does not has an IP address then CDP still

operates without any problem.

But the IP address of that neighbor is not provided.

180. Which two statements about NTP operations are true? (Choose two.)

- A. NTP uses UDP over IP.
- B. Cisco routers can act as both NTP authoritative servers and NTP clients.
- C. Cisco routers can act only as NTP servers.
- D. Cisco routers can act only as NTP clients.
- E. NTP uses TCP over IP.

Correct Answer: AB

181. Which command should you enter to configure an LLDP delay time of 5 seconds?

- A. 11dp timer 5000
- B. 11dp holdtime 5
- C. 11dp reinit 5000
- D. 11dp reinit 5

Correct Answer: D

Explanation/Reference:

+ 11dp holdtime seconds: Specify the amount of time a receiving device should hold the information from your device before discarding it
+ 11dp reinit delay: Specify the delay time in seconds for LLDP to initialize on an interface
+ 11dp timer rate: Set the sending frequency of LLDP updates in seconds
Reference: [Click here](#)

182. Which value is used to determine the active router in an HSRP default configuration?

- A. Router loopback address
- B. Router IP address
- C. Router priority
- D. Router tracking number

Correct Answer: B

Explanation/Reference: In the case of an equal priority, the router with the highest IP address for the respective group is elected as active. Furthermore, if there are more than two routers in the group, the second highest IP address determines the standby router and the other router/routers are in the listen state.

183. Which statement about Cisco Discovery Protocol is true?

- A. It is a Cisco-proprietary protocol.
- B. It runs on the network layer.
- C. It can discover information from routers, firewalls, and switches.
- D. It runs on the physical layer and the data link layer.

Correct Answer: A

184. Which value can you modify to configure a specific interface as the preferred forwarding interface?

- A. The interface number
- B. The port priority
- C. The VLAN priority
- D. The hello time

Correct Answer: B

185. When configuring an EtherChannel bundle, which mode enables LACP only if a LACP device is detected?

- A. Passive
- B. Desirable
- C. On
- D. Auto
- E. Active

Correct Answer: A

Explanation/Reference: The LACP is Link Aggregation Control Protocol. LACP is an open protocol, published under the 802.3ad.

The modes of LACP are active, passive or on. The side configured as “passive” will waiting the other side that should an Active for the Etherchannel to be established.

PAgP is Port-Aggregation Protocol. It is Cisco proprietary protocol. The mode are On, Desirable or Auto. Desirable - Auto will establish a EtherChannel.

An example of how to configure an Etherchannel:

```
SwitchFormulal>enable
SwitchFormulal#configure terminal SwitchFormulal(config)#
interface range f0/5 -14 SwitchFormulal(config-if-range)#
channel-group 13 mode ? active Enable LACP
unconditionally
auto Enable PAgP only if a PAgP device is detected
desirable Enable PAgP unconditionally
on Enable Etherchannel only
passive Enable LACP only if a LACP device is detected
```

186. Which command should you enter to verify the priority of a router in an HSRP group?

- A. show hsrp
- B. show sessions
- C. show interfaces
- D. show standby

Correct Answer: D

Explanation/Reference: The following is sample output from the show standby command:

```
Router# show standby
```

```
Ethernet0/1 - Group 1
State is Active
  2 state changes, last state change 00:30:59
  Virtual IP address is 10.1.0.20
  Secondary virtual IP address 10.1.0.21
  Active virtual MAC address is 0004.4d82.7981
  Local virtual MAC address is 0004.4d82.7981 (bia)
  Hello time 4 sec, hold time 12 sec
  Next hello sent in 1.412 secs
  Gratuitous ARP 14 sent, next in 7.412 secs
  Preemption enabled, min delay 50 sec, sync delay 40 sec
  Active router is local
  Standby router is 10.1.0.6, priority 75 (expires in 9.184 sec)
Priority 95 (configured 120)
  Tracking 2 objects, 0 up
  Down Interface Ethernet0/2, pri 15
  Down Interface Ethernet0/3
Group name is "HSRP1" (cfgd)
Follow by groups:
  Et1/0.3 Grp 2 Active 10.0.0.254 0000.0c07.ac02 refresh 30 secs (nex
  Et1/0.4 Grp 2 Active 10.0.0.254 0000.0c07.ac02 refresh 30 secs (nex
  Group name is "HSRP1", advertisement interval is 34 sec
```

187. Refer to the exhibit. Which Command do you enter so that R1 advertises the loopback0 interface to the BGP Peers?

```
R1
interface Loopback0
ip address 172.16.1.33 255.255.255.224

interface FastEthernet0/0
ip address 192.168.12.1 255.255.255.0

router bgp 100
neighbor 192.168.12.2 remote-as 100
```

- A. Network 172.16.1.32 mask 255.255.255.224
- B. Network 172.16.1.0 0.0.0.255
- C. Network 172.16.1.32 255.255.224
- D. Network 172.16.1.33 mask 255.255.255.224
- E. Network 172.16.1.32 mask 0.0.0.31
- F. Network 172.16.1.32 0.0.0.31

Correct Answer: A

188. For what two purposes does the Ethernet protocol use physical addresses?

- 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

189. Which command is used to display the collection of OSPF link states?

- A. show ip ospf link-state
- B. show ip ospf lsa database
- C. show ip ospf neighbors
- D. show ip ospf database

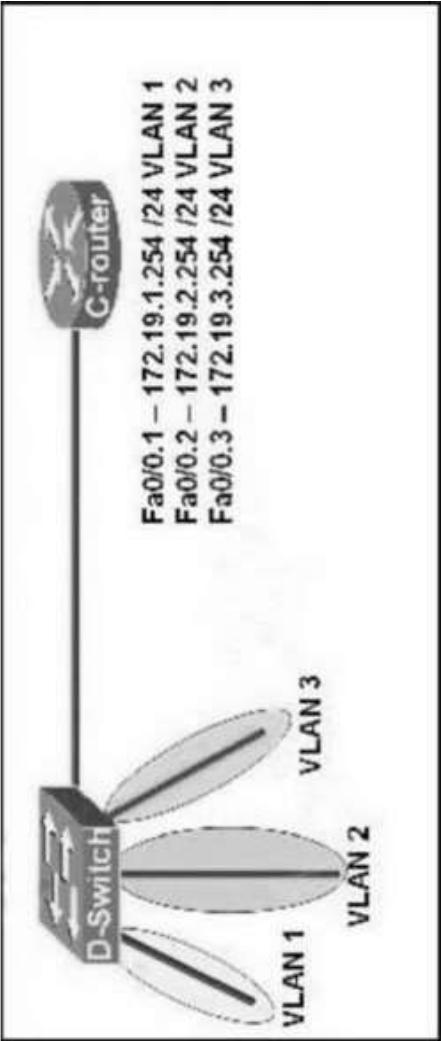
Correct Answer: D

Explanation/Reference: The “show ip ospf database” command displays the link states. Here is an example:
Here is the lsa database on R2.

```
R2#show ip ospf database  
OSPF Router with ID (2.2.2.2) (Process ID 1)  
Router Link States (Area 0)  
Link ID ADV Router Age Seq# Checksum Link count2.2.2.2.2.2.2 793  
0x80000003 0x04F85 210.4.4.10.4.4 776 0x80000004 0x005643  
1111.111.111.111.111.111.111.111 755 0x80000005 0x0059CA  
2133.133.133.133.133.133.133.133 775 0x80000005 0x00B5B1 2 Net Link  
States (Area 0) Link ID ADV Router Age Seq# Checksum10.1.1.1  
111.111.111.111.794 0x80000001 0x001E8B10.2.2.3 133.133.133.812  
0x80000001 0x004BA910.4.4.1 111.111.111.755 0x80000001  
0x007F1610.4.4.3 133.133.133.775 0x80000001 0x00C31F
```

190. Refer to the exhibit. C-router is to be used as a “router-on-a-stick” to route between the VLANs. All the interfaces have been properly configured and IP routing is operational. The hosts in the

VLANs have been configured with the appropriate default gateway.
What is true about this configuration?



- A. These commands need to be added to the configuration:

```
C-router(config)# router eigrp 123  
C-router(config-router)# network 172.19.0.0
```
- B. These commands need to be added to the configuration:

```
C-router(config)# router ospf 1  
C-router(config-router)# network 172.19.0.0 0.0.3.255
```
- C. These commands need to be added to the configuration:

```
C-router(config)# router rip  
C-router(config-router)# network 172.19.0.0
```
- D. No further routing configuration is required.

Correct Answer: D

Explanation/Reference: Since all the same router (C-router) is the default gateway for all three VLANs, all traffic destined to a different VLAN 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.

191. A user configured OSPF in a single area between two routers A serial interface connecting R1 and R2 is running encapsulation PPP. By default which OSPF network type is seen on this interface when the user types show ip ospf interface on R1 or R2?

- A. port-to-multipoint
- B. broadcast
- C. point-to-point

- D. non-broadcast

Correct Answer: C

Explanation/Reference: The default OSPF network type for HDLC and PPP on Serial link is point-to-point (while the default OSPF network type for Ethernet link is Broadcast).

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

Gateway of last resort is not set	
D	192.168.25.0/30 is subnetted, 4 subnets
D	D 192.168.25.20 [90/2681856] via 192.168.15.5, 00:00:10, Serial0/1
D	D 192.168.25.16 [90/1823638] via 192.168.15.5, 00:00:50, Serial0/1
D	D 192.168.25.24 [90/3837233] via 192.168.15.5, 00:05:23, Serial0/1
D	D 192.168.25.28 [90/8127323] via 192.168.15.5, 00:06:45, Serial0/1
C	C 192.168.15.4/30 is directly connected, Serial0/1
C	C 192.168.2.0/24 is directly connected, FastEthernet0/0

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

Correct Answer: C

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 $2^8 = 256$ but 12 is not an exponentiation of 2 so we must choose 16 (24). Therefore the subnet mask is /28 ($=1111\ 1111\ 1111.\ 1111\ 1111\ 1100\ 0000$) = 255.255.255.240

So the best answer should be 192.168.25.16 255.255.240

193. 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.

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.)

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#						

- A. FastEthernet0 /0
- B. FastEthernet0 /1
- C. Serial0/0
- D. Serial0/1. 102
- E. Serial0/1. 103
- F. Serial0/1. 104

Correct Answer: BCD

Explanation/Reference: The “network 192.168.12.64 0.0.0.63 equals to network 192.168.12.64/26. This network has:
+ Increment: 64 (/26= 1111 1111. 1111 1111 1111 1100 0000) + Network address:
192.168.12.64

+ Broadcast address: 192.168.12.127
Therefore all interface in the range of this network will join OSPF.

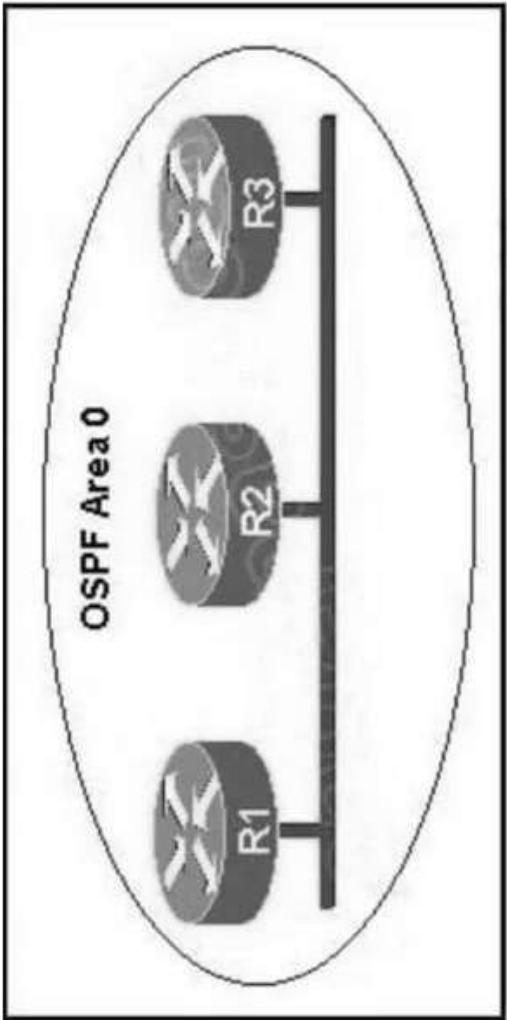
194. A network administrator is troubleshooting the OSPF configuration of routers R1 and R2. The routers cannot establish an adjacency relationship on their common Ethernet link. The graphic shows the output of the show ip ospf interface e0 command for routers R1 and R2. Based on the information in the graphic, what is the cause of this problem?

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

- A. The OSPF area is not configured properly.
- B. The OSPF area is not configured properly.
- 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

195. 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

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);

196. 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

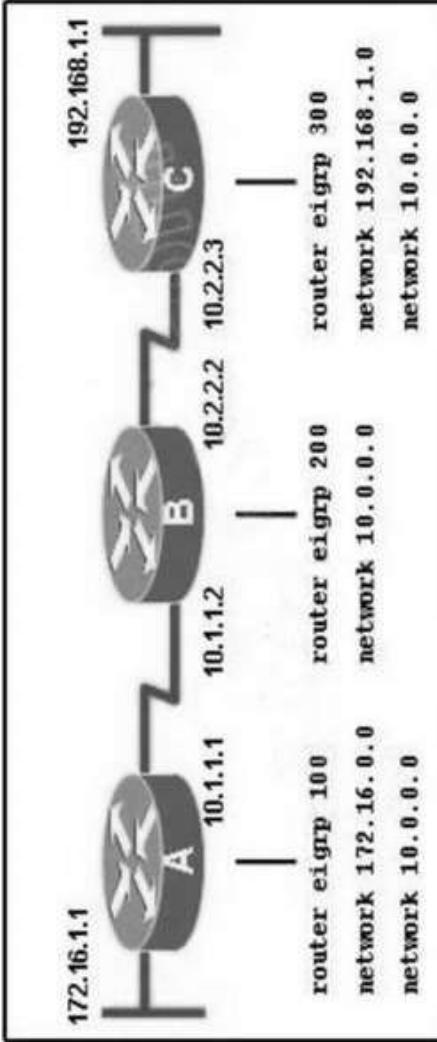
- A. 10. 1. 1. 2
 - B. 10. 154. 154. 1
 - C. 172. 16. 5. 1
 - D. 192. 168. 5. 3

Correct Answer: C

Explanation/Reference: The highest IP address of all loopback

interfaces will be chosen \Rightarrow Loopback 0 will be chosen as the router ID.

197. 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

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.

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

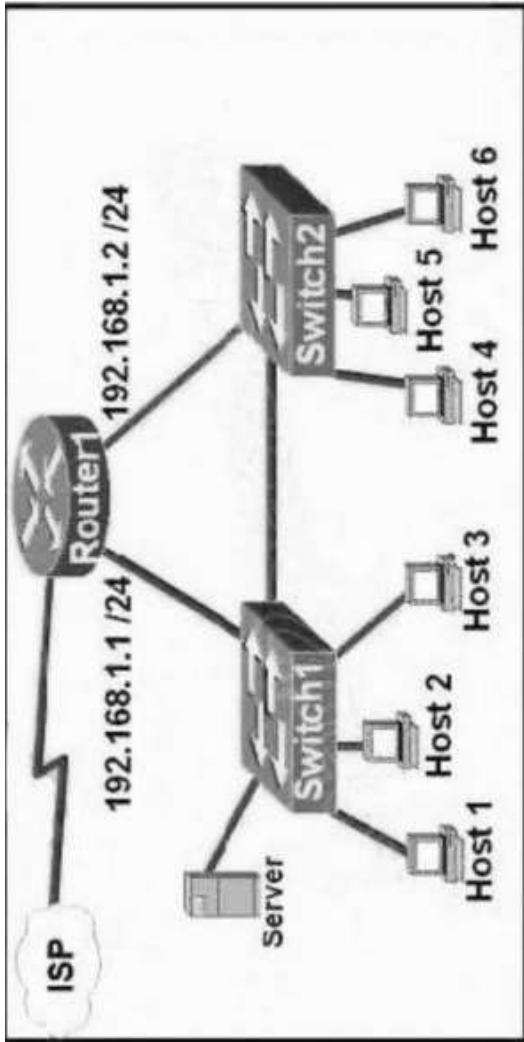
Router# show ip dhcp conflict			
IP address	Detection method	Detection time	
172.16.1.32	Ping	Feb 16	1998 12:28 PM
172.16.1.64	Gratuitous ARP	Feb 23	1998 08:12 AM

- 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

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.

199. 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

Explanation/Reference: Each interface on a router must be in a different network. If two interfaces are in the same network, the router will not accept it and show error when the administrator assigns it.

200. What benefit does controller-based networking provide versus traditional networking?

- A. moves from a two-tier to a three-tier network architecture to provide maximum redundancy
- B. provides an added layer of security to protect from DDoS attacks
- C. allows configuration and monitoring of the network from one centralized point
- D. combines control and data plane functionality on a single device to minimize latency

Correct Answer: C

201. A network engineer must create a diagram of a multivendor network. Which command must be configured on the Cisco devices so that the topology of the network can be mapped?

- A. Device (Config)#lldp run
- B. Device (Config)#cdp run
- C. Device (Config-if)#cdp enable
- D. Device (Config)#flow-sampler-map topology

Correct Answer: A

**202. What are two descriptions of three-tier network topologies?
(Choose two)**

- A. The core and distribution layers perform the same functions
- B. The access layer manages routing between devices in different domains
- C. The network core is designed to maintain continuous connectivity when devices fail.
- D. The core layer maintains wired connections for each host
- E. The distribution layer runs Layer 2 and Layer 3 technologies

Correct Answer: CE

203. What is the expected outcome when an EUI-64 address is generated?

- A. The seventh bit of the original MAC address of the interface is inverted
- B. The interface ID is configured as a random 64-bit value
- C. The characters FE80 are inserted at the beginning of the MAC address of the interface
- D. The MAC address of the interface is used as the interface ID without modification

Correct Answer: A

204. Which function does an SNMP agent perform?

- A. it sends information about MIB variables in response to requests from the NMS
- B. it coordinates user authentication between a network device and a TACACS+ or RADIUS server
- C. it requests information from remote network nodes about catastrophic system events.

- D. it manages routing between Layer 3 devices in a network

Correct Answer:A

205. R1 has learned route 10.10.0/24 via numerous routing protocols. Which route is installed?

- A. route with the lowest cost
- B. route with the next hop that has the highest IP
- C. route with the shortest prefix length
- D. route with the lowest administrative distance

Correct Answer:D

206. What is a characteristic of spine-and-leaf architecture?

- A. Each device is separated by the same number of hops
- B. It provides variable latency
- C. It provides greater predictability on STP blocked ports.
- D. Each link between leaf switches allows for higher bandwidth.

Correct Answer:A

207. Which action must be taken to assign a global unicast IPv6 address on an interface that is derived from the MAC address of that interface?

- A. configure a stateful DHCPv6 server on the network
- B. enable SLAAC on an interface
- C. disable the EUI-64 bit process
- D. explicitly assign a link-local address

Correct Answer:B

208. Refer to the exhibit. Router R1 is running three different routing protocols. Which route characteristic is used by the router to forward the packet that it receives for destination IP 172.16.32.1?

```
R1# show ip route
...
D 172.16.32.0/27 [90/2888597172] via 20.1.1.1
O 172.16.32.0/19 [110/292094] via 20.1.1.10
R 172.16.32.0/24 [120/2] via 20.1.1.3
```

- A. longest prefix
- B. metric
- C. cost
- D. administrative distance

Correct Answer: A

209. Router R1 **must** send all traffic without a matching routing-table entry to 192.168.1.1. Which configuration accomplishes this task?

- A. R1# config t
R1(config)# ip routing
R1(config)# ip route default-route 192.168.1.1
- B. R1# config t
R1(config)# ip routing
R1(config)# ip route 192.168.1.1 0.0.0.0 0.0.0.0
- C. R1# config t
R1(config)# ip routing
R1(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.1
- D. R1# config t
R1(config)# ip routing
R1(config)# ip default-gateway 192.168.1.1

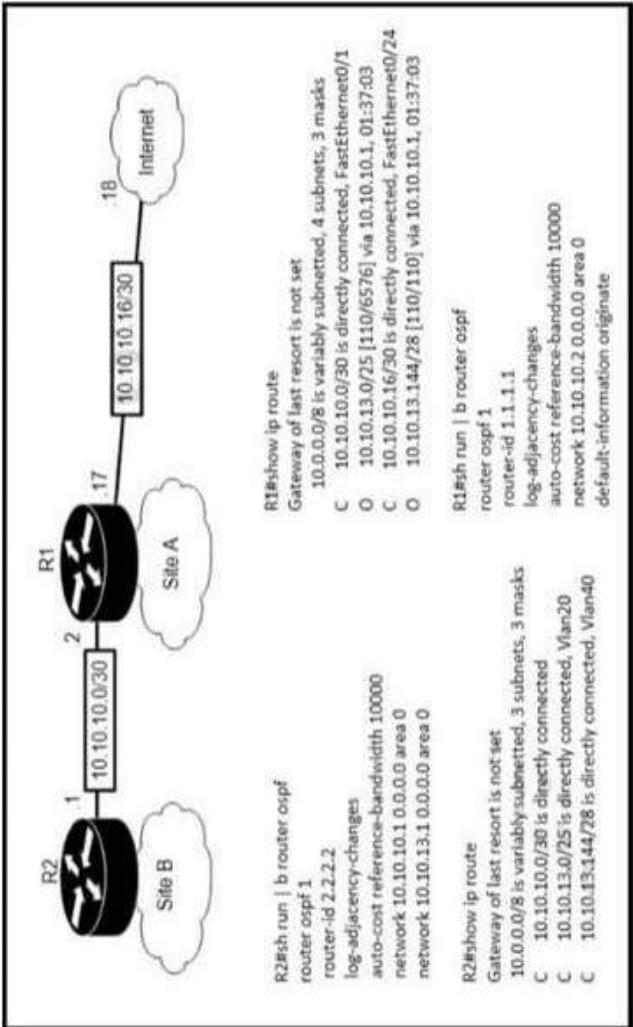
Correct Answer: C

210. Which WPA3 enhancement protects against hackers viewing traffic on the Wi-Fi network?

- A. TKIP encryption
- B. AES encryption
- C. scrambled encryption key
- D. SAE encryption

Correct Answer: D

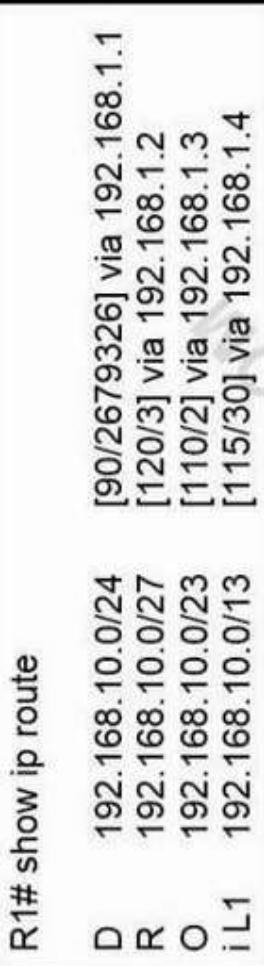
211. Refer to the exhibit. An engineer is bringing up a new circuit to the MPLS provider on the Gi0/1 interface of Router1. The new circuit uses eBGP and teams the route to VLAN25 from the BGP path. What is the expected behavior for the traffic flow for route 10.10.13.0/25?



- A. Traffic to 10.10.13.0.25 is load balanced out of multiple interfaces
- B. Route 10.10.13.0/25 is updated in the routing table as being learned from interface Gi0/1.
- C. Traffic to 10.10.13.0/25 is asymmetrical
- D. Route 10.10.13.0/25 learned via the Gi0/0 interface remains in the routing table

Correct Answer: B

212. Refer to the exhibit. How does router R1 handle traffic to 192.168.10.16?



- A. It selects the IS-IS route because it has the shortest prefix inclusive of the destination address.
- B. It selects the EIGRP route because it has the lowest administrative distance.
- C. It selects the OSPF route because it has the lowest cost.

- D. It selects the RIP route because it has the longest prefix inclusive of the destination address.

Correct Answer:D

213. Refer to the exhibit.

Switch#show etherchannel summary [output omitted]				
Group	Port-channel	Protocol	Ports	
10	Po10 (SU)	LACP	Gi0/0 (P)	Gi0/1 (P)
20	Po20 (SU)	LACP	Gi0/2 (P)	Gi0/3 (P)

Which two commands were used to create port channel 10? (Choose two)

- A **int range g0/0-1
channel-group 10 mode active**
 - B **int range g0/0-1
channel-group 10 mode desirable**
 - C **int range g0/0-1
channel-group 10 mode passive**
 - D **int range g0/0-1
channel-group 10 mode auto**
 - E **int range g0/0-1
channel-group 10 mode on**
- A. Option A
 - B. Option B
 - C. Option C
 - D. Option D
 - E. Option E

Correct Answer:AC

214. What is a difference between RADIUS and TACACS+?

- A. RADIUS is most appropriate for dial authentication, but TACACS+ can be used for multiple types of authentication
- B. TACACS+ encrypts only password information and RADIUS encrypts the entire payload
- C. TACACS+ separates authentication and authorization, and RADIUS merges them
- D. RADIUS logs all commands that are entered by the administrator, but TACACS+ logs only start, stop, and interim commands

*Correct Answer:*C

215. Refer to the exhibit. How does the router manage traffic to 192.168.12.16?

EIGRP: 192.168.12.0/24
RIP: 192.168.12.0/27
OSPF: 192.168.12.0/28

- A. It selects the RIP route because it has the longest prefix inclusive of the destination address.
- B. It chooses the OSPF route because it has the longest prefix inclusive of the destination address.
- C. It load-balances traffic between all three routes
- D. It chooses the EIGRP route because it has the lowest administrative distance

*Correct Answer:*A

216. What is an advantage of Cisco DNA Center versus traditional campus device management?

- A. It supports numerous extensibility options including cross-domain adapters and third-party SDKs.
- B. It supports high availability for management functions when operating in cluster mode.
- C. It enables easy autodiscovery of network elements in a brownfield deployment.
- D. It is designed primarily to provide network assurance.

*Correct Answer:*A

217. While examining excessive traffic on the network, it is noted that all incoming packets on an interface appear to be allowed even though an IPv4 ACL is applied to the interface. Which two misconfigurations cause this behavior? (Choose two)

- A. The packets fail to match any permit statement
- B. A matching permit statement is too high in the access test
- C. A matching permit statement is too broadly defined
- D. The ACL is empty
- E. A matching deny statement is too high in the access list

Correct Answer: BC

218. How do traditional campus device management and Cisco DNA Center device management differ in regards to deployment?

- A. Cisco DNA Center device management can deploy a network more quickly than traditional campus device management
- B. Traditional campus device management allows a network to scale more quickly than with Cisco DNA Center device management
- C. Cisco DNA Center device management can be implemented at a lower cost than most traditional campus device management options
- D. Traditional campus device management schemes can typically deploy patches and updates more quickly than Cisco DNA Center device management

Correct Answer: A

219. How do AAA operations compare regarding user identification, user services and access control?

- A. Authorization provides access control and authentication tracks user services
- B. Authentication identifies users and accounting tracks user services
- C. Accounting tracks user services, and authentication provides access control
- D. Authorization identifies users and authentication provides access control

Correct Answer: B

220. What is a difference between local AP mode and FlexConnect AP mode?

- A. Local AP mode creates two CAPWAP tunnels per AP to the WLC
- B. FlexConnect AP mode fails to function if the AP loses connectivity with the WLC
- C. FlexConnect AP mode bridges the traffic from the AP to the WLC when local switching is configured
- D. Local AP mode causes the AP to behave as if it were an autonomous AP

Correct Answer:A

221. Which function does the range of private IPv4 addresses perform?

- A. allows multiple companies to each use the same addresses without conflicts
- B. provides a direct connection for hosts from outside of the enterprise network
- C. ensures that NAT is not required to reach the internet with private range addressing
- D. enables secure communications to the internet for all external hosts

Correct Answer:A

222. What event has occurred if a router sends a notice level message to a syslog server?

- A. A TCP connection has been torn down
- B. An ICMP connection has been built
- C. An interface line has changed status
- D. A certificate has expired.

Correct Answer:C

223. Refer to the exhibit. An administrator configures four switches for local authentication using passwords that are stored in a cryptographic hash. The four switches must also support SSH access for administrators to manage the network infrastructure. Which

switch is configured correctly to meet these requirements?

```
SW1(config-line) #line vty 0 15
SW1(config-line) #no login local
SW1(config-line) #password cisco

SW2(config) #username admin1 password abcd1234
SW2(config) #username admin2 password abcd1234
SW2(config-line) #line vty 0 15
SW2(config-line) #login local
```

```
SW3(config) #username admin1 secret abcd1234
SW3(config) #username admin2 secret abcd1234
SW3(config-line) #line vty 0 15
SW3(config-line) #login local
```

```
SW4(config) #username admin1 secret abcd1234
SW4(config) #username admin2 secret abcd1234
SW4(config-line) #line console 0
SW4(config-line) #login local
```

- A. SW1
- B. SW2
- C. SW3
- D. SW4

Correct Answer: C

224. What are two fundamentals of virtualization? (choose two)

- A. The environment must be configured with one hypervisor that serves solely as a network manager to monitor SNMP traffic
- B. It allows logical network devices to move traffic between virtual machines and the rest of the physical network
- C. It allows multiple operating systems and applications to run independently on one physical server.
- D. It allows a physical router to directly connect NICs from each virtual machine into the network
- E. It requires that some servers, virtual machines and network gear reside on the Internet

Correct Answer: BC

225. Refer to the exhibit. What two conclusions should be made about this configuration? (Choose two)

```
SW1#show spanning-tree vlan 30
VLAN0030
  Spanning tree enabled protocol rstp
    Root ID Priority 32798
      Address 0025.63e9.c800
      Cost 19
      Port 1 (FastEthernet 2/1)
      Hello Time 2 sec
      Max Age 30 sec
      Forward Delay 20 sec
  [Output suppressed]
```

- A. The designated port is FastEthernet 2/1
- B. This is a root bridge
- C. The spanning-tree mode is Rapid PVST+
- D. The spanning-tree mode is PVST+
- E. The root port is FastEthernet 2/1

Correct Answer: CE

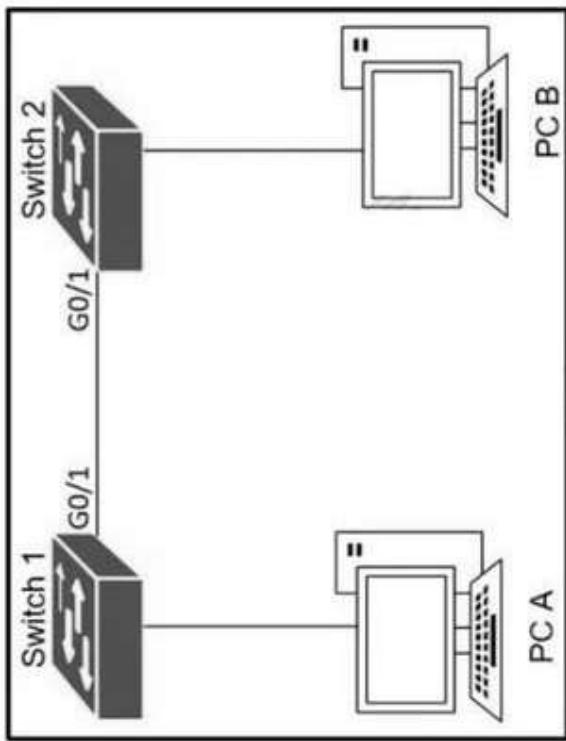
226. Refer to the exhibit. A router reserved these five routes from different routing information sources. Which two routes does the router install in its routing table? (Choose two)

```
iBGP route 10.0.0.0/30
RIP route 10.0.0.0/30
OSPF route 10.0.0.0/16
OSPF route 10.0.0.0/30
EIGRP route 10.0.0.1/32
```

- A. RIP route 10.0.0.0/30
- B. iBGP route 10.0.0.0/30
- C. OSPF route 10.0.0.0/30
- D. EIGRP route 10.0.0.1/32
- E. OSPF route 10.0.0.0/16

Correct Answer: CD

227. Refer to the exhibit. The network administrator wants VLAN 67 traffic to be untagged between Switch 1 and Switch 2 while all other VLANs are to remain tagged. Which command accomplishes this task?



- A. switchport access vlan 67
- B. switchport trunk allowed vlan 67
- C. switchport private-vlan association host 67
- D. switchport trunk native vlan 67

Correct Answer:D

228. What are two differences between optical-fiber cabling and copper cabling? (Choose two)

- A. Light is transmitted through the core of the fiber
- B. A BNC connector is used for fiber connections
- C. The glass core component is encased in a cladding
- D. Fiber connects to physical interfaces using RJ-45 connections
- E. The data can pass through the cladding

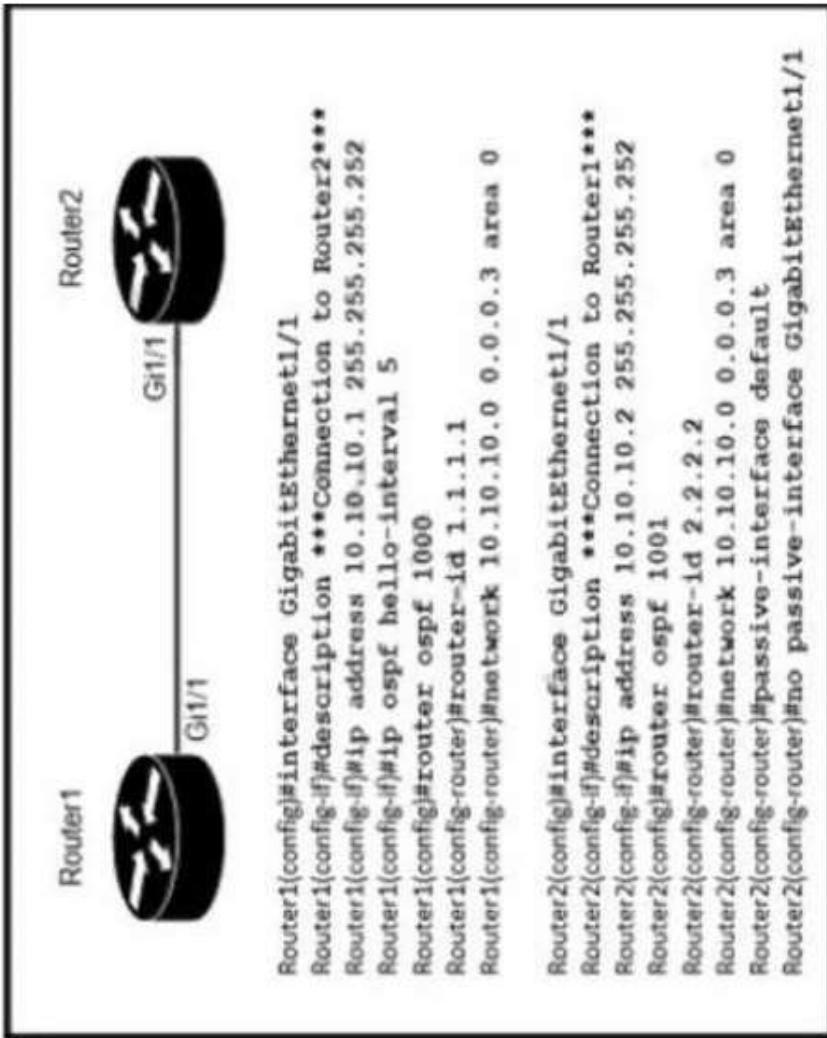
Correct Answer:AC

229. Which two minimum parameters must be configured on an active interface to enable OSPFv2 to operate? (Choose two)

- A. OSPF area
- B. OSPF MD5 authentication key
- C. IPv6 address
- D. OSPF process ID
- E. OSPF stub flag

*Correct Answer:*A

230. Refer to the exhibit. Refer to the exhibit. After the configuration is applied, the two routers fail to establish an OSPF neighbor relationship. what is the reason for the problem?



- A. The OSPF router IDs are mismatched.
- B. Router2 is using the default hello timer.
- C. The network statement on Router1 is misconfigured.
- D. The OSPF process IDs are mismatched.

*Correct Answer:*B

231. How do TCP and UDP differ in the way they provide reliability for delivery of packets?

- A. TCP is a connectionless protocol that does not provide reliable delivery of data, UDP is a connection-oriented protocol that uses sequencing to provide reliable delivery.
- B. TCP does not guarantee delivery or error checking to ensure that there is no corruption of data UDP provides message acknowledgement and retransmits data if lost.

- C. TCP provides flow control to avoid overwhelming a receiver by sending too many packets at once, UDP sends packets to the receiver in a continuous stream without checking for sequencing
- D. TCP uses windowing to deliver packets reliably; UDP provides reliable message transfer between hosts by establishing a three-way handshake

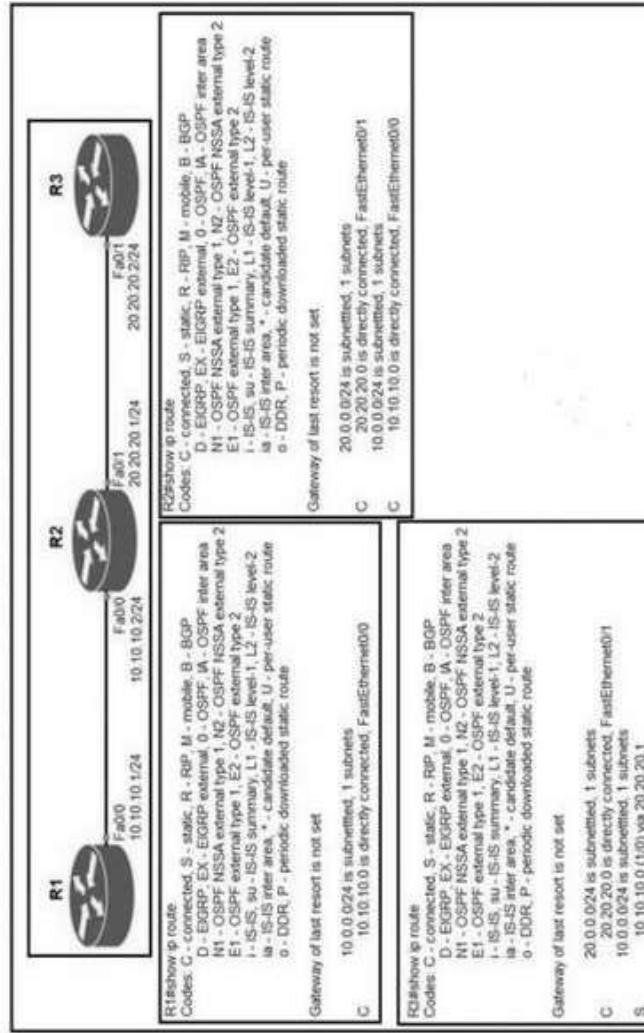
Correct Answer:C

- 232.** A packet is destined for 10.10.1.22. Which static route does the router choose to forward the packet?

- A. ip route 10.10.1.0 255.255.240 10.10.255.1
- B. ip route 10.10.1.16 255.255.252 10.10.255.1
- C. ip route 10.10.1.20 255.255.252 10.10.255.1
- D. ip route 10.10.1.20 255.255.254 10.10.255.1

Correct Answer:C

- 233.** Refer to the exhibit. Router R1 Fa0/0 cannot ping router R3 Fa0/1. Which action must be taken in router R1 to help resolve the configuration issue?

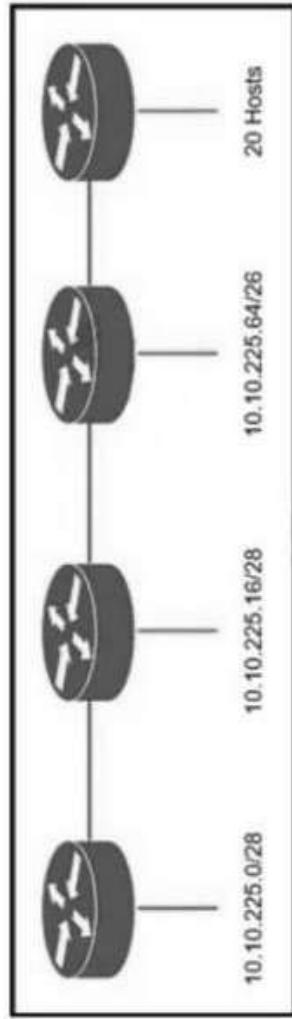


- A. set the default network as 20.20.20.0/24
- B. set the default gateway as 20.20.20.2

- C. configure a static route with Fa0/1 as the egress interface to reach the 20.20.0/24 network
- D. configure a static route with 10.10.10.2 as the next hop to reach the 20.20.0/24 network

Correct Answer:D

234. Refer to the exhibit. Refer to the exhibit. An engineer must add a subnet for a new office that will add 20 users to the network. Which IPv4 network and subnet mask combination does the engineer assign to minimize wasting addresses?



- A. 10.10.225.48 255.255.255.240
- B. 10.10.225.32 255.255.255.240
- C. 10.10.225.48 255.255.255.224
- D. 10.10.225.32 255.255.255.224

Correct Answer:D

235. A corporate office uses four floors in a building

- * Floor 1 has 24 users
- * Floor 2 has 29 users
- * Floor 3 has 28 users
- * Floor 4 has 22 users

Which subnet summarizes and gives the most efficient distribution of IP addresses for the router configuration?

- A. 192.168.0.0/26 as summary and 192.168.0.0/29 for each floor
- B. 192.168.0.0/24 as summary and 192.168.0.0/28 for each floor
- C. 192.168.0.0/23 as summary and 192.168.0.0/25 for each floor
- D. 192.168.0.0/25 as summary and 192.168.0.0/27 for each floor

Correct Answer:D

236. By default, how Does EIGRP determine the metric of a route for the routing table?

- A. it uses the bandwidth and delay values of the path to calculate the route metric
- B. it uses a default metric of 10 for all routes that are learned by the router
- C. it uses a reference Bandwidth and the actual bandwidth of the connected link to calculate the route metric
- D. it counts the number of hops between the receiving and destination routers and uses that value as the metric

Correct Answer: A

237. Refer to the exhibit. Which configuration issue is preventing the OSPF neighbor relationship from being established between the two routers?

```
R1#show running-config
Building configuration...
interface GigabitEthernet1/0
mtu 1600
ip address 192.168.0.1 255.255.255.252
negotiation auto

router ospf 1
router-id 1.1.1.1
passive-interface default
no passive-interface GigabitEthernet1/0
network 192.168.0.1 0.0.0.0 area 0

R2#show running-config
Building configuration...
interface GigabitEthernet2/0
ip address 192.168.0.2 255.255.255.252
negotiation auto

router ospf 1
router-id 2.2.2.2
passive-interface default
no passive-interface GigabitEthernet2/0
network 192.168.0.2 0.0.0.0 area 0
```

- A. R2 is using the passive-interface default command
- B. R1 has an incorrect network command for interface Gi1/0
- C. R2 should have its network command in area 1

- D. R1 interface Gig1/0 has a larger MTU size

Correct Answer:D

238. What are two roles of the Dynamic Host Configuration Protocol (DHCP)? (Choose two)

- A. The DHCP server offers the ability to exclude specific IP addresses from a pool of IP addresses
- B. The DHCP client can request up to four DNS server addresses
- C. The DHCP server assigns IP addresses without requiring the client to renew them
- D. The DHCP server leases client IP addresses dynamically.
- E. The DHCP client maintains a pool of IP addresses it can assign.

Correct Answer:AD

239. How does CAPWAP communicate between an access point in local mode and a WLC?

- A. The access point must directly connect to the WLC using a copper cable
- B. The access point must not be connected to the wired network, as it would create a loop
- C. The access point must be connected to the same switch as the WLC
- D. The access point has the ability to link to any switch in the network, assuming connectivity to the WLC

Correct Answer:D

240. Refer to the exhibit. Which action is expected from SW1 when the untagged frame is received on the GigabitEthernet0/1 interface?

```
SW1#show run int gig 0/1
interface GigabitEthernet0/1
switchport access vlan 11
switchport trunk allowed vlan 1-10
switchport trunk encapsulation dot1q
switchport trunk native vlan 5
switchport mode trunk
speed 1000
duplex full
```

- A. The frame is processed in VLAN 5.
- B. The frame is processed in VLAN 11
- C. The frame is processed in VLAN 1
- D. The frame is dropped

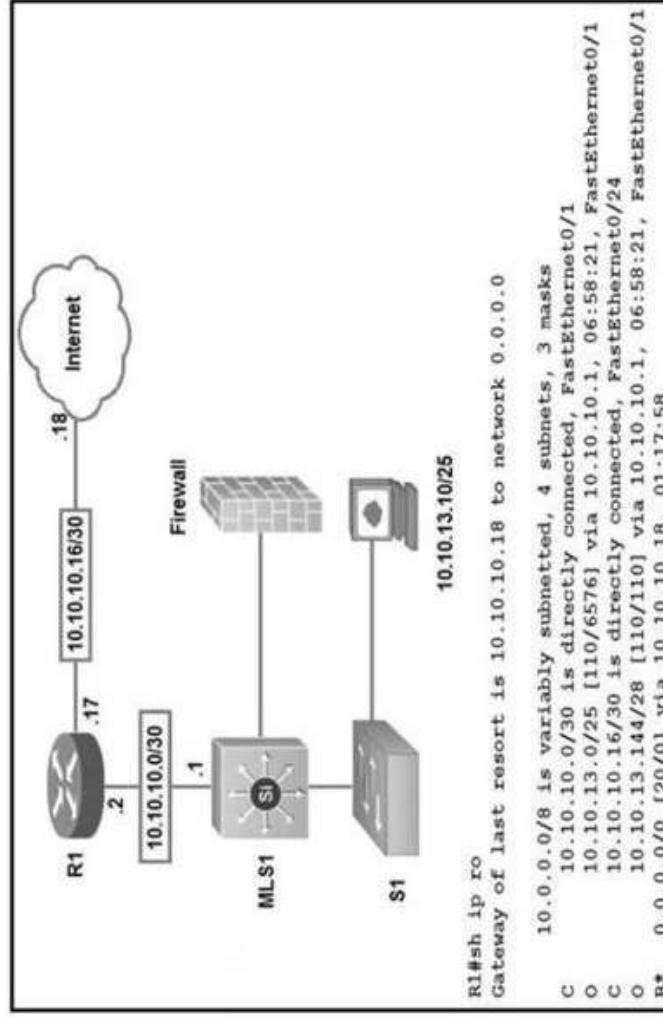
Correct Answer: A

241. What are two reasons for an engineer to configure a floating state route? (Choose two)

- A. to automatically route traffic on a secondary path when the primary path goes down
- B. to route traffic differently based on the source IP of the packet
- C. to enable fallback static routing when the dynamic routing protocol fails
- D. to support load balancing via static routing
- E. to control the return path of traffic that is sent from the router

Correct Answer: AC

242. Refer to the exhibit. Which route type is configured to reach the internet?



- A. floating static route
- B. host route

- C. default route
- D. network route

Correct Answer:C

243. How does Cisco DNA Center gather data from the network?

- A. Network devices use different services like SNMP, syslog, and streaming telemetry to send data to the controller
- B. Devices establish an ipsec tunnel to exchange data with the controller
- C. Devices use the call-home protocol to periodically send data to the controller.
- D. The Cisco CU Analyzer tool gathers data from each licensed network device and streams it to the controller.

Correct Answer:A

244. What is the difference regarding reliability and communication type between TCP and UDP?

- A. TCP is reliable and is a connection-oriented protocol; UDP is not reliable and is a connectionless protocol
- B. TCP is not reliable and is a connection-oriented protocol; UDP is reliable and is a connectionless protocol
- C. TCP is not reliable and is a connectionless protocol; UDP is reliable and is a connection-oriented protocol
- D. TCP is reliable and is a connectionless protocol; UDP is not reliable and is a connection-oriented protocol

Correct Answer:A

245. Several new coverage cells are required to improve the Wi-Fi network of an organization. Which two standard designs are recommended? (Choose two.)

- A. 5GHz provides increased network capacity with up to 23 nonoverlapping channels.
- B. 5GHz channel selection requires an autonomous access point.
- C. Cells that overlap one another are configured to use nonoverlapping channels.
- D. Adjacent cells with overlapping channels use a repeater access point.
- E. For maximum throughput, the WLC is configured to dynamically set adjacent access points to the channel.