642-883.v12.39

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Exam Code: 642-883

Exam Name: Deploying Cisco Service Provider Network Routing (SPROUTE)

Version: 12.39

Exam A

QUESTION 1
Refer to the OSPF command exhibit. Which effect does the no-summary command option have?

```
RP/0/RSP0/CPU0:P1(config-ospf)#area 1 stub no-summary
```

A. It will cause area 1 to be able to receive non-summarized inter-area routes.
B. It will cause area 1 to not receive any inter-area routes and will use a default route to reach networks in other areas.
C. It will cause area 1 to not receive any external routes and will use a default route to reach the external networks.
D. It will convert the NSSA area into a NSSA totally stubby area.
E. It will convert the stubby area into a NSSA.
F. It will disable OSPF auto-summary.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

To define an area as a stub area, use the **area stub** command in router configuration mode. To disable this function, use the **no** form of this command.

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub**

no area *area-id*

Syntax Description

area-id	Identifier for the stub area; either a decimal value or an IP address.
no-summary	(Optional) Prevents an ABR from sending summary link advertisements into the stub area.

Defaults

No stub area is defined.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

You must configure the **area stub** command on all routers and access servers in the stub area. Use the **area** router configuration command with the **default-cost** option to specify the cost of a default internal router sent into a stub area by an area border router.

There are two stub area router configuration commands: the **stub** and **default-cost** options of the **area** router configuration command. In all routers attached to the stub area, the area should be configured as a stub area using the **stub** option of the **area** command. Use the **default-cost** option only on an ABR attached to the stub area. The **default-cost** option provides the metric for the summary default route generated by the area border router into the stub area.

To further reduce the number of link state advertisements (LSAs) sent into a stub area, you can configure **no-summary** on the ABR to prevent it from sending summary LSAs (LSA type 3) into the stub area.

QUESTION 2

When troubleshooting OSPF neighbor errors, which three verification steps should be considered? (Choose three.)

A. Verify if neighboring OSPF interfaces are configured in the same area.
B. Verify if neighboring OSPF interfaces are configured with the same OSPF process ID.
C. Verify if neighboring OSPF interfaces are configured with the same OSPF priority.
D. Verify if neighboring OSPF interfaces are configured with the same hello and dead intervals.
E. Verify if neighboring OSPF interfaces are configured with the same area type.

Correct Answer: ADE
Section: (none)
Explanation

QUESTION 3
On Cisco IOS XR Software, which set of commands is used to enable the gi0/0/0/1 interface for OSPF in area 0?

A. interface gi0/0/0/0
ip address 10.1.1.1 255.255.255.0
!
router ospf 1
network 10.1.1.1 0.0.0.0 area 0
B. interface gi0/0/0/0
ip address 10.1.1.1 255.255.255.0
!
router ospf 1
network 10.1.1.1 255.255.255.255 area 0
C. router ospf 1
area 0
interface GigabitEthernet0/0/0/1
D. interface gi0/0/0/0
ip address 10.1.1.1 255.255.255.0
ip ospf 1 area 0
E. router ospf 1
address-family ipv4 unicast
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interface GigabitEthernet0/0/0/1 area 0
F. router ospf 1
address-family ipv4 unicast
interface GigabitEthernet0/0/0/1
area 0

Correct Answer: C
Section: (none)
Explanation

QUESTION 4
Which three statements are true regarding the OSPF router ID? (Choose three.)

A. The OSPF routing process chooses a router ID for itself when it starts up.
B. The router-id command is the preferred procedure to set the router ID.
C. If a loopback interface is configured, its address will always be preferred as the router ID over any other methods.
D. After the router ID is set, it does not change, even if the interface that the router is using for the router ID goes down. The router ID changes only if the router reloads or if the OSPF routing process restarts.
E. In OSPF version 3, the OSPF router ID uses a 128-bit number.

Correct Answer: ABD
Section: (none)
Explanation

QUESTION 5
Which two OSPF network scenarios require OSPF virtual link configuration? (Choose two.)

A. to connect an OSPF non-backbone area to area 0 through another non-backbone area
B. to connect an NSSA area to an external routing domain
C. to connect two parts of a partitioned backbone area through a non-backbone area
D. to enable route leaking from Level 2 into Level 1
E. to enable route leaking from Level 1 into Level 2
F. to enable OSPF traffic engineering

Correct Answer: AC
Section: (none)
Explanation

QUESTION 6
What is function of the RP/0/RSP0/CPU0:PE1(config-ospf)#distance Cisco IOS-XR command?

A. To modify the administrative distance of the OSPF routes

B. To modify the default seed metric of the OSPF external routes
C. To modify the OSPF default reference bandwidth
D. To modify the OSPF cost

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios_xr_sw/iosxr_r3.8/routing/command/reference/rr38ospf.pdf

distance (OSPF)

To define an administrative distance, use the **distance** command in the appropriate mode. To remove the **distance** command from the configuration file and restore the system to its default condition in which the software removes a distance definition, use the **no** form of this command.

distance *weight* [*ip-address wildcard-mask* [*access-list-name*]]

no distance *weight ip-address wildcard-mask* [*access-list-name*]

Syntax Description

weight	Administrative distance. Range is 10 to 255. Used alone, the *weight* argument specifies a default administrative distance that the software uses when no other specification exists for a routing information source. Routes with a distance of 255 are not installed in the routing table. Table 1 lists the default administrative distances.
ip-address	(Optional) IP address in four-part, dotted-decimal notation.
wildcard-mask	(Optional) Wildcard mask in four-part, dotted decimal format. A bit set to 1 in the *mask* argument instructs the software to ignore the corresponding bit in the address value.
access-list-name	(Optional) Name of an IP access list to be applied to incoming routing updates.

QUESTION 7
Which four statements are correct regarding IS-IS operations? (Choose four.)

A. By default, Level 1 routers within an IS-IS area do not carry any routing information external to the area to which they belong. They use a default route to exit the area.
B. Summarization should be configured on the Level 2 routers, which injects the Level 2 routes "First Test, First Pass" - www.lead2pass.com 5 Cisco 642-883 Exam
into Level 1.
C. IS-IS supports "route leaking" in which selected Level 2 routes can be advertised by a Level 1/Level 2 router into Level 1.
D. The IS-IS backbone is a contiguous collection of Level 1 capable routers, each of which can be in a different area.
E. With IS-IS, an individual router is in only one area, and the border between areas is on the link that connects two routers that are in different areas.
F. Cisco IOS XR Software supports multitopology for IPv6 IS-IS unless single topology is explicitly configured in IPv6 address-family configuration mode.

Correct Answer: ACEF
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios_xr_sw/iosxr_r3.0/routing/configuration/guide/rc3isis.html#wp1148617

Single-Topology IPv6 Support

Single-topology IPv6 support on Cisco IOS XR software allows IS-IS for IPv6 to be configured on interfaces along with an IPv4 network protocol. All interfaces must be configured with the identical set of network protocols and all routers in the IS-IS area (for Level 1 routing) or the domain (for Level 2 routing) must support the identical set of network layer protocols on all interfaces.

When single-topology support for IPv6 is used, only narrow link metrics, also known as old-style type, length, value (TLV) arguments, may be employed. During single-topology operation, one shortest path first (SPF) computation per level is used to compute both IPv4 and IPv6 routes. Using a single SPF is possible because both IPv4 IS-IS and IPv6 IS-IS routing protocols share a common link topology.

Because multitopology is the default behavior in the software, you must explicitly configure IPv6 to use the same topology as IPv4 in order to enable single-topology IPv6. Configure the single-topology command in ipv6 address family configuration submode of the IS-IS router stanza.

Multitopology IPv6 Support

Multitopology IPv6 support on Cisco IOS XR software differs from Cisco IOS software in that IS-IS assumes that multitopology support is required as soon as it detects interfaces configured for both IPv6 and IPv4 within the IS-IS stanza.

You must use the metric-style wide command to configure IS-IS to wide link metrics as multitopology link advertisements.

QUESTION 8
When configuring IPv4 and IPv6 IS-IS routing on Cisco IOS XR routers, which three statements are correct? (Choose three.)

A. By default, a single SPF is used for both IPv4 and IPv6, so the IPv4 and IPv6 topology should be the same.
B. By default, the IS-IS router type is Level 1 and Level 2.
C. All IS-IS routers within the same IS-IS area must be configured with the same IS-IS routing process instance ID.
D. By default, metric-style narrow is used.
E. By default, the IS-IS interface circuit type is Level 1 and Level 2.
F. The area IS-IS address-family configuration command is used to specify the IS-IS area address.

Correct Answer: BDE
Section: (none)
Explanation

Explanation/Reference:

`is-type {level-1 | level-1-2 | level-2-only}`
 	
Example:
`RP/0/RP0/CPU0:router(config-isis)# is-type level-2-only`
	(Optional) Configures the system type (area or backbone router).
	• By default, every IS-IS instance acts as a **level-1-2** router.
	• The **level-1** keyword configures the software to perform Level 1 (intra-area) routing only. Only Level 1 adjacencies are established. The software learns about destinations inside its area only. Any packets containing destinations outside the area are sent to the nearest **level-1-2** router in the area.
	• The **level-2-only** keyword configures the software to perform Level 2 (backbone) routing only and the router establishes only Level 2 adjacencies, either with other Level 2-only routers or with **level-1-2** routers.
	• The **level-1-2** keyword configures the software to perform both Level 1 and Level 2 routing. Both Level 1 and Level 2 adjacencies are established. The router acts as a border router between the Level 2 backbone and its Level 1 area.

The default metric style for single topology is narrow metrics. However, you can use either wide metrics or narrow metrics. How to configure them depends upon how single-topology is configured. If both IPv4 and IPv6 are enabled and single-topology is configured, the metric style is configured in the address-family ipv4 stanza. You may configure the metric style in the address-family ipv6 stanza, but it will be ignored in this case. If IPv6 only is enabled and single topology is configured, then the metric style is configured in the address-family ipv6 stanza.

circuit-type {level-1 | level-2-only | level-1-2} **Example:** RP/0/RP0/CPU0:router(config-isis-if)# circuit-type level-1-2	(Optional) Configures the type of adjacency. • The default circuit type is the configured system type (configured through the **is-type** command). • Typically, circuit type needs to be configured when the router is configured only **level-1-2** and you want to constrain an interface to form only **level-1** or **level-2-only** adjacencies.

QUESTION 9
Refer to the PE1 router routing table output exhibit. What is causing the i su 10.1.10.0/24 [115/30] via 0.0.0.0, 00:40:34, Null0 entry on the PE1 router routing table?

```
RP/0/RSP0/CPU0:PE1#show route ipv4 isis

<output omitted>
i su 10.1.10.0/24 [115/30] via 0.0.0.0, 00:40:34, Null0
i L1 10.1.10.1/32 [115/30] via 192.168.101.11, 00:42:39, GigabitEthernet0/0/0/0
i L1 10.1.10.2/32 [115/24] via 192.168.112.21, 00:44:40, GigabitEthernet0/0/0/1
i L1 10.1.10.3/32 [115/32] via 192.168.113.22, 00:38:23, GigabitEthernet0/0/0/2
i L1 10.1.10.4/32 [115/22] via 192.168.114.23, 00:14:10, GigabitEthernet0/0/0/3
<output omitted>
```

A. The PE1 router is receiving the 10.1.10.0/24 summary route from the upstream L1/L2 IS-IS router.
B. The PE1 router has been configured to summarize the 10.1.10.x/32 IS-IS routes to 10.1.10.0/24.
C. The 10.1.10.0/24 has been suppressed because IS-IS auto-summary has been disabled on the PE1 router.
D. The 10.1.10.0/24 has been suppressed because of a route policy configuration on the PE1 router.
E. The 10.1.10.0/24 has been suppressed because the more specific 10.1.10.x/32 IS-IS routes have been configured to leak into the IS-IS non-

backbone area.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

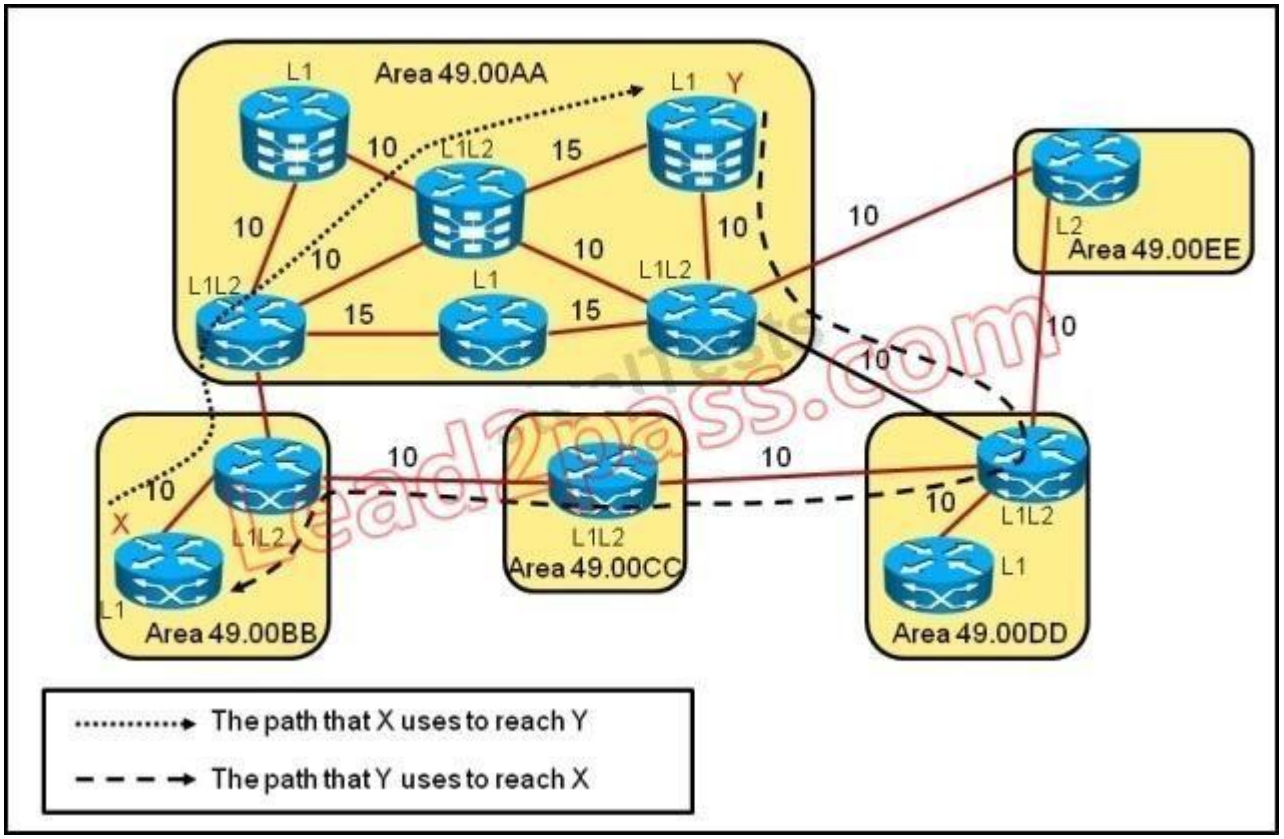
```
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       O - OSPF, IA - OSPF inter area, N1 - OSPF NSSA external type 1
       N2 - OSPF NSSA external type 2, E1 - OSPF external type 1
       E2 - OSPF external type 2, E - EGP, i - ISIS, L1 - IS-IS level-1
       L2 - IS-IS level-2, ia - IS-IS inter area
       su - IS-IS summary null, * - candidate default
       U - per-user static route, o - ODR, L - local
```

QUESTION 10
In comparing IS-IS with OSPF, a Level-1-2 IS-IS router is similar to which kind of OSPF router?

A. ASBR on a normal OSPF area
B. ASBR on NSSA
C. ABR on totally stubby OSPF area
D. ABR on stubby OSPF area
E. ABR on a normal OSPF area

Correct Answer: C
Section: (none)
Explanation

QUESTION 11
Refer to the topology diagram in the exhibit. Which IS-IS feature could be implemented so that the return path for the packets from router Y in area 49.00AA to router X in area 49.00BB will use the more optimal path?



A. Enable route leaking to pass Level 2 information into the Level 1 routers.
B. Change the area 49.00AA type from a stub area to a regular area.
C. Change the IS-IS administrative distance on router Y in area 49.00AA.
D. Change the IS-IS metric type from narrow to wide on all IS-IS routers.

Correct Answer: A
Section: (none)
Explanation

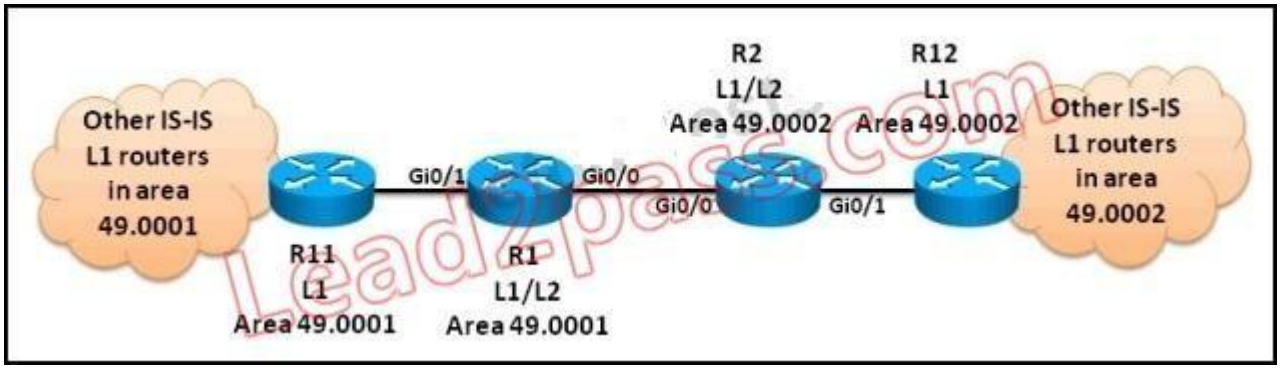
Explanation/Reference:
http://www.cisco.com/application/pdf/paws/13796/route-leak.pdf

The IS−IS routing protocol allows for a two−level hierarchy of routing information. There can be multiple

Level 1 areas interconnected by a contiguous Level 2 backbone. A router can belong to Level 1, Level 2, or both. The Level 1 link−state database contains information about that area only. The Level 2 link−state database contains information about that level as well as each of the Level 1 areas. An L1/L2 router contains both Level 1 and Level 2 databases. It advertises information about the L1 area to which it belongs into L2. Each L1 area is essentially a stub area. Packets destined for an address that is outside of the L1 area are routed to the closest L1/L2 router to be forwarded on to the destination area. Routing to the closest L1/L2 router can lead to sub−optimal routing when the shortest path to the destination is through a different L1/L2 router. Route leaking helps reduce sub−optimal routing by providing a mechanism for leaking, or redistributing, L2 information into L1 areas. By having more detail about interarea routes, an L1 router is able to make a better choice with regard to which L1/L2 router to forward the packet.

QUESTION 12
Refer to the exhibit. Which two configuration options can be used to optimize the IS-IS network

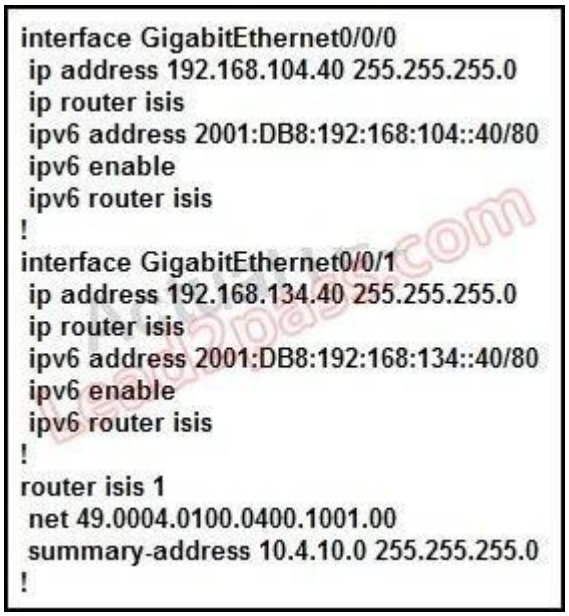
scenario? (Choose two.)



A. Change the R1 and R2 IS type to Level 2.
B. Change the R1 and R2 IS type to Level 1.
C. Change the gi0/0 interface IS-IS circuit type on R1 and R2 to Level 2 only.
D. Change the gi0/1 interface IS-IS circuit type on R1and R2 to Level 1.
E. Change the IS type for all the routers to Level-1-2.
F. Change the IS-IS network type for all the routers to point-to-point.

Correct Answer: CD
Section: (none)
Explanation

QUESTION 13
Refer to the Cisco IOS XE IS-IS configuration exhibit. What are two problems with the configuration that are causing the IPv4, or the IPv6, or the IPv4 and IPv6 IS-IS operations to fail? (Choose two.)



A. The configuration is missing the interface gi0/0 and interface gi0/0 commands under router isis 1.
B. The configuration is missing the address-family ipv4 unicast and address-family ipv6 unicast commands under router isis 1.
C. IPv6 unicast routing has not been enabled globally on the Cisco IOS XE router.
D. The gi0/0 and gi0/1 interfaces are not participating in the router isis 1 routing instance.
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E. Multitopology IS-IS must be enabled to support both IPv4 and IPv6.
F. Another router isis instance must be enabled to support IPv6.

Correct Answer: CD
Section: (none)
Explanation

Explanation/Reference:

http://www.cisco.com/en/US/docs/switches/metro/me3400/software/release/12.2_50_se/configuration/guide/swipv6.pdf

• When using user-network interface (UNI) or enhanced network interface (ENI) ports for any IPv6-related features, you must first globally enable IP routing and IPv6 routing on the switch by entering the **ip routing ipv6 unicast-routing**

QUESTION 14
The Cisco IOS XE Software summary-address router IS-IS configuration command can be used to send a summarized route into which IS-IS hierarchy?

A. Level 1 only
B. Level 2 only
C. Level-1-2 only
D. Level 1 or Level 2 or Level-1-2

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

summary-address (IS-IS)

To create aggregate addresses for IS-IS, use the **summary-address** command in router configuration mode. To restore the default, use the **no** form of this command.

summary-address *address mask* {**level-1** | **level-1-2** | **level-2**}

no summary-address *address mask* {**level-1** | **level-1-2** | **level-2**}

Syntax Description

address	Summary address designated for a range of addresses.
mask	IP subnet mask used for the summary route.
level-1	Only routes redistributed into Level 1 are summarized with the configured address and mask value.
level-1-2	Summary routes are applied when redistributing routes into Level 1 and Level 2 IS-IS, and when Level 2 IS-IS advertises Level 1 routes as reachable in its area.
level-2	Routes learned by Level 1 routing are summarized into the Level 2 backbone with the configured address and mask value. Redistributed routes into Level 2 IS-IS will be summarized also.

QUESTION 15
In which network environment is IS-IS adjacency check important?

A. in a multitopology environment where there are different instances of IS-IS running on the same router
B. in an IPv4/IPv6 environment and running single-topology IS-IS
C. when a level L1/L2 IS-IS router is neighboring with a Level 1 only or Level 2 only router
D. when IS-IS neighbors are in an NBMA environment like over Frame Relay
E. when IS-IS neighbors are in a broadcast environment like an Ethernet LAN

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

Disabling IPv6 Protocol-Support Consistency Checks

Perform this task to disable protocol-support consistency checks in IPv6 single-topology mode.

For single-topology IS-IS IPv6, routers must be configured to run the same set of address families. IS-IS performs consistency checks on hello packets and will reject hello packets that do not have the same set of configured address families. For example, a router running IS-IS for both IPv4 and IPv6 will not form an adjacency with a router running IS-IS for IPv4 or IPv6 only. In order to allow adjacency to be formed in mismatched address-families network, the **adjacency-check** command in IPv6 address family configuration mode must be disabled.

---

e Entering the **no adjacency-check** command can adversely affect your network configuration. Enter the **no adjacency-check** command only when you are running IPv4 IS-IS on all your routers and you want to add IPv6 IS-IS to your network but you need to maintain all your adjacencies during the transition. When the IPv6 IS-IS configuration is complete, remove the **no adjacency-check** command from the configuration.

QUESTION 16
Refer to the IS-IS configuration exhibit. This is the typical IS-IS configuration of the routers in an AS using IS-IS as the IGP. This AS is in the transition phase of integrating IPv6 into the network. During this transition phase, some of the routers within the AS might be running IPv4 only, some might be running IPv6 only, and others might be running both IPv4 and IPv6. To avoid any black holes for the IPv6 traffic, which configuration change can be made?

```
router isis 1
 net 49.0001.0100.0100.1001.00
 address-family ipv4 unicast
 !
 address-family ipv6 unicast
  single-topology
 !
 interface gi0/0/0/0
  address-family ipv4 unicast
  !
  address-family ipv6 unicast
```

A. Disable IS-IS adjacency checks.
B. Enable IPv6 adjacency over IPv4 IS-IS peering.
C. Enable multi-topology IS-IS.

D. Disable the IPv4 unicast address-family.

E. Enable IS-IS wide metric to support the single-topology mode.

Correct Answer: C
Section: (none)
Explanation

QUESTION 17
When implementing OSPF, which type of networks require DR/BDR election?

A. point-to-point networks
B. mutli-access broadcast networks
C. non-broadcast multi-access networks (Hub and Spoke Frame Relay) using point-to-multipoint OSPF network type
D. All networks type

Correct Answer: B
Section: (none)
Explanation

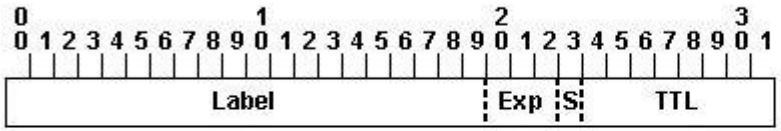
QUESTION 18
The S bit in the MPLS header is used for what purpose?

A. To indicate the bottom level in the label stack
B. To indicate if LDP is sync to the IGP
C. To indicate if LDP is sync to the IGP
D. To indicate the status of the LSP

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

A label is a short, four-byte, fixed-length, locally-significant identifier which is used to identify a Forwarding Equivalence Class (FEC). The label which is put on a particular packet represents the FEC to which that packet is assigned.



- **Label**—Label Value (Unstructured), 20 bits
- **Exp**—Experimental Use, 3 bits; currently used as a Class of Service (CoS) field.
- **S**—Bottom of Stack, 1 bit
- **TTL**—Time to Live, 8 bits

a 1-bit **bottom of stack** flag. If this is set, it signifies that the current label is the last in the stack.

QUESTION 19
What are two purposes of the BGP scan-time command? (Choose two.)

A. to tune the BGP process which walks the BGP table and confirms the reachability of next hops
B. to allow faster detection of downed BGP peers
C. to improve BGP convergence time
D. to tune the BGP update interval
E. to decrease the effects of unstable routes by increasing the route suppression time

Correct Answer: AC
Section: (none)
Explanation

Explanation/Reference:
http://www.networkers-online.com/blog/2008/12/bgp-performance-tunning-convergence-stability-scalability-and-nsf-part-2/

Background BGP scanner

It is responsible for BGP housekeeping by scanning both the BGP RIB and the IP RIB and cleaning and sorting things out.
BGP monitors the next hop of the installed routes to verify next-hop reachability and to select, install, and validate the BGP best path. By default, the BGP scanner polls the RIB for this information every 60 seconds. During the 60 second time period between scan cycles, IGP instabilities or other network failures can cause temporarily black holes and routing loops.

NOTE With Cisco IOS the default timer is 60 seconds for the IPv4 address family and 15 seconds for the VPNv4 address family in order to optimize the VPNs routing table convergence.
This timer can be controlled via the following command:
Router(config-router)#bgp scan-time <5-60>

QUESTION 20
When using the show bgp ipv6 unicast summary command to verify the IPv6 BGP session status with the IPv6 BGP peers, you noticed the "St/PfxRcd" status for one of the IPv6 BGP peers is in the "Active" state. What does the "Active" state indicate?

A. The IPv6 BGP session has been established with the IPv6 BGP peer.
B. The router is in the process of sending BGP routing updates to the IPv6 BGP peer.
C. The router is in the process of establishing the IPv6 BGP session with the IPv6 BGP peer.
D. The router is exchanging BGP notification messages with its IPv6 BGP peer.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
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QUESTION 21
Which three BGP configuration groupings are supported on Cisco IOS XR Software? (Choose three.)

A. peer-group
B. af-group
C. bgp-group
D. session-group
E. neighbor-group
F. as-group

Correct Answer: BDE
Section: (none)
Explanation

Explanation/Reference:
•Commands relating to a peer group found in Cisco IOS Release 12.2 have been removed from Cisco IOS XR software. Instead, the af-group, session-group, and neighbor-group configuration commands are added to support the neighbor in Cisco IOS XR software:

–The af-group command is used to group address family-specific neighbor commands within an IPv4 or IPv6 address family. Neighbors that have the same address family configuration are able to use the address family group name for their address family-specific configuration. A neighbor inherits the configuration from an address family group by way of the use command. If a neighbor is configured to use an address family group, the neighbor will (by default) inherit the entire configuration from the address family group. However, a neighbor will not inherit all of the configuration from the address family group if items are explicitly configured for the neighbor.

–The session-group command allows you to create a session group from which neighbors can inherit address family-independent configuration. A neighbor inherits the configuration from a session group by way of the use command. If a neighbor is configured to use a session group, the neighbor (by default) inherits the session group's entire configuration. A neighbor does not inherit all the configuration from a session group if a configuration is done directly on that neighbor.

–The neighbor-group command helps you apply the same configuration to one or more neighbors. Neighbor groups can include session groups and address family groups. This additional flexibility can create a complete configuration for a neighbor. Once a neighbor group is configured, each neighbor can inherit the configuration through the use command. If a neighbor is configured to use a neighbor group, the neighbor (by default) inherits the neighbor group's entire BGP configuration.

–However, a neighbor will not inherit all of the configuration from the neighbor group if items are explicitly configured for the neighbor. In addition, some part of the neighbor group's configuration could be hidden if a session group or address family group was also being used.

QUESTION 22
Which AS path access list is used by a multihomed customer to only announce their own address space to their service providers to prevent the multihomed customer from becoming a transit AS?

A. ip as-path access-list permit.*
B. ip as-path access-list permit^$
C. ip as-path access-list permit _$
D. ip as-path access-list permit _^
E. ip as-path access-list permit local-as
   ip as-path access-list deny *
F. ip as-path access-list deny.*
   ip as-path access-list permit *

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
http://blog.ine.com/tag/as-path/

```
+-------------------------------------------------------+
| CHAR | USAGE                                          |
+-------------------------------------------------------|
```

^	Start of string
$	End of string
[]	Range of characters
-	Used to specify range (i.e. [0-9])
( )	Logical grouping
.	Any single character
*	Zero or more instances
+	One or more instance
?	Zero or one instance
_	Comma, open or close brace, open or close parentheses, start or end of string, or space

Some commonly used regular expressions include:

Expression	Meaning	
.*	Anything	
^$	**Locally originated routes**	********
^100_	Learned from AS 100	
_100$	Originated in AS 100	
_100_	Any instance of AS 100	
^[0-9]+$	Directly connected ASes	

QUESTION 23
What is recursive lookup in BGP and how does it work?

A. The router looks up the EBGP route and the EBGP next hop to reach a destination in the remote AS. Then the router looks up the route to reach the EBGP next hop using the IBGP.
B. The router looks up the IBGP route and the IBGP next hop to reach a destination in the remote AS. Then the router looks up the route to reach the IBGP next hop using the EBGP.

C. The router looks up the BGP route and the BGP next hop to reach a destination in the remote AS. Then the router looks up the route to reach the BGP next hop using the IGP.
D. The router looks up the route and the next hop to reach a destination in the remote AS using the IGP. Then the router looks up the route to reach the next hop using BGP.
E. The router perform three routing lookups to determine the route to reach a destination in the remote AS. The first lookup is done using EBGP, the second lookup is done using IBGP, and the third lookup is done using the IGP.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
A few different approaches are available to deal with iBGP and synchronization. We may turn on the synchronization option on our routers and wait for the IGP to have a route for the destination before it's advertised to peers. Another option is to simply use a full mesh, so that iBGP convergence isn't an issue. Clearly that isn't going to happen when a network's core needs to scale: it will implement something like reflectors that cause iBGP's full mesh to be broken.
The real alternative, if you don't enable synchronization, is to use route recursion. A recursive route lookup uses the BGP next-hop attribute to actually make a different route lookup. The IGP can use the destination network instead of the AS-path to determine where it gets sent. Even if the iBGP hasn't converged, the routers will still know how to get to that network, since it will exist in the router it was advertised from, who will know the next-hop.

QUESTION 24
Which reserved AS number or range of numbers is used for backward compatibility between old BGP peers using 16-bit AS number and new BGP peers using 32-bit AS number?

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A. AS 65001 to 65535
B. AS 65512 to 65535
C. AS 12345
D. AS 23456
E. AS 64001

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6554/ps6599/4byte_asnios.pdf

New Reserved AS#
AS_TRANS = AS #23456
2-byte placeholder for a 4-byte AS number
Used for backward compatibility between OLD and NEW BGP speakers

QUESTION 25
Which BGP attribute is a set of generic tags that can be used to signal various routing policies between BGP routers?

A. AS path
B. MED
C. weight
D. communities
E. route tags

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/tech/tk365/technologies_configuration_example09186a00801475b2.shtml

QUESTION 26
Which of the following is a characteristic of dual-multihomed connectivity between an enterprise network and the service provider network or networks?

A. An enterprise network that is connected to two or more different service providers with two or more links per service provider and using BGP to exchange routing updates with the service providers.
B. Each service provider announces a default route on each of the links that connect to the customer with a different metric.
C. An enterprise network announces a default route to each service provider.
D. Load balancing can be achieved using the maximum-paths command.

Correct Answer: A
Section: (none)
Explanation

QUESTION 27
What are two ways to advertise networks into BGP? (Choose two.)

A. using the neighbor router BGP command
B. using a route policy in Cisco IOS XR Software or using a route map in Cisco IOS Software or Cisco IOS XE Software

C. using route redistribution into BGP
D. using the network router BGP command
E. enabling an interface to run BGP using the interface router BGP command

Correct Answer: CD
Section: (none)
Explanation

QUESTION 28
Refer to the network diagram in the exhibit. Assuming the IBGP session within AS 64500 was established using the loopback 0 interface between the two routers, by default, what will be the next hop of the routes from AS 64501 when the routes appear on the router running IBGP only in AS 64500?

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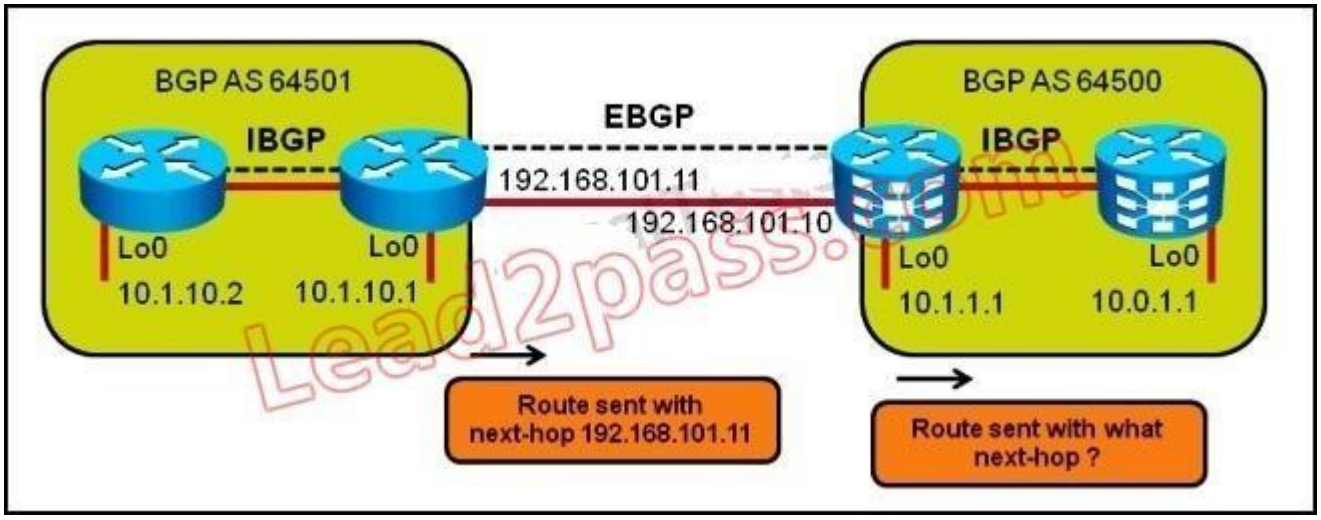

A. 192.168.101.11
B. 192.168.101.10
C. 10.1.1.1
D. 10.0.1.1
E. 10.1.10.1

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

QUESTION 29
When configuring BGP on Cisco IOS XR Software, which address-family is enabled by default?

A. IPv4 unicast
B. IPv6 unicast
C. VPNv4
D. IPv4 unicast and IPv6 unicast
E. IPv4 unicast and IPv6 unicast and VPNv4
F. No address-family is enabled by default.

Correct Answer: F
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios_xr_sw/iosxr_r3.8/routing/command/reference/rr38bgp.pdf

An address family must be explicitly configured in the router configuration mode for the address family to be active in BGP. Similarly, an address family must be configured under the neighbor for the BGP session to be established for that address family. An address family must be configured in router configuration mode before it can be configured under a neighbor.

QUESTION 30
What are two characteristics of the multihomed customers to service providers connection option? (Choose two.)

A. Multihomed customers must use a private AS number.
B. The traffic load can be shared for different destination networks between service providers.
C. Multihomed customers must receive a full routing table from the service providers.
D. The routing methodology must be capable of reacting to dynamic changes. BGP is used to achieve this flexibility.
E. Multihomed customers must use a provider-assigned address space.

Correct Answer: BD

Section: (none)
Explanation

Explanation/Reference:
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QUESTION 31
Referring to the partial Cisco IOS-XR BGP configuration exhibit, when trying to commit this configuration, the following error is displayed:
% Failed to commit one or more configuration items during a pseudo-atomic operation. All changes made have been reverted. Please issue 'show configuration failed' from this session to view the errors.

What is wrong with the configuration?

A. IPv6 unicast routing has not been enabled globally using the ipv6 unicast-routing command
B. The configuration is missing the required network command
C. The update-source loopback 0 commands must be configured under the respective neighbor address-family
D. The configuration is missing the address-family ipv4 unicast and address-family ipv6 unicast commands under router bgp 65111

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

QUESTION 32
Which two of the following are true regarding the BGP Prefix-Based outbound route filtering feature? (Choose two.)

A. IP multicast routes are not supported.
B. Outbound route filtering is configured only on a per-address family basis.
C. Outbound route filtering can be configured for either iBGP or eBGP sessions.
D. The outbound route filter can be defined in a Prefix list, Distribute list or Access lists.
E. Outbound route filtering is more effective when a distance vector IGP is used.

Correct Answer: AB
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios/12_2s/feature/guide/fsbgporf.pdf

Restrictions for BGP Prefix-Based Outbound Route Filtering

• The BGP Prefix-Based Outbound Route Filtering feature does not support IP multicast routes.
• IP addresses that are used for outbound route filtering must be defined in an IP prefix-list. BGP distribute lists and IP access lists are not supported.
• Outbound route filtering is configured on only a per-address family basis and cannot be configured under the general session or BGP routing process (Router(config-router)#).
• Outbound route filtering is configured for only external peering sessions.

QUESTION 33
Refer to the Cisco IOS-XR route policy exhibit. Which statement correctly describes this route policy?

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```
route-policy setcomm
if community matches-any (11:11, 44:44) then
set community (55:55) additive
elseif community matches-any (22:22) then
set community (77:77) additive
endif
```

A. The pass action is required after each of the set community statements to make this route policy functional.
B. If a route has both the 11:11 and 22:22 communities (or 44:44 and 22:22), the router adds the 55:55 community only.

C. If a route contains the 11:11 or 44:44 community, the router adds the 55:55 community and continues.
Additionally, if the same route also contains the 22:22 community, the router also adds another 77:77 community to the same route.

D. If a route only has the 22:22 community, then no community will be added by the router.

E. If a route only has the 11:11 or 44:44 community, then no community will be added by the router.

Correct Answer: B
Section: (none)
Explanation

QUESTION 34
Refer to the BGP and route map configurations exhibit. When the "setas" route map is applied to the 10.1.1.2 neighbor, the 10.1.1.2 neighbor is not able to receive all the required BGP routes from this router. What could be the problem?

```
router bgp 65001
 neighbor 10.1.1.2 remote-as 65023
 neighbor 10.1.1.2 route-map setas out
!
route-map setas permit 10
 match ip address test1
 set as-path prepend 65111 65112
!
route-map setas permit 20
 match ip address test2
 set as-path prepend 65202 65203 65204
!
!end of the route-map configuration
```

A. The BGP session was cleared using the clear ip bgp command after the route map was applied.

B. The test1 or test2 prefix-list is misconfigured.

C. There is no pass action configured within the route map.

D. The route map is missing the route-map setas permit 30 statement.

Correct Answer: D
Section: (none)
Explanation

QUESTION 35
In Cisco IOS and Cisco IOS XE Software images, when redistributing routes from other routing protocols into OSPF, what is a common reason why

some of the routes might not be redistributed into OSPF?

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A. The OSPF external metric type (E1 or E2) is not defined.
B. The OSPF seed metric is not defined.
C. The OSPF level (Level 1, Level 2, or Level-1-2) to which the routes will be redistributed into is not defined.
D. The subnets option in the redistribute command is missing.

Correct Answer: D
Section: (none)
Explanation

QUESTION 36
Refer to the exhibit. Based on the Cisco IOS XR route policy configuration, when redistributing OSPF routes into IS-IS, to which of the following does the "tag" value correspond?

A. The tag value represents the OSPF metric.
B. The tag value represents the IS-IS metric.
C. The tag value identifies a route or set of routes.
D. The tag value is used to match whether the IS-IS route is an external or internal IS-IS route.
E. The tag value represents the administrative distance.

Correct Answer: C
Section: (none)
Explanation

QUESTION 37
When configuring Cisco IOS route maps, which command allows the route map processing to jump to another statement instead of exiting?

A. jump
B. next
C. set
D. continue
E. goto

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

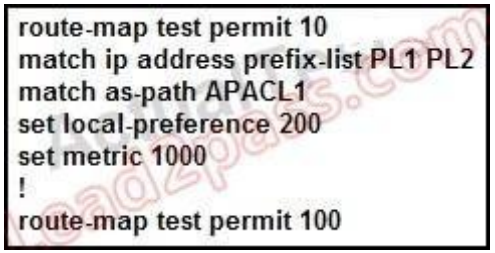
Match Operations With Continue Clauses

If a match clause does not exist in the route-map entry but a continue clause does, the continue clause will be automatically executed and go to the specified route-map entry. If a match clause exists in a route-map entry, the continue clause is executed only when a successful match occurs. When a successful match occurs and a continue clause exists, the route map executes the set clauses and then goes to the specified route-map entry. If the next route map contains a continue clause, the route map will execute the continue clause if a successful match occurs. If a continue clause does not exist in the next route map, the route map will be evaluated normally. If a continue clause exists in the next route map but a match does not occur, the route map will not continue and will “fall through” to the next sequence number if one exists.

Set Operations With Continue Clauses

Set clauses are saved during the match clause evaluation process and executed after the route-map evaluation is completed. The set clauses are evaluated and executed in the order in which they were configured. Set clauses are only executed after a successful match occurs, unless the route map does not contain a match clause. The continue statement proceeds to the specified route-map entry only after configured set actions are performed. If a set action occurs in the first route map and then the same set action occurs again, with a different value, in a subsequent route map entry, the last set action may override any previous set actions that were configured with the same **set** command unless the **set** command permits more than one value. For example, the **set as-path prepend** command permits more than one autonomous system number to be configured.

QUESTION 38
Refer to the Cisco IOS route map configuration exhibit. Which two statements are correct? (Choose two.)



A. The match prefix-list condition is a logical OR: match prefix list PL1 OR PL2.
B. All match conditions are logical OR: match prefix list PL1 OR PL2 OR match the APACL1 AS path access list.
C. The three match conditions are logical AND. match prefix list PL1 AND PL2 AND match the APACL1 AS path access list.
D. The local preference AND the metric will be set to 100 IF the route matches the PL1 OR PL2 prefix list AND the route must also match the APACL1 AS path access list.
E. All routes that are not matched by the sequence 10 route map statement will be dropped.

Correct Answer: AD
Section: (none)
Explanation

Explanation/Reference:
http://www.routeralley.com/ra/docs/route_maps.pdf

when match criteria is contained within a single line, a logical OR is applied.

QUESTION 39
Refer to the route policies exhibit. Which five route policies will cause the routes to be dropped or passed? (Choose five)

```
route-policy one
end-policy
!
route-policy two
pass
end-policy
!
route-policy three
drop
end-policy
!
route-policy four
set weight 100
end-policy
!
route-policy five
pass
drop
pass
end-policy
!
```

A. route-policy one will cause the routes to be dropped.
B. route-policy two will cause the routes to be dropped.
C. route-policy three will cause the routes to be dropped.
D. route-policy four will cause the routes to be dropped.
E. route-policy five will cause the routes to be dropped.
F. route-policy one will cause the routes to be passed.

G. route-policy two will cause the routes to be passed.
H. route-policy three will cause the routes to be passed.
I. route-policy four will cause the routes to be passed.
J. route-policy five will cause the routes to be passed.

Correct Answer: ACEGI
Section: (none)
Explanation

Explanation/Reference:

QUESTION 40
When using the Cisco IOS XR route policy language to define a logical if-then-else condition, which logical operator has the highest precedence?

A. AND
B. OR
C. NOT
D. IS
E. IN

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios_xr_sw/iosxr_r3.0/routing/configuration/guide/rc3rpl.html

Boolean Operator Precedence

Boolean expressions are evaluated in order of operator precedence, from left to right. The highest precedence operator is not, followed by and, and then or. The following expression:

```
med eq 10 and not destination in (10.1.3.0/24) or community matches-any ([10..25]:35)
```

if fully parenthesized to display the order of evaluation would look like this:

```
(med eq 10 and (not destination in (10.1.3.0/24))) or community matches-any ([10..25]:35)
```

The inner not applies only to the destination test; the and combines the result of the not expression with the Multi Exit Discriminator (MED) test; and the or combines that result with the community test. If the order of operations are rearranged:

```
not med eq 10 and destination in (10.1.3.0/24) or community matches-any ([10..25]:35)
```

then the expression, fully parenthesized, would look like the following:

```
((not med eq 10) and destination in (10.1.3.0/24)) or community matches-any ([10..25]:35)
```

QUESTION 41
When configuring Cisco IOS XR route policy nesting, which command is used within a route policy to call another route policy?

A. apply
B. continue
C. jump
D. goto
E. call

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios_xr_sw/iosxr_r3.7/routing/command/reference/rr37plcy.html

Examples

In the following example, the policy CustomerIn applies the route-policy SetLocalPref to conditionally set the local preference on a route. The parameters 20, 30, 40, and 50 are passed to the parameterized policy SetLocalPref, where the local preference is set to:

•20, if the community 217:20 is present in the route

•30, if the community 217:30 is present in the route

•40, if the community 217:40 is present in the route

•50, if the community 217:50 is present in the route

```
RP/0/RP0/CPU0:router(config)# route-policy SetLocalPref ($lp0, $lp1, $lp2, $lp3, $lp4)

RP/0/RP0/CPU0:router(config-rpl)# if community matches-any ($lp0:$lp1)then

RP/0/RP0/CPU0:router(config-rpl-elseif)# set local-preference $lp1

RP/0/RP0/CPU0:router(config-rpl-elseif)# elseif community matches-any ($lp0:$lp2) then

RP/0/RP0/CPU0:router(config-rpl-elseif)# set local-preference $lp2

RP/0/RP0/CPU0:router(config-rpl-elseif)# elseif community matches-any ($lp0:$lp3) then
```

```
RP/0/RP0/CPU0:router(config-rpl-elseif)# set local-preference $lp3
RP/0/RP0/CPU0:router(config-rpl-elseif)# elseif community matches-any ($lp0:$lp4) then
RP/0/RP0/CPU0:router(config-rpl-elseif)# set local-preference $lp4
RP/0/RP0/CPU0:router(config-rpl-elseif)# endif
RP/0/RP0/CPU0:router(config-rpl)# end-policy

RP/0/RP0/CPU0:router(config)# route-policy CustomerIn($cust)
RP/0/RP0/CPU0:router(config-rpl)# apply SetLocalPref ($cust, 20, 30, 40, 50)
RP/0/RP0/CPU0:router(config-rpl)# end-policy

RP/0/RP0/CPU0:router(config)# route-policy Cust_217
RP/0/RP0/CPU0:router(config-rpl)# apply CustomerIn(217)
RP/0/RP0/CPU0:router(config-rpl)# end-policy
```

QUESTION 42
Refer to the Cisco IOS XR route policy exhibit. If the original incoming routing update has an MED of 10 and a local preference of 100, how will the routing update be modified?

```
route-policy SetLP
if med eq 10 then
set local-preference 200
endif
if local-preference eq 100 then
set weight 100
endif
if local-preference eq 200 then
set weight 200
endif
end-policy
```

A. The local preference will be set to 100, the MED will be set to 10, and the weight will be set to 100.
B. The local preference will be set to 100, the MED will be set to 10, and the weight will be set to 200.

C. The local preference will be set to 200, the MED will be set to 10, and the weight will be set to 100.
D. The local preference will be set to 200, the MED will be set to 10, and the weight will be set to 200.

Correct Answer: C
Section: (none)
Explanation

QUESTION 43
What is defined by using the Cisco IOS XR policy-global configuration command?

A. the default BGP route policy
B. global variables that can be referenced by any route policy
C. the global default route policy
D. hierarchical route policy
E. nested route policy

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

Global Configuration Mode

Prompt: (config)

Enter global configuration mode from executive (EXEC) mode by using the configure command. Global configuration commands generally apply to the whole system rather than just one protocol or interface. You can enter all other configuration submodes listed in this section from global configuration mode.

```
RP/0/RP0/CPU0:router# configure

RP/0/RP0/CPU0:router(config)#
```

Global Parameter Configuration Mode

Prompt: (config-rpl-gl)

Enter global parameter configuration mode by using the policy-global command in global configuration mode. In global parameter configuration mode,

you can create or modify a global policy by entering successive commands and then terminating the configuration by entering the end-global command.

For example, to configure global parameters:

```
RP/0/RP0/CPU0:router(config)# policy-global

RP/0/RP0/CPU0:router(config-rp-gl)# glbpathtype ebgp

RP/0/RP0/CPU0:router(config-rp-gl)# glbtag 100

RP/0/RP0/CPU0:router(config-rp-gl)# end-global
```

QUESTION 44
How can you prevent multihomed customers with connections to two service providers from acting as a transit AS?

A. Enable BGP synchronization on all the customer routers.
B. Use MED to influence the inbound traffic from the ISPs.
C. Use static routing to the ISPs.
D. Use an AS-path access-list to filter the BGP updates to the ISPs.
E. Use conditional advertisements when sending BGP updates to the ISPs.

Correct Answer: D
Section: (none)
Explanation

QUESTION 45
Refer to the Cisco IOS XR route policy exhibit. Which two statements are correct? (Choose two.)

```
route-policy new
  if community matches-any test then
    set local-preference 10
  elseif community matches-every foo then
    set local-preference 20
  else
    pass
  endif
end-policy
```

A. "test" and "foo" are references to the community sets.

B. The "match-any" option indicates matching either the standard community or extended community.
C. Routes that match both the "test" and "foo" conditions will have their local preference set to 20.
D. All non-matching routes will be permitted.

Correct Answer: AD
Section: (none)
Explanation

Explanation/Reference:
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QUESTION 46
When redistributing routes into OSPF, which kind of routes will be redistributed by default on Cisco IOS XR Software but will not be automatically redistributed by default on Cisco IOS Software and Cisco IOS XE Software?

A. Type 1 external routes
B. Type 2 external routes
C. subnetted routes
D. /32 host routes
E. tagged static routes

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

Table 12 Redistribution Configurations for OSPF in Cisco IOS and Cisco IOS XR

Cisco IOS	Cisco IOS XR
router ospf 1 redistribute connected subnets redistribute static subnets route-map map	router ospf lab redistribute connected redistribute static policy

You no longer need the **subnets** keyword in Cisco IOS XR, and you declare an RPL policy rather than a route map.

If you want to redistribute only classful routes into OSPF in Cisco IOS XR, you can use the **redistribute** command with the classful keyword. The use of policies rather than route maps is covered in the "Border Gateway Protocol (BGP)" section and also in the existing Cisco IOS XR documentation on RPL. The mainpiece of information to get from this discussion is that redistribution into OSPF on
Cisco IOS XR is a policy attach point.

QUESTION 47
When redistributing EIGRP routes into OSPF as type E2 external OSPF routes, what is the default OSPF seed metric?

A. Infinite
B. 0
C. 1
D. 10
E. 20

Correct Answer: E
Section: (none)
Explanation

QUESTION 48
Refer to the exhibit. Which Cisco IOS XR configuration is missing to complete the configuration task of enabling BFD with only the OSPF peer over the gi0/3/0/1 interface in area 0?

```
router ospf 100
bfd minimum-interval 2
bfd multiplier 20
area 0
interface gigabitEthernet 0/3/0/1
interface gigabitEthernet 0/3/0/2
end
```

A. bfd fast-detect also needs to be enabled globally under router ospf 100.
RP/0/RSP0/CPU0:P1(config-ospf)#bfd fast-detect
B. bfd fast-detect also needs to be enabled for the OSPF area under area 0.
RP/0/RSP0/CPU0:P1(config-ospf-ar)#bfd fast-detect
C. bfd fast-detect also needs to be enabled for the OSPF interface under area 0 interface gi0/3/0/1.
RP/0/RSP0/CPU0:P1(config-ospf-ar-if)#bfd fast-detect
D. bfd fast-detect also needs to be enabled globally on the router.
RP/0/RSP0/CPU0:P1(config#bfd fast-detect
E. bfd fast-detect also needs to be enabled on the gi0/3/0/1 interface under interface gi0/3/0/1.
RP/0/RSP0/CPU0:P1(config-if)#bfd fast-detect

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
bfd fast-detect

To enable Bidirectional Forwarding Detection (BFD) to detect failures in the path between adjacent forwarding engines, use the bfd fast-detect command in the appropriate configuration mode. To return the software to the default state in which BFD is not enabled, use the no form of this command.

bfd fast-detect [disable | ipv4]

no bfd fast-detect

QUESTION 49
Which high-availability routing feature requires the neighbor router to support the graceful restart capability?

A. BFD
B. NSR
C. NSF

D. MTR

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

On Cisco IOS XR software, NSF minimizes the amount of time a network is unavailable to its users following a route processor (RP) failover. The main objective of NSF is to continue forwarding IP packets and perform a graceful restart following an RP failover.

When a router restarts, all routing peers of that device usually detect that the device went down and then came back up. This transition results in what is called a routing flap, which could spread across multiple routing domains. Routing flaps caused by routing restarts create routing instabilities, which are detrimental to the overall network performance. NSF helps to suppress routing flaps in NSF-aware devices, thus reducing network instability.

NSF allows for the forwarding of data packets to continue along known routes while the routing protocol information is being restored following an RP failover. When the NSF feature is configured, peer networking devices do not experience routing flaps. Data traffic is forwarded through intelligent line cards while the standby RP assumes control from the failed active RP during a failover. The ability of line cards to remain up through a failover and to be kept current with the Forwarding Information Base (FIB) on the active RP is key to NSF operation.

When the Cisco IOS XR router running IS-IS routing performs an RP failover, the router must perform two tasks to resynchronize its link-state database with its IS-IS neighbors. First, it must relearn the available IS-IS neighbors on the network without causing a reset of the neighbor relationship. Second, it must reacquire the contents of the link-state database for the network.

The IS-IS NSF feature offers two options when configuring NSF:

•IETF NSF

•Cisco NSF

If neighbor routers on a network segment are NSF aware, meaning that neighbor routers are running a software version that supports the IETF Internet draft for router restartability, they assist an IETF NSF router that is restarting. With IETF NSF, neighbor routers provide adjacency and link-state information to help rebuild the routing information following a failover.

In Cisco IOS XR software, Cisco NSF checkpoints (stores persistently) all the state necessary to recover from a restart without requiring any special cooperation from neighboring routers. The state is recovered from the neighboring routers, but only using the standard features of the IS-IS routing protocol. This capability makes Cisco NSF suitable for use in networks in which other routers have not used the IETF standard implementation of NSF

QUESTION 50
Which high-availability mechanism is a detection protocol that is enabled at the interface and at the routing protocol levels?

A. NSF
B. SSO

C. NSR
D. BFD
E. SDR

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/docs/ios/12_0s/feature/guide/fs_bfd.html

QUESTION 51
Refer to the Cisco IOS show command output shown in the exhibit. Which of the following statements is correct?

```
R1# show ip bgp 10.2.10.1
BGP routing table entry for 10.2.10.1/32, version 32
Paths: (2 available, best #2, table default)
  Advertised to update-groups:
     2
  64500 64500 64502
    192.168.103.30 from 192.168.103.30 (10.3.1.1)
      Origin IGP, localpref 100, weight 100, valid, external
  64500 64500 64502
    192.168.134.40 (metric 11) from 192.168.134.40 (10.4.1.1)
      Origin IGP, localpref 100, weight 200, valid, external, best


R1# show ip bgp
BGP table version is 89, local router ID is 11.0.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
   Network          Next Hop            Metric LocPrf Weight Path
*> 10.2.10.1/32     192.168.201.20                       200 64500 64500 64500 64500 64502 i
                    192.168.101.10                       100 64500 64500 64502 i
```

A. The best path to 10.2.10.1/32 was chosen because of the AS path.
B. The best path to 10.2.10.1/32 was chosen because of the weight.
C. The best path to 10.2.10.1/32 was chosen because of the local preference.

D. The best path to 10.2.10.1/32 was chosen because of the MED.
E. The best path to 10.2.10.1/32 was chosen because of the route origin.

Correct Answer: B
Section: (none)
Explanation

QUESTION 52
Which OSPF feature allows a router with redundant route processors to maintain its OSPF state and adjacencies across planned and unplanned RP switchovers and does this by checkpointing state information from OSPF on the active RP to the standby RP? This feature does not require the OSPF neighbor to support graceful restart.

A. NSR
B. NSF
C. BFD
D. MTR
E. SDR

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Continuous Forwarding
An important aspect of high availability is maintenance of traffic forwarding, even in the case of control-plane switchovers. Cisco IOS XR Software has several built-in features that can provide continuous forwarding, including RSP stateful switchover (SSO), Nonstop Forwarding (NSF), Graceful Restart, and NSR.

● **NSF:** Cisco IOS XR Software supports forwarding without traffic loss during a brief outage of the control plane through signaling and routing protocol implementations for Graceful Restart extensions as standardized by the IETF. In addition to standards compliance, this implementation has been compatibility tested with Cisco IOS Software and third-party operating systems.
● **Graceful Restart:** This control-plane mechanism ensures high availability by allowing detection and recovery from failure conditions while preserving NSF services. Graceful Restart is a way to recover from signaling and control-plane failures without affecting the forwarding plane. Cisco IOS XR Software uses this feature and a combination of check

pointing, mirroring, RSP redundancy, and other system resiliency features to recover prior to timeout and avoid service downtime as a result of network reconvergence.
● **NSR:** This feature allows for the forwarding of data packets to continue along known routes while the routing protocol information is being refreshed following a processor switchover. NSR maintains protocol sessions and state information across SSO functions for services such as Multiprotocol Label Switching (MPLS) VPN. TCP connections and the routing protocol sessions are migrated from the active RSP to the standby RSP after the RSP failover without letting the peers know about the failover. The sessions terminate locally on the failed RSP, and the protocols running on the standby RSP reestablish the sessions after the standby RSP goes active, without the peer detecting the change. You can also use NSR with Graceful Restart to protect the routing control plane during switchovers.
The Cisco IOS XR Operating System provides system resiliency through a comprehensive set of high-availability features including modularity, process restart, fault handling, continuous forwarding, and upgradability.

QUESTION 53
Which two statements regarding OSPFv2 or OSPFv3 authentication are correct? (Choose two.)

A. OSPFv2 supports MD5 authentication.
B. OSPFv2 supports MD5 or SHA authentication.
C. OSPFv2 relies on the native security stack that uses IPsec.
D. OSPFv3 supports MD5 authentication.
E. OSPFv3 supports MD5 or SHA authentication.
F. OSPFv3 relies on the native security stack that uses IPsec.

Correct Answer: AF
Section: (none)
Explanation

QUESTION 54
What are three common problems that can cause a BGP neighbor state to toggle between the idle state and the active state? (Choose three.)

A. BGP network command misconfiguration
B. route policy misconfiguration
C. AS number misconfiguration
D. route map misconfiguration
E. BGP neighbor peering to wrong IP address
F. IGP routing problem: not able to reach the source IP address of the BGP open packet

Correct Answer: CEF
Section: (none)
Explanation

QUESTION 55
BGP peerings can be secured using which protection mechanism?

A. SHA authentication
B. MD5 authentication
C. SSH
D. SSL
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E. AAA
F. digital certificates

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
http://www.cisco.com/en/US/tech/tk365/technologies_configuration_example09186a0080b52107.shtml

QUESTION 56
In an AS with 10 routers running IBGP, how many IBGP sessions will be required to establish fully meshed IBGP peerings?

A. 10
B. 20
C. 45
D. 50
E. 99
F. 100

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
N * (N-1) /2

QUESTION 57
You are implementing OSPF as the IGP using a single OSPF area design. The router memory usage for OSPF is too high. Which two methods can lower the OSPF memory usage? (Choose two.)

A. enable OSPF synchronization
B. implement multi-area OSPF
C. enable OSPF sham links to reduce the number of LSAs
D. implement route summarization on the ABRs
E. enable route leaking between Level 1 and Level 2 areas

Correct Answer: BD
Section: (none)
Explanation

QUESTION 58
Routes that are received from an IBGP peer will be propagated to which other routers by default?

A. to the EBGP peers only
B. to the IBGP peers only
C. to both EBGP and IBGP peers
D. to no other peers

Correct Answer: A
Section: (none)
Explanation

QUESTION 59
What are two consequences of having constant link flaps, resulting in the OSPF neighbor adjacencies going up and down repeatedly? (Choose two.)

A. routes getting into the "Stuck In Active" state
B. constant flooding of LSAs
C. OSPF route dampening to occur
D. many SPF recalculations

E. routing loops may temporarily be introduced into the network

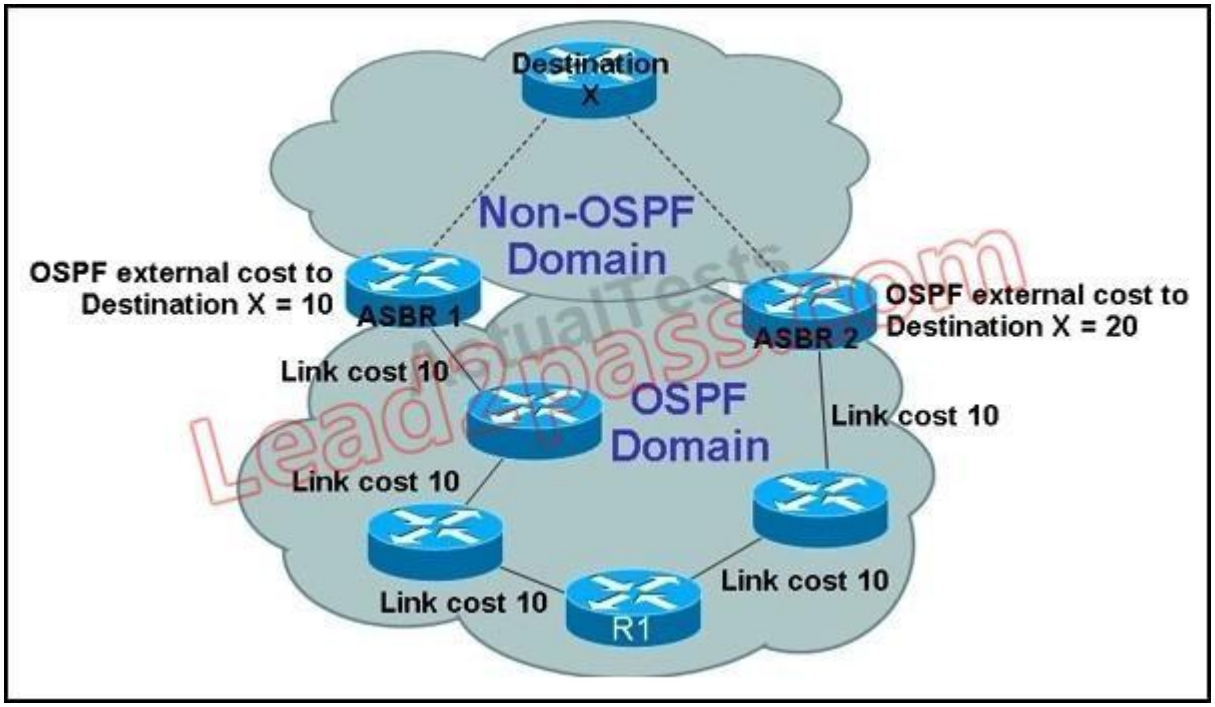
Correct Answer: BD
Section: (none)
Explanation

QUESTION 60
When monitoring the OSPF operations in the network, you notice that the OSPF process is not load balancing traffic across multiple OSPF links. Which configuration adjustment could be made to enable the OSPF process to load balance traffic across multiple OSPF links?

A. Enable BFD on the OSPF interfaces and on the OSPF routing process.
B. Enable NSR on the OSPF routing process.
C. Enable NSF on the OSPF routing process.
D. Adjust the OSPF cost on the OSPF interfaces.
E. Adjust the OSPF variance parameter.
F. Use the wide-style OSPF metric instead of the narrow-style OSPF metric.

Correct Answer: D
Section: (none)
Explanation

QUESTION 61
Refer to the network diagram in the exhibit. If both ASBRs are advertising the external Destination X network as OSPF E2 route, what is the best path for the R1 router to reach Network X?



A. R1 will use the path via ASBR 2 as the best path.
B. R1 will use the path via ASBR 1 as the best path.
C. R1 will load balance between two equal cost paths via ASBR 1 and ASBR 2.
D. R1 will sees two equal costs and will choose the path through the ASBR with the lower OSPF router ID.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
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QUESTION 62
Refer to the show command output in the exhibit. For which reason will this router drop all traffic that is destined to the 1.1.1.0/24 network?

```
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, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR

Gateway of last resort is not set

     4.0.0.0/24 is subnetted, 1 subnets
D       4.4.4.0 [90/409600] via 161.108.0.4, 00:49:24, Ethernet0/0
     5.0.0.0/24 is subnetted, 1 subnets
C       5.5.5.0 is directly connected, Loopback0
     162.108.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       162.108.10.0/24 is directly connected, Serial1/0
C       162.108.4.0/22 is directly connected, Serial2/0
C    161.108.0.0/16 is directly connected, Ethernet0/0
Router#
Router#show ip bgp
BGP table version is 6, local router ID is 5.5.5.5
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
* i1.1.1.0/24       132.108.10.1             0    100      0 1 i
* i131.108.0.0      132.108.10.1             0    100      0 1 i
*>i161.108.0.0      4.4.4.4                  0    100      0 i
Router#
```

A. The 1.1.1.0/24 route is not synchronized.
B. The BGP next hop for reaching the 1.1.1.0/24 network is not reachable.
C. The metric of the 1.1.1.0/24 route is set to 0.
D. The weight of the 1.1.1.0/24 route is set to 0.
E. The 1.1.1.0/24 route is an incomplete route.
F. The IBGP split-horizon rule is preventing the router to use the IBGP route.

Correct Answer: B
Section: (none)
Explanation

QUESTION 63
Which of the following is used by an IS-IS router to detect other IS-IS neighbor routers and to form adjacencies?

A. ESH
B. ISH
C. IIH
D. PSNP
E. CSNP

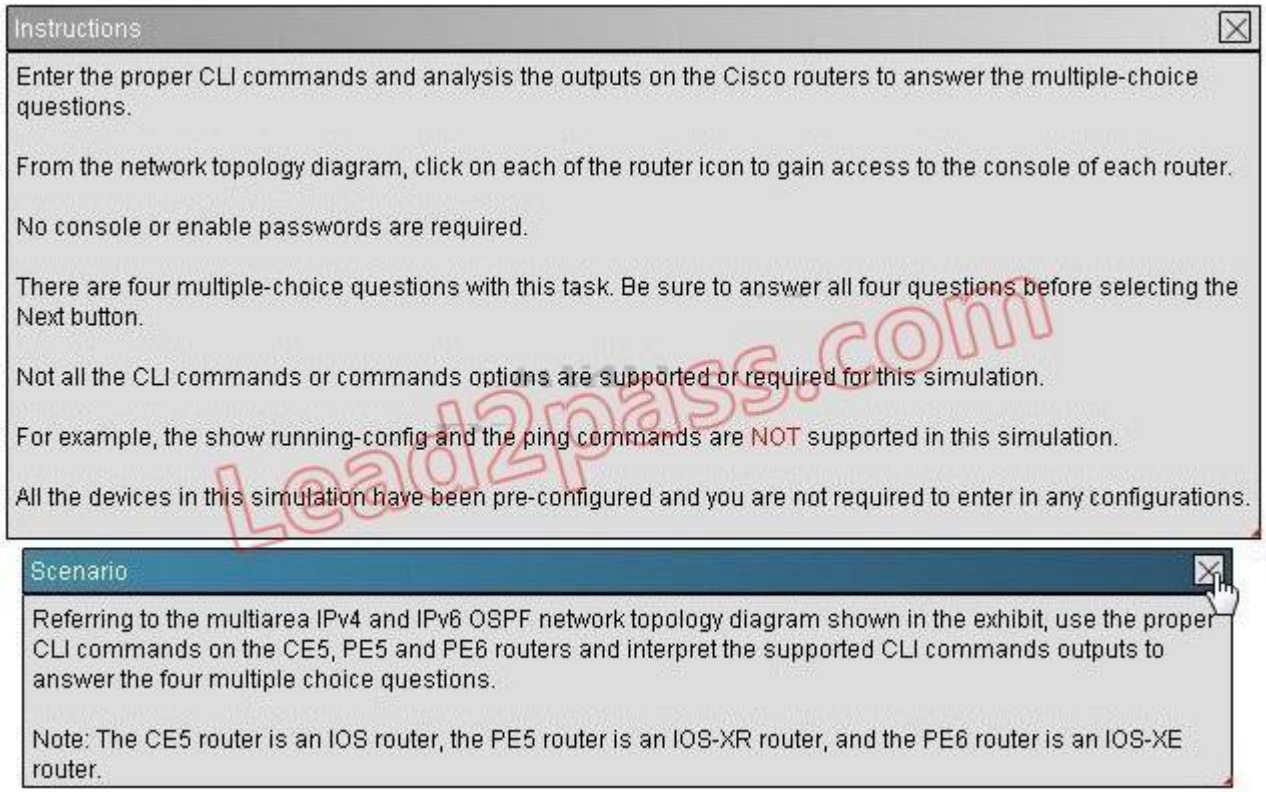
Correct Answer: C
Section: (none)
Explanation

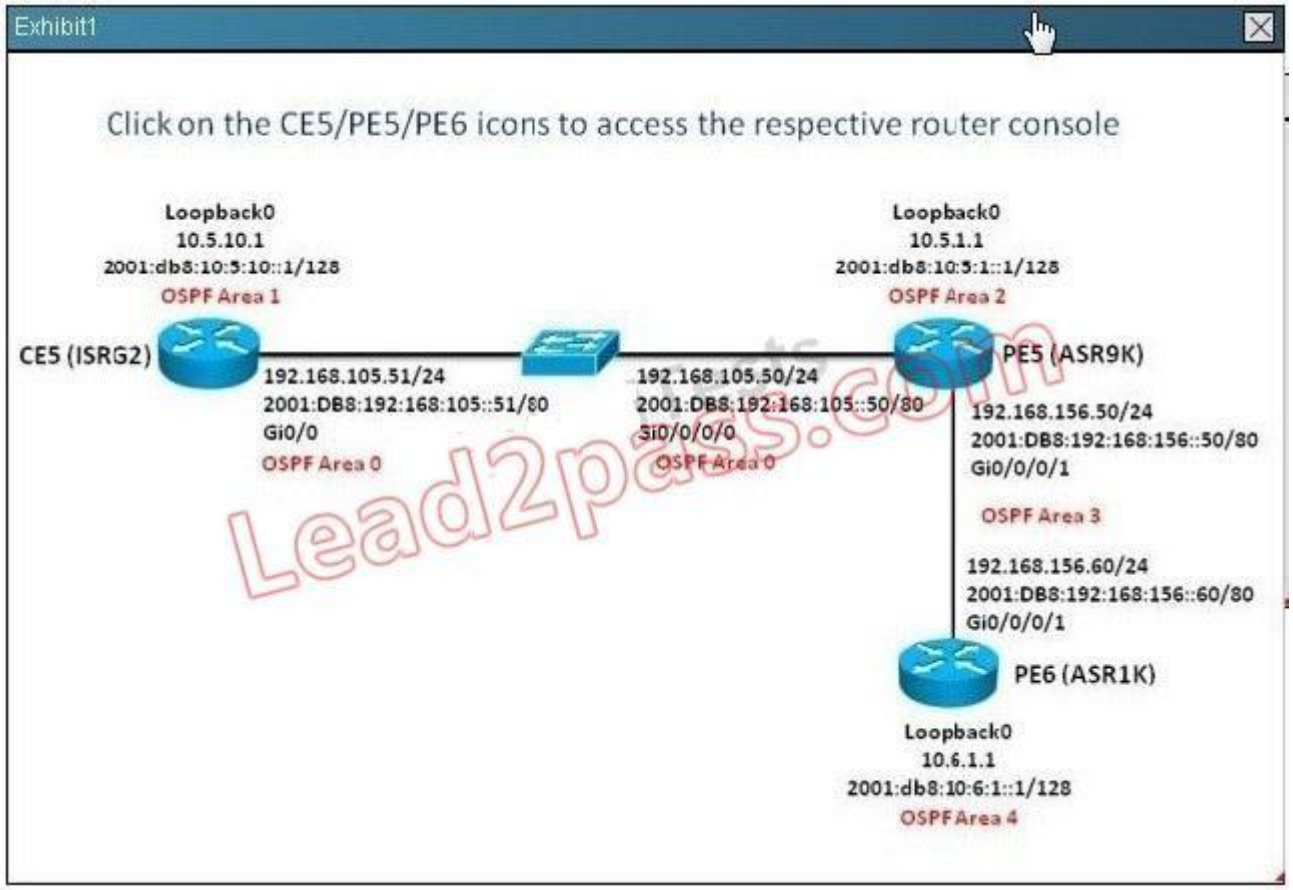
Explanation/Reference:
ISIS actually features three different hello types

An ES Hello (ESH) is send by all End Systems, and all IS devices listen for this Hello
An IS Hello (ISH) announces the presence of an IS - An IS Hello is sent by all IS devices, and End Systems listen for these hellos
Finally, an IS-to-IS Hello (IIH) is used by an IS to discover other ISes and to form adjacencies with them

A router will send an IIH to another router on the link to form or maintain an adjacency, but it will still send an ISH as well in case there are end systems located on that segment

QUESTION 64
Hotspot





How many total OSPF virtual links are configured in this multiarea OSPF network which supports both OSPFv2 and OSPFv3 for IPv4 and IPv6 routing?

A. 1
B. 2
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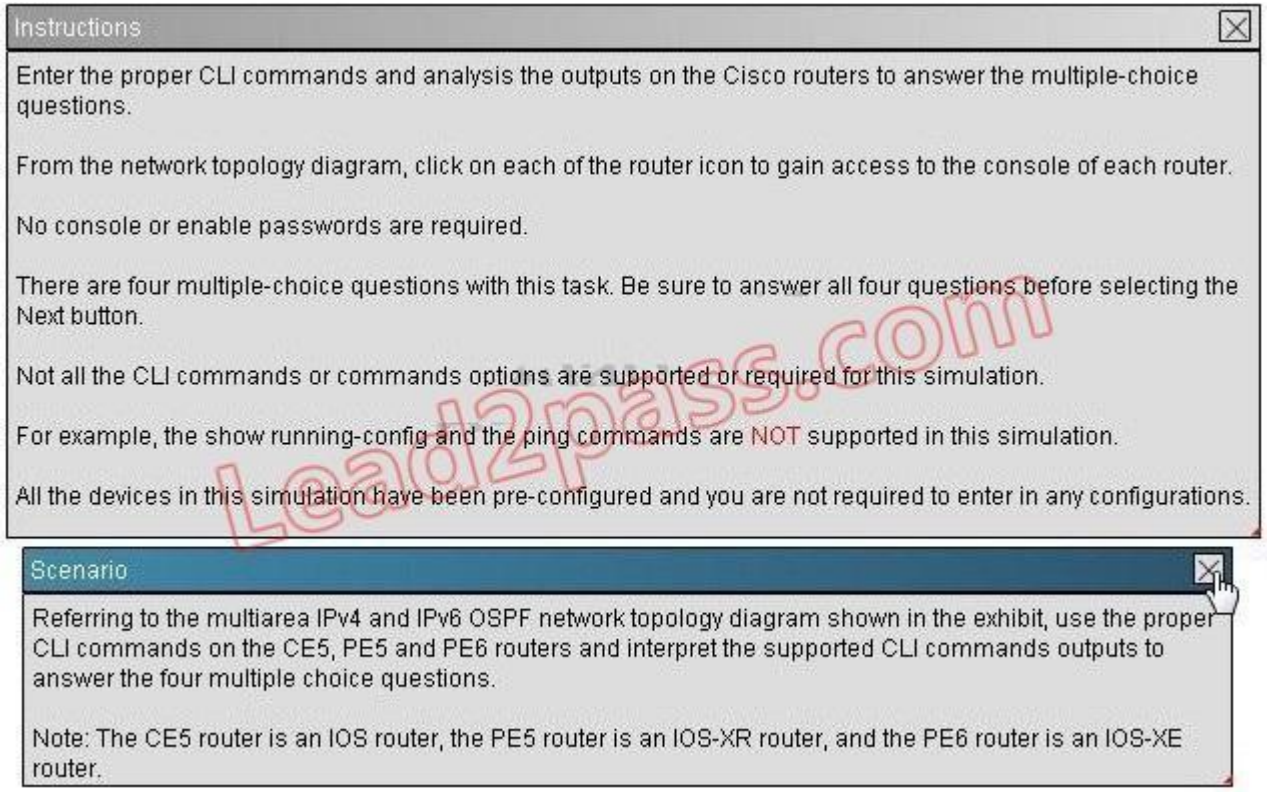
C. 3
D. 4

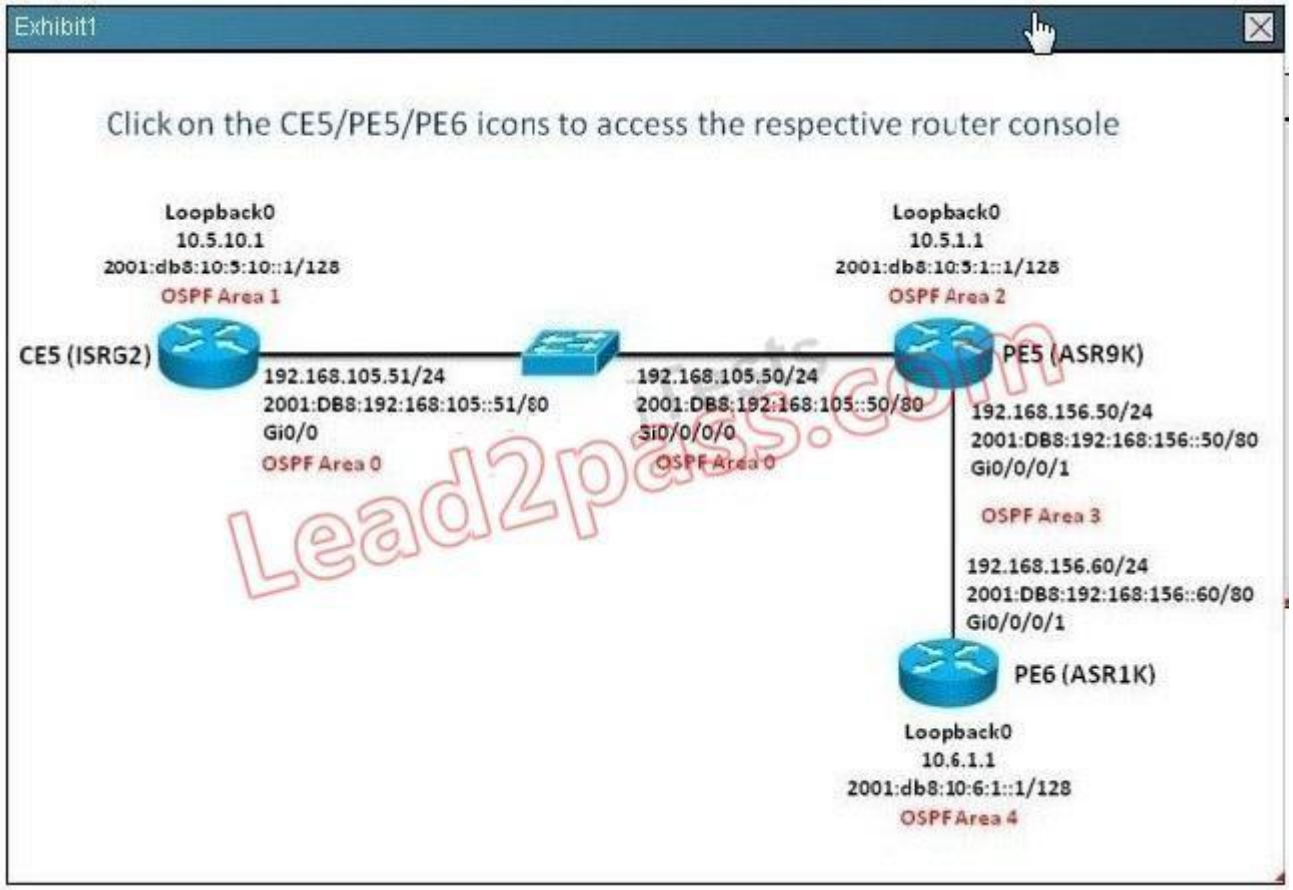
Correct Answer: B
Section: (none)

Explanation

Explanation/Reference:
#Show running-config | include virtual check how many router having "virtual " entry

QUESTION 65





Which statement Is correct regarding the DR election process In this OSPF implementation?

A. Both the CE5 and PE6 routers are DROTHERs
B. PE5 is the OSPFv2 DR for the GigabitEthernet link between PE5 and PE6
C. PE6 is the OSPFv2 and OSPFv3 DR for the GigabitEthernet link between PE5 and PE6
D. PE6 is the DR for the GigabitEthernet link between PE5 and PE6 because it has a higher OSPF priority

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
show ip ospf neighbor
show ipv6 ospf neighbor

QUESTION 66
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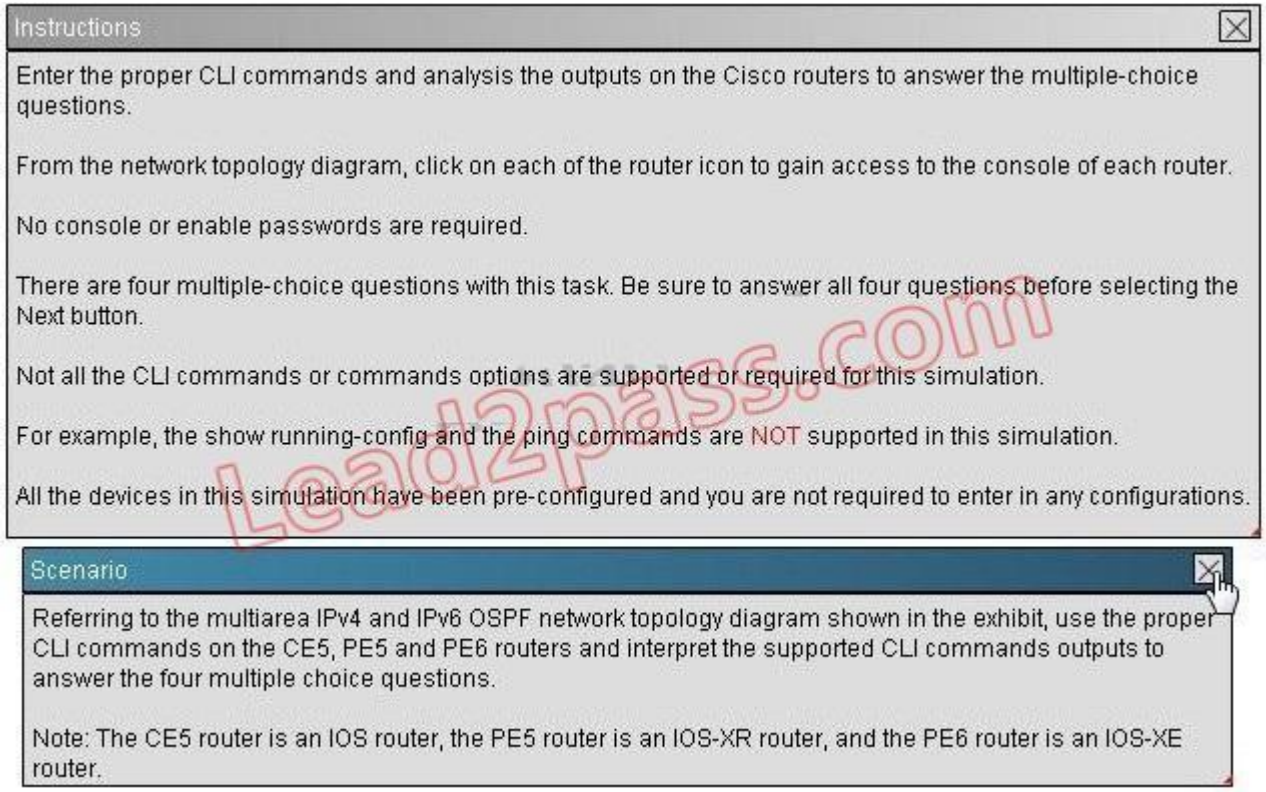

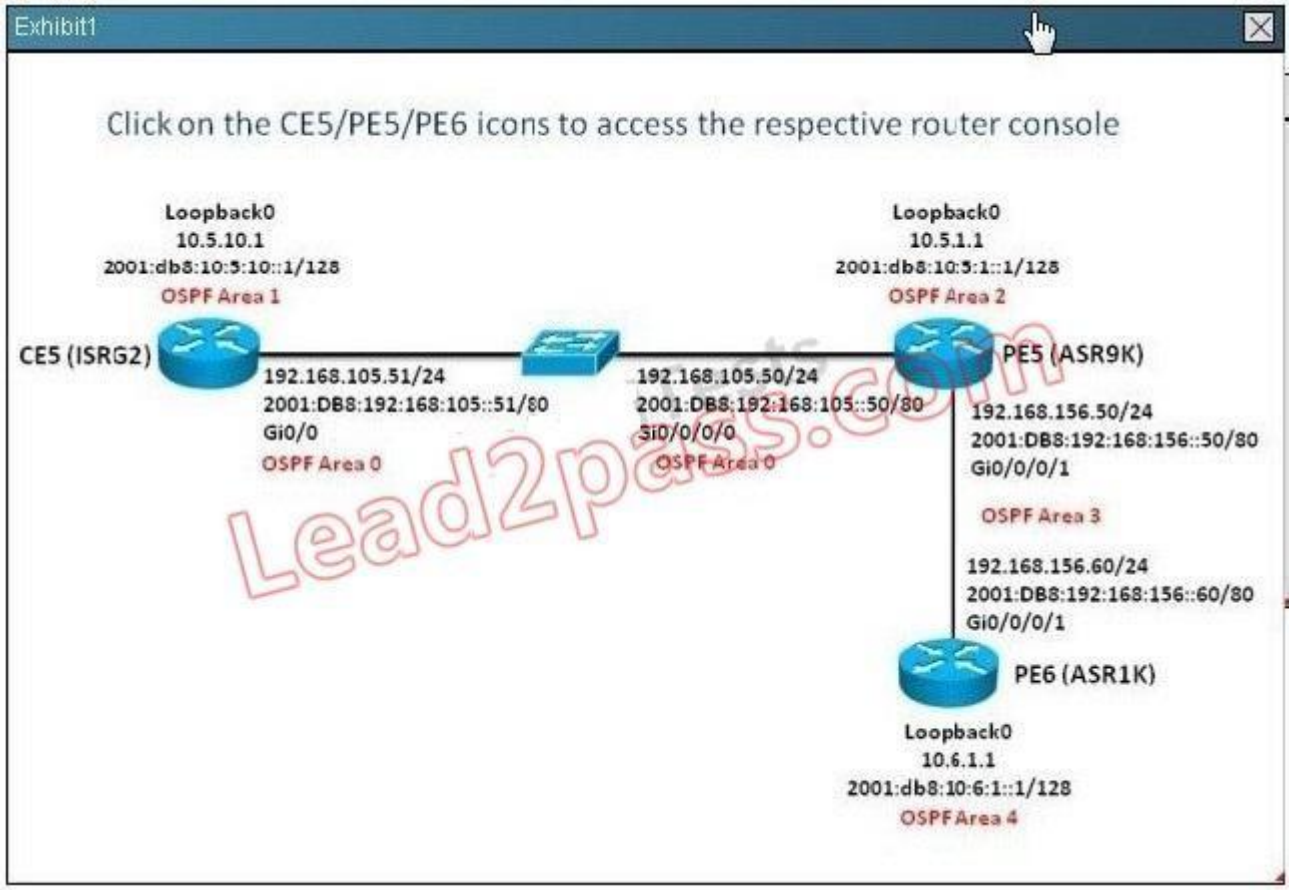

On the PE5 router, there are how many IPv4 and IPv6 OSPF neighbors and how many IPv4 OSPF interfaces? (Choose three)

A. two ipv4 ospf neighbors
B. three ipv4 ospf neighbors
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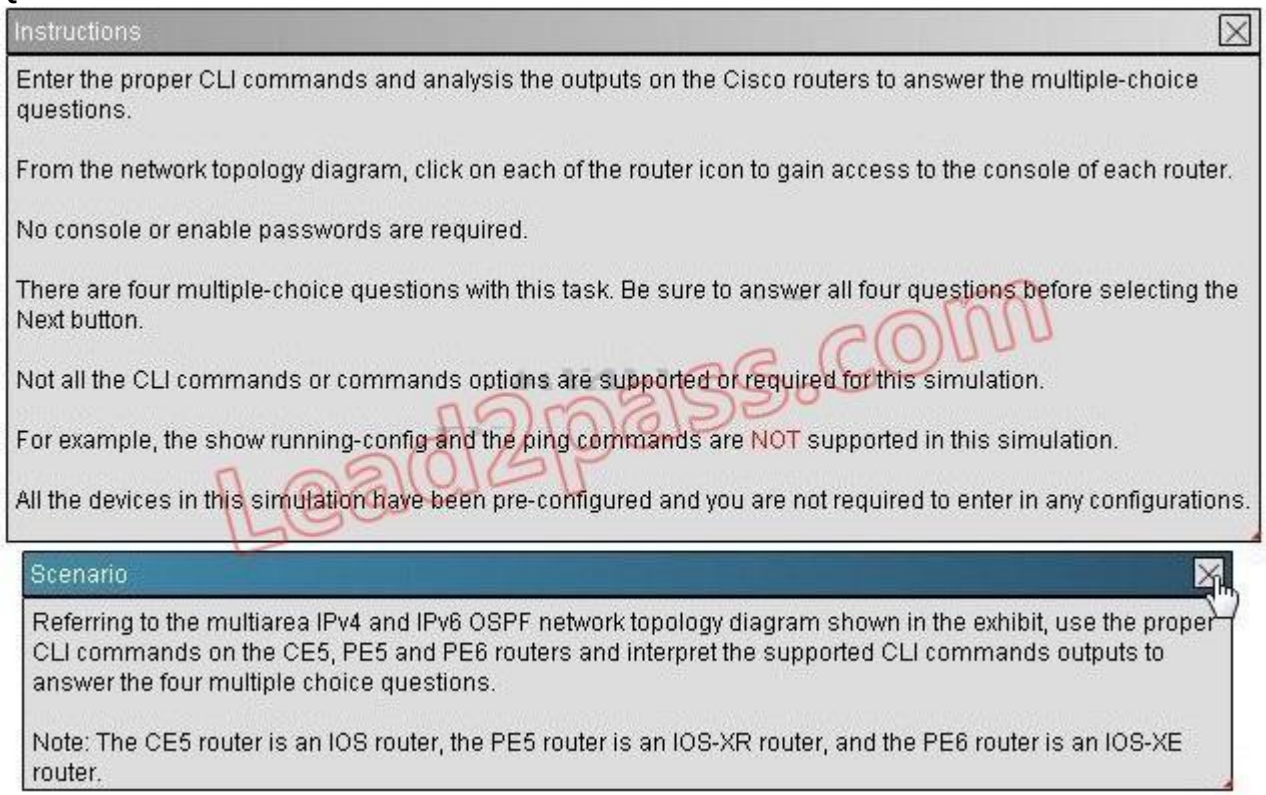
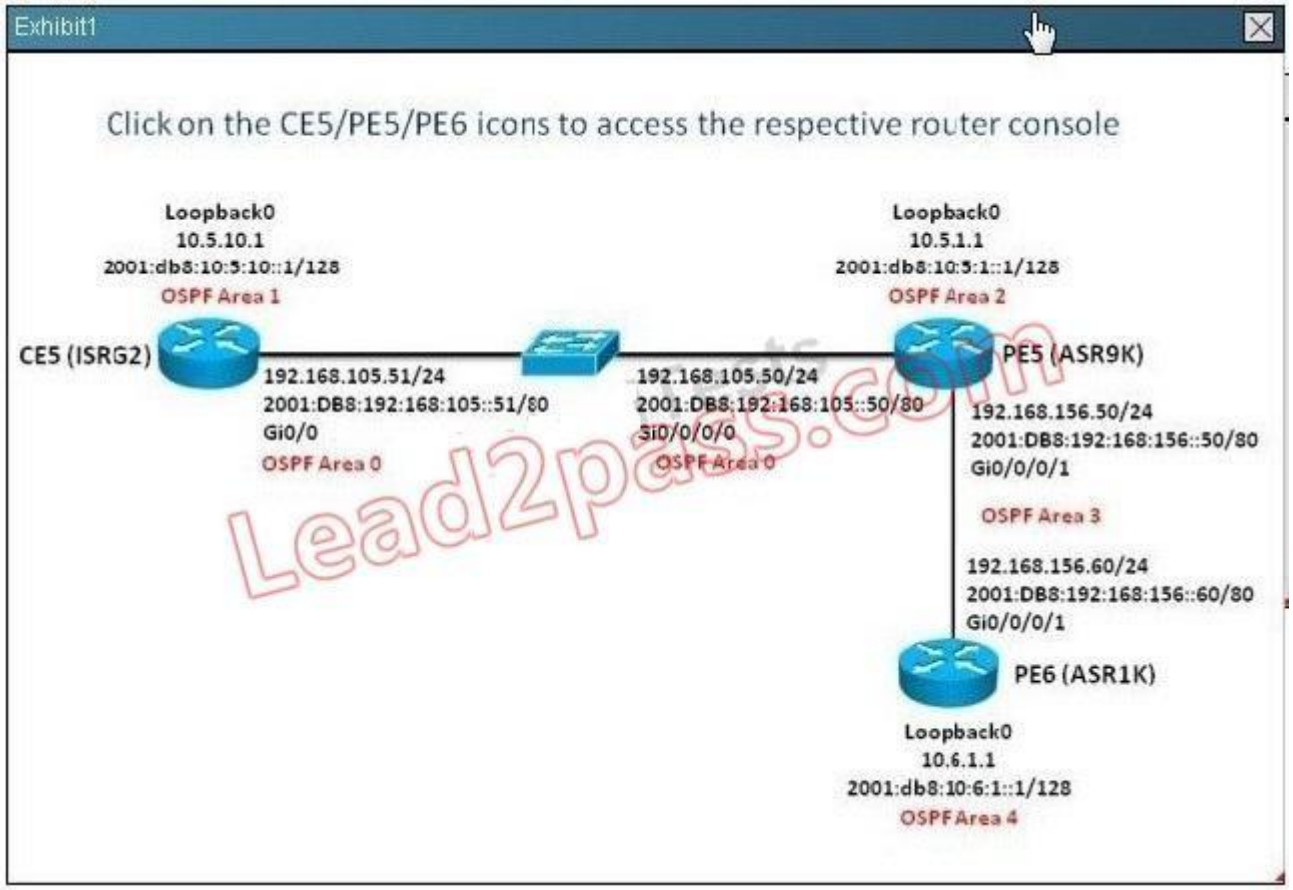
C. two ipv6 ospf neighbors
D. three ipv6 ospf neighbors
E. three ipv4 ospf interfaces
F. four ipv4 ospf interfaces

Correct Answer: AEF
Section: (none)
Explanation

Explanation/Reference:
show ip ospf neighbor
show ipv6 ospf neighbor

QUESTION 67





Which three statements are correct regarding the OSPF operations? line (Choose three.)

A. PE5 OSPFv2 and OSPFv3 router id is 10.5.1.1
B. The OSPF virtual-link cost is 1
C. Area 3 is a transit area
D. Area 4 is using MD5 authentication
E. Area 1 IPv4 and IPv6 networks are not reachable from PE6

Correct Answer: CDE
Section: (none)
Explanation

Explanation/Reference:
#show ip protocols
#show ip route ospf
#show ip ospf interfaces
#show ip ospf neighbors
#show ip ospf database
#show ip ospf border-routers
#show ip ospf
#show ip route
#show ip protocols

QUESTION 68
Hotspot

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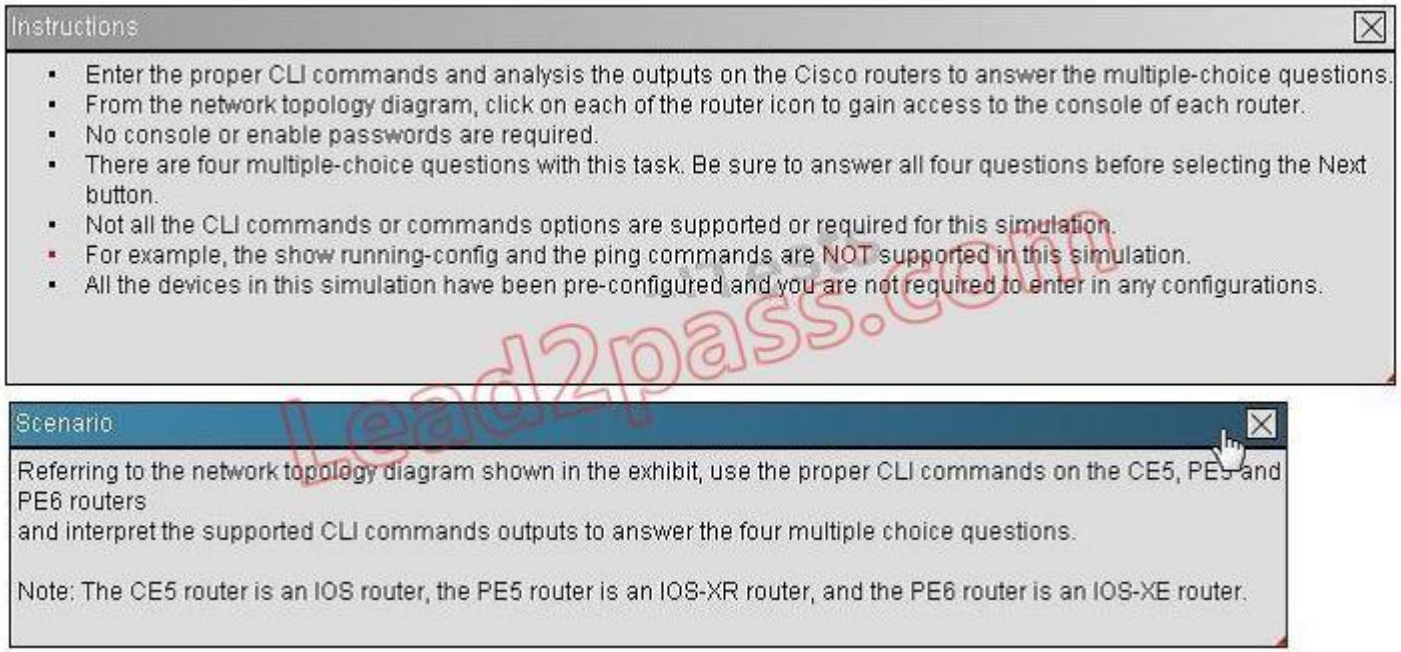
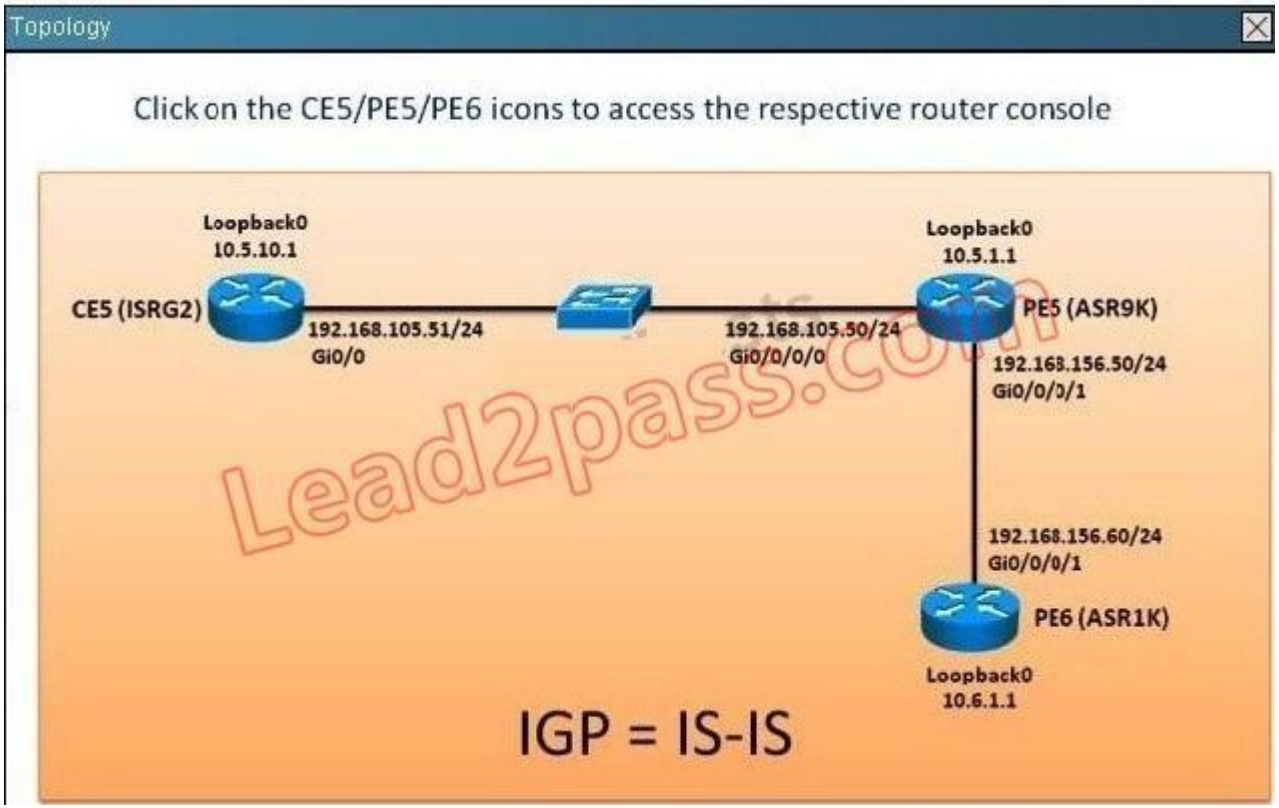




What is the configured IS-IS circuit-type between the CE5 and PE5 routers and between the PE5 and PE6 routers? (Choose two.)

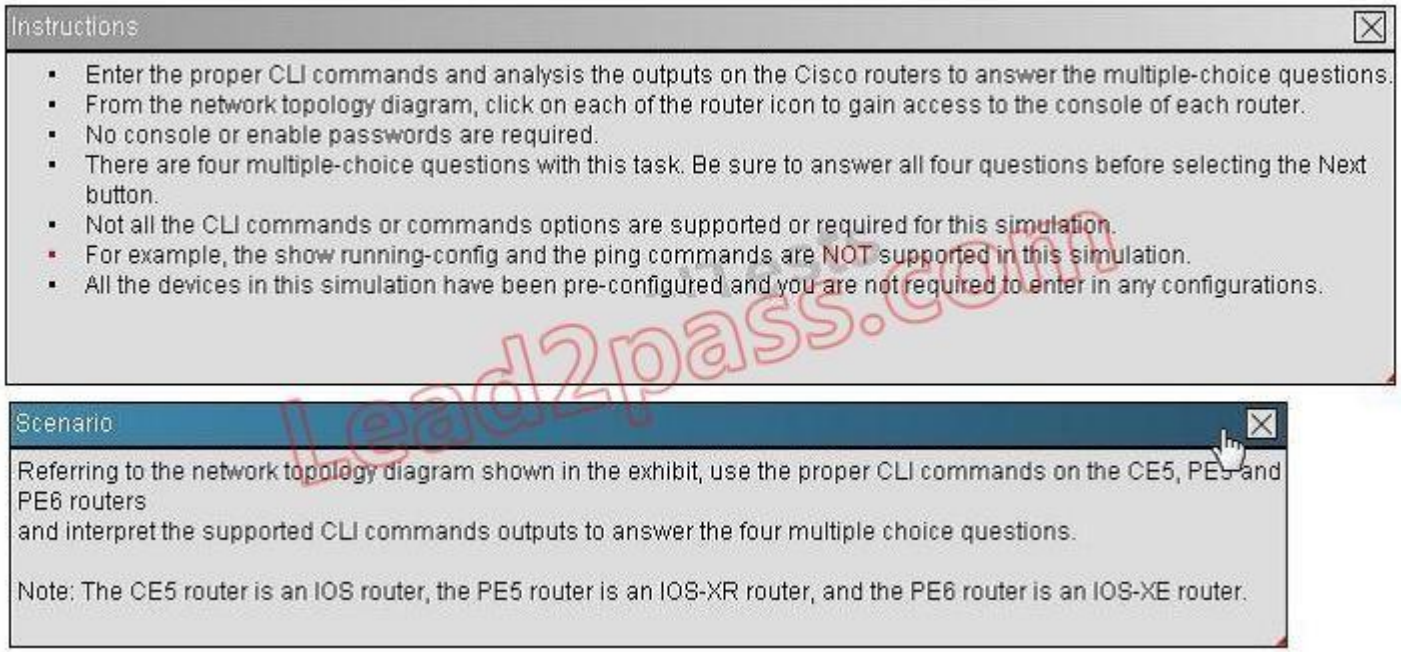
A. Circuittype L1 between CE5 and PE5 4
B. Circuittype L1/L2 between CE5 and PE5
C. Circuittype L2 between CE5 and PE5
D. Circuittype L1 between PE5 and PE6
E. Circuittype L1/L2 between PE5 and PE6
F. Circuittype L2 between PE5 and PE6

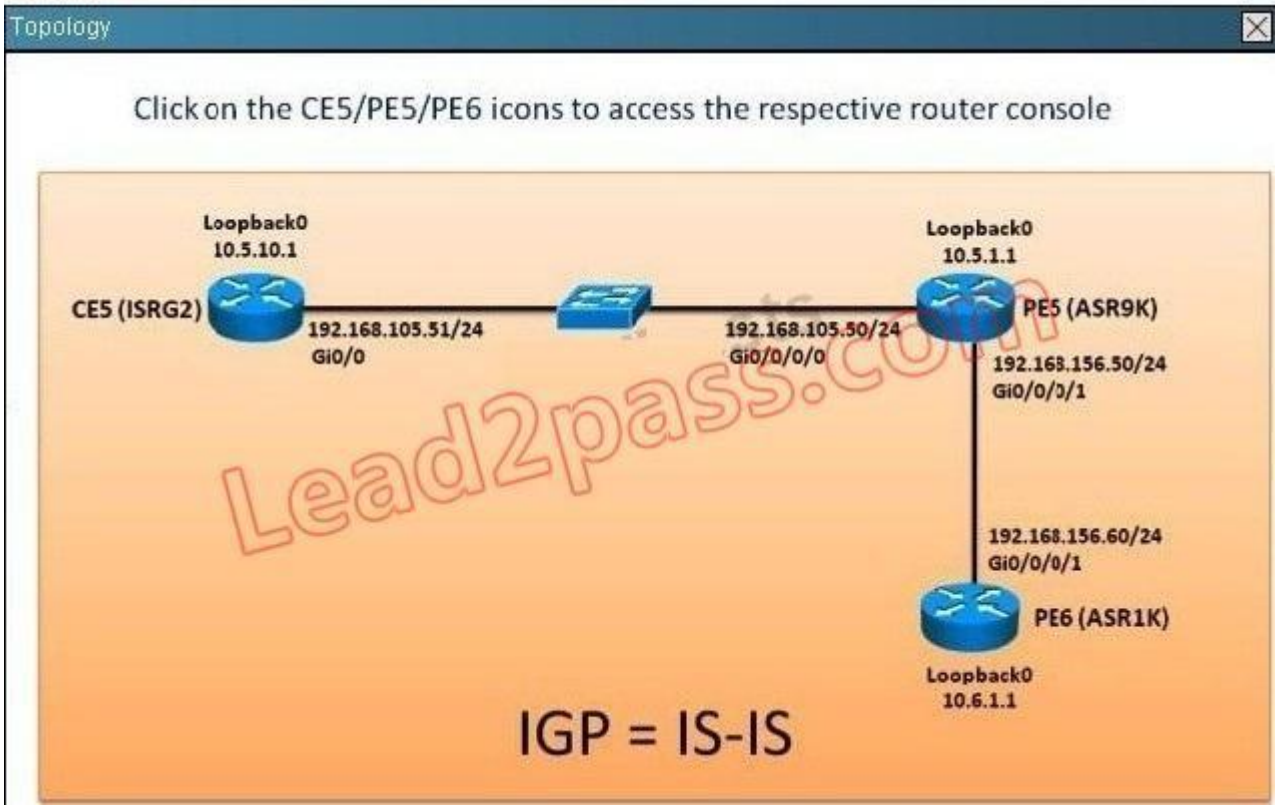
Correct Answer: AF
Section: (none)
Explanation

Explanation/Reference:

#show clns neighbor

QUESTION 69





Which router(s) is/are IS-Type L1/L2 IS-IS router?

A. CE5 only
B. PE6 only
C. CE5 and PE6 only
D. PE5 and PE6 only
E. CE5, PE5 and PE6

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
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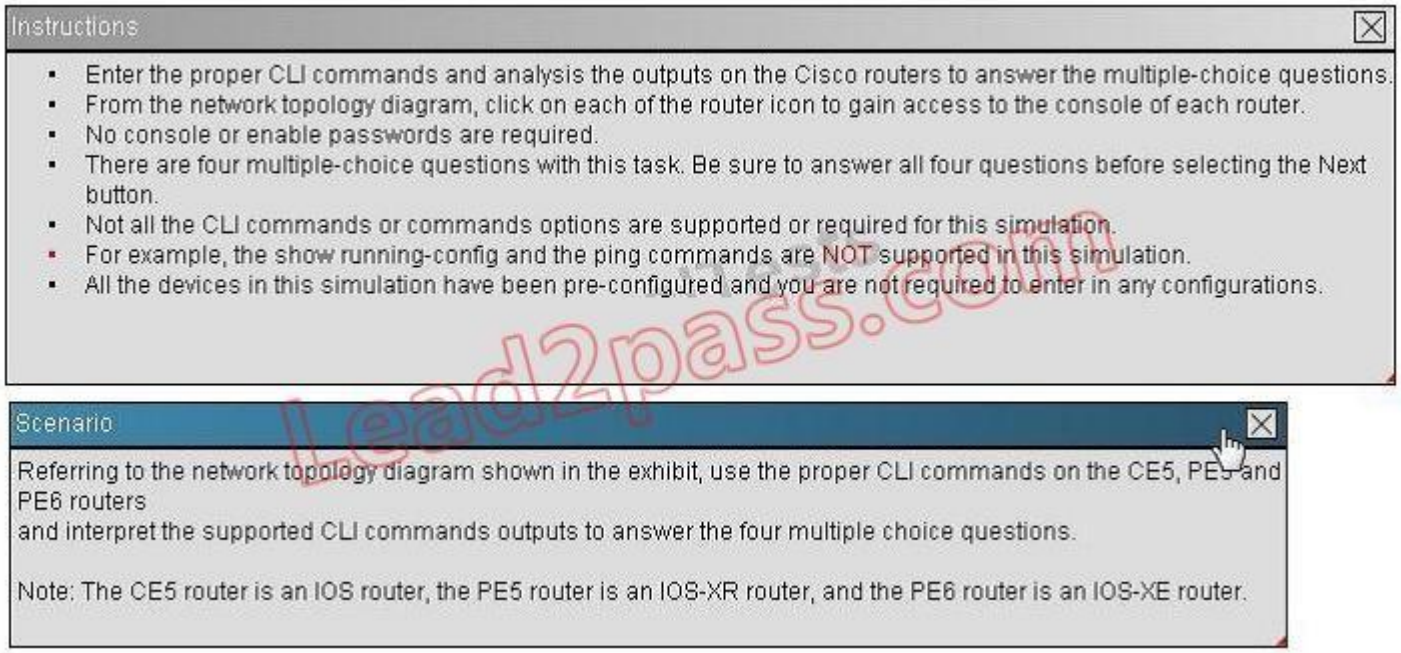
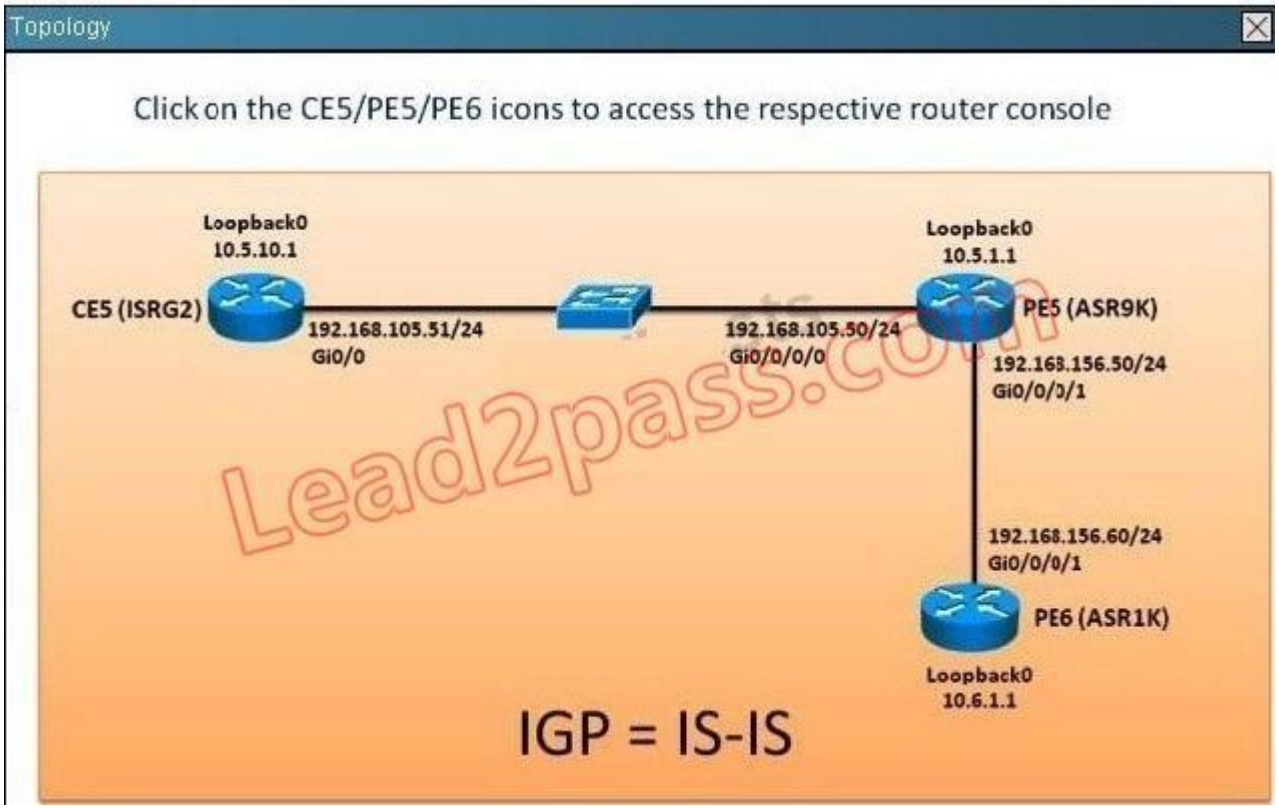
#show clns neighbor

QUESTION 70





There are how many IS-IS area(s) defined in this network Scenario?

A. 1
B. 2
C. 3
D. 4

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
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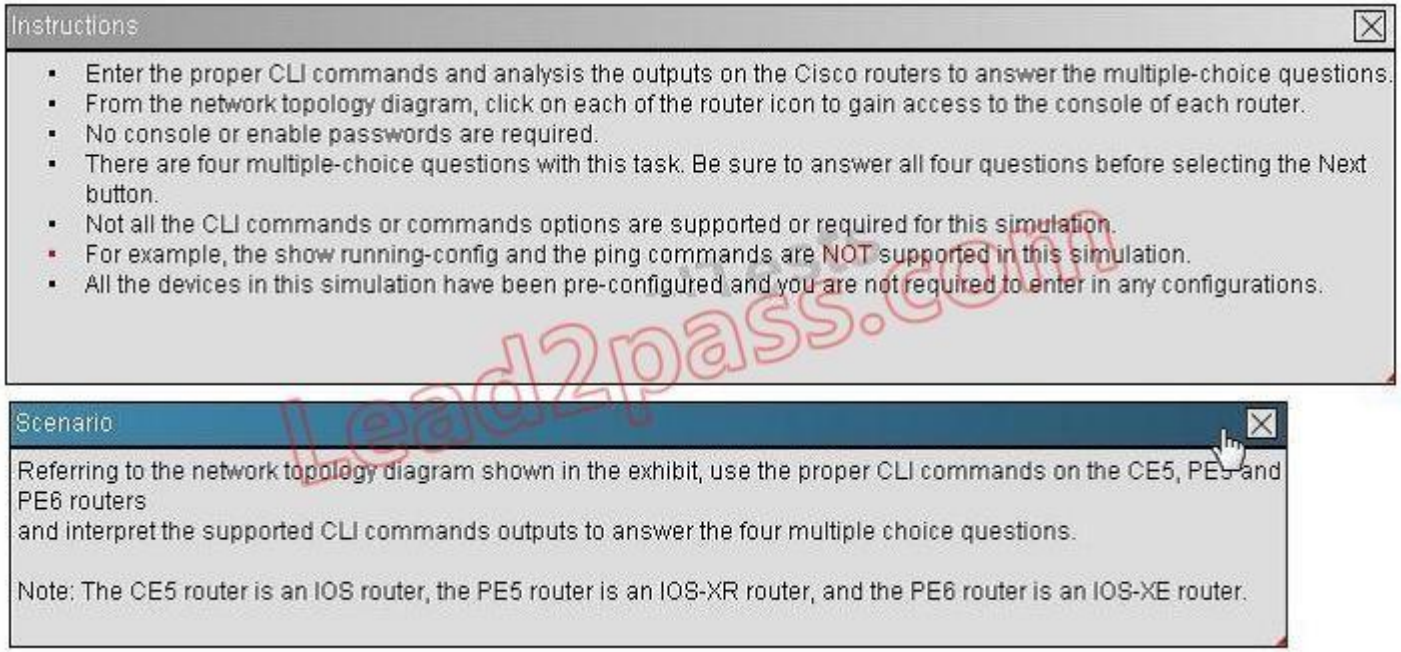
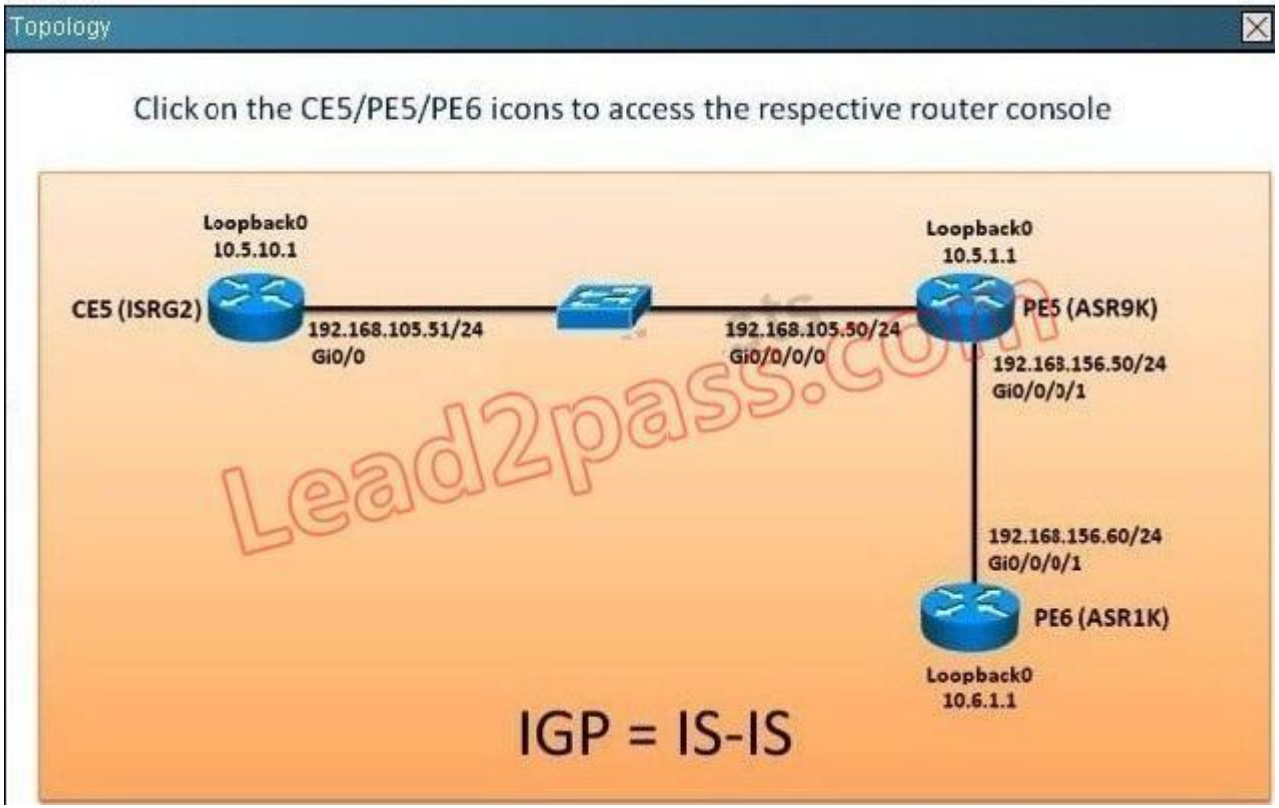
#show clns

QUESTION 71





Which router has the su 10.5.10.0/24 [20/115] entry pointing to NullO in its routing table and why? (Choose two.)

A. CE5
B. PE5
C. PE6
D. The router is summarizing 10.5.10.1/32 into 10.5.10.0/24
E. The router is suppressing the 10.5.10.0/24 route
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F. The L2/L1 IS-IS router is blocking the 10.5.10.0/24 interarea route to the L1-only router

Correct Answer: DF
Section: (none)
Explanation

Explanation/Reference:
show clns route

QUESTION 72
When implementing LDP, what is liberal label retention mode?

A. To reduce the convergence time, the LSR will retain all the received labels in its LIB even if all the neighbor LSRs go down temporary
B. The LSR can assign it's own label for each destination network even though it has not been assigned a next hop label from the neighbor LSR
C. The LSR will store the label received from the downstream LSRs in its LIB even if the downstream LSRs are not the next hop for the destination
D. The LSR will not perform PHP if it is operating in liberal label retention mode

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

By default, LDP accepts labels (as remote bindings) for all prefixes from all peers. LDP operates in liberal label retention mode, which instructs LDP to keep remote bindings from all peers for a given prefix. For security reasons, or to conserve memory, you can override this behavior by configuring label binding acceptance for set of prefixes from a given peer.

The ability to filter remote bindings for a defined set of prefixes is also referred to as LDP inbound label filtering

QUESTION 73
When using the Cisco IOS-XR show bgp command to examine the BGP table, the Metric value being displayed is used to represent which BGP attribute?

A. Weight
B. Local Preference
C. MED
D. Cost Community

Correct Answer: C
Section: (none)
Explanation

QUESTION 74
What is the default OSPF seed metric and type?

A. 10 and E1
B. 10 and E2
C. 20 and E1
D. 20 and E2
E. 0 and E1
F. 0 and E2

Correct Answer: D
Section: (none)
Explanation

QUESTION 75
Which two statements about a transit AS are correct? (Choose two.)

A. A transit AS has eBGP connection(s) to only one external AS.
B. Routes between ASs are always exchanged via eBGP.
C. A transit AS uses an IGP like OSPF or ISIS to propagate the external networks within the transit AS.
D. Core routers within a transit AS normally use default routing to reach the external networks.
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E. iBGP sessions can be established between non directly connected routers.

Correct Answer: BE
Section: (none)
Explanation

QUESTION 76
Which two statements are true about an EBGP session or an IBGP session? (Choose two.)

A. IBGP uses AS-Path to detect routing information loops within the AS.
B. EBGP routes have a default Admin Distance of 20 and IBGP routes have a default Admin Distance of 200.
C. No BGP attributes are changed in EBGP updates except for the next-hop attribute if next-hop-self is configured.
D. Routes learned from an EBGP peer not advertised to another EBGP peer to prevent routing information loops.
E. IBGP uses split horizon to prevent routing information loops; routes learned from an IBGP peer are not advertised to another IBGP peer.

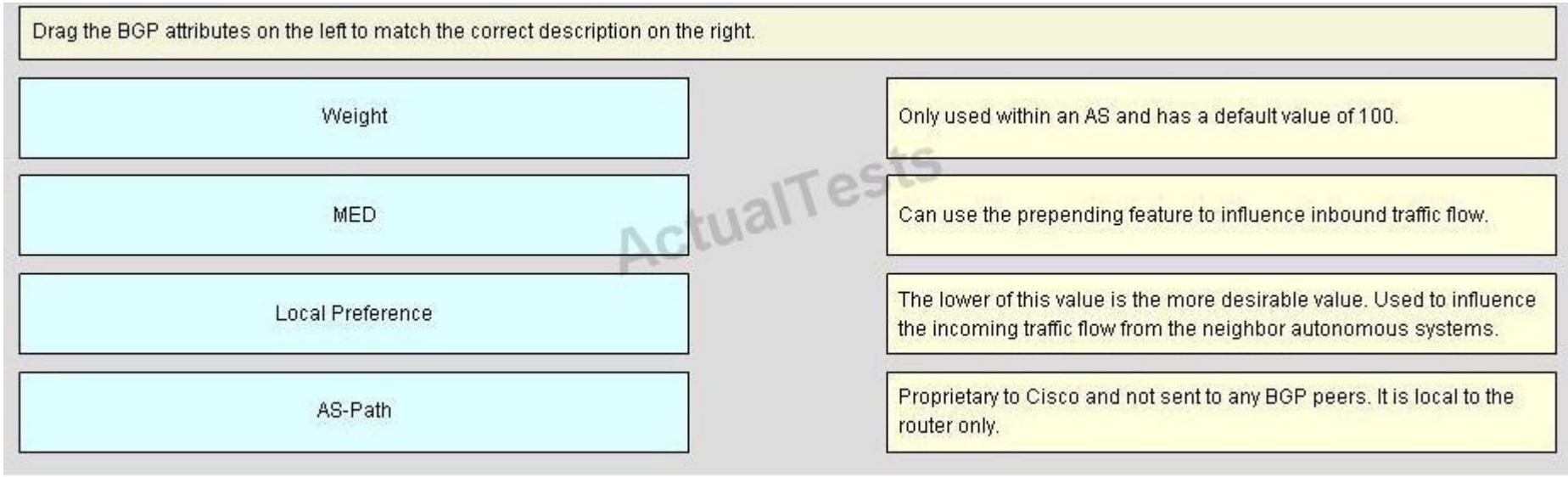
Correct Answer: BE
Section: (none)

Explanation

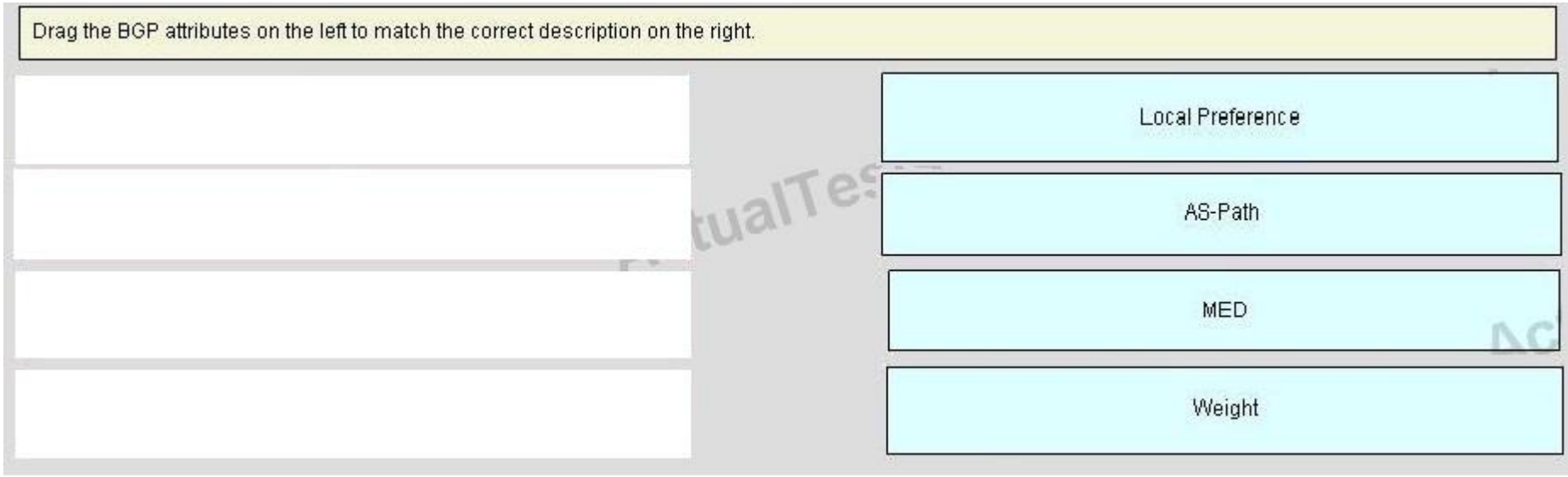
Explanation/Reference:

QUESTION 77

Select and Place:



Correct Answer:

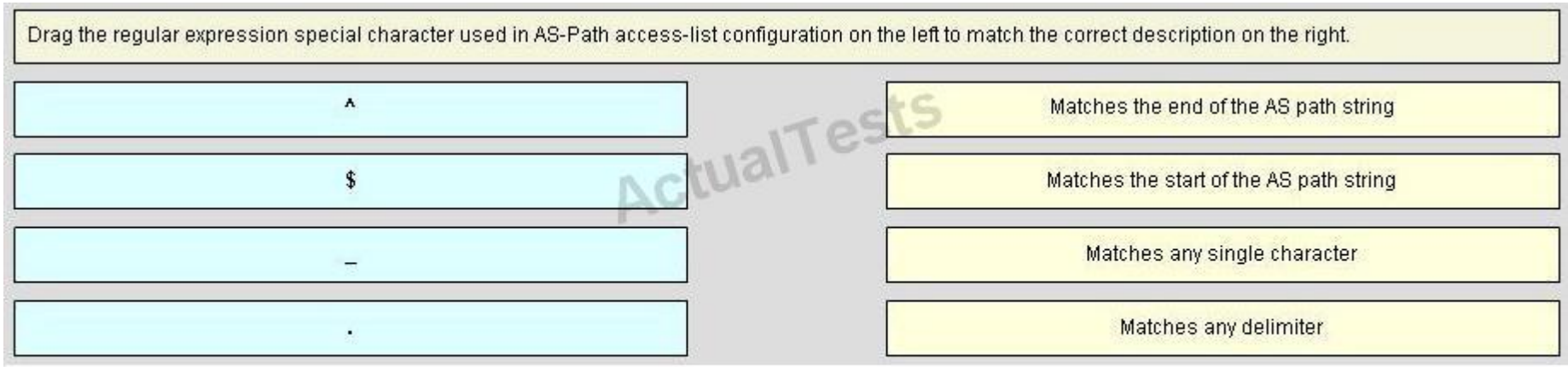


Section: (none)
Explanation

Explanation/Reference:

QUESTION 78

Select and Place:



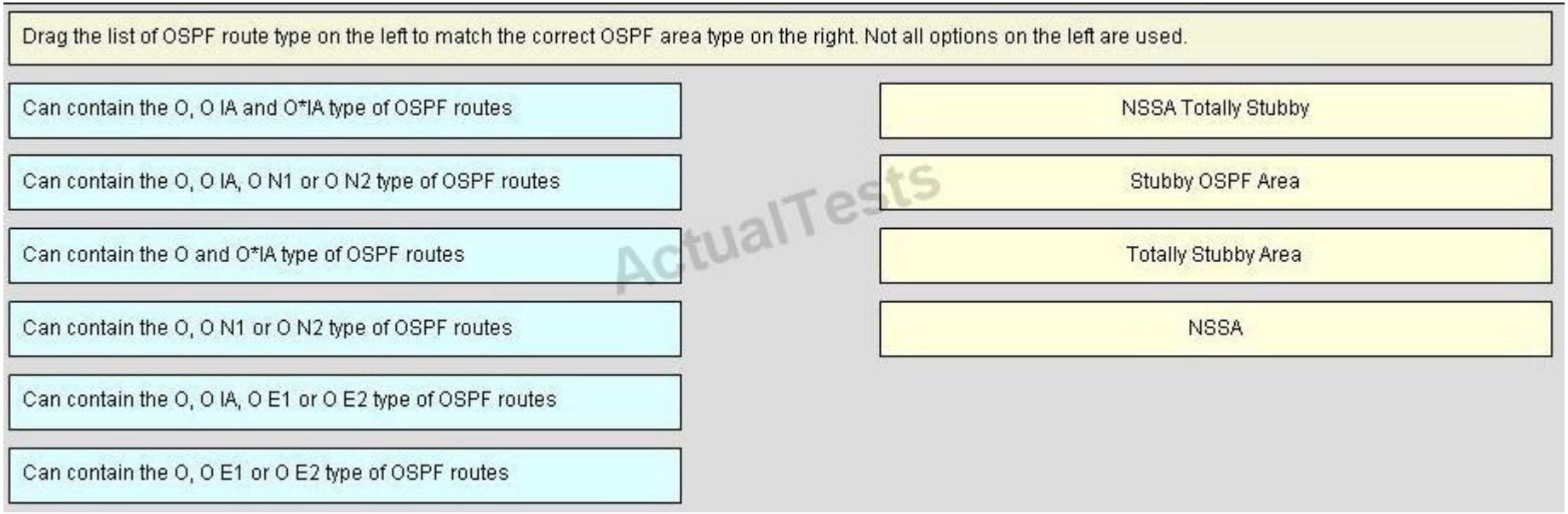
Correct Answer:

Section: (none)
Explanation

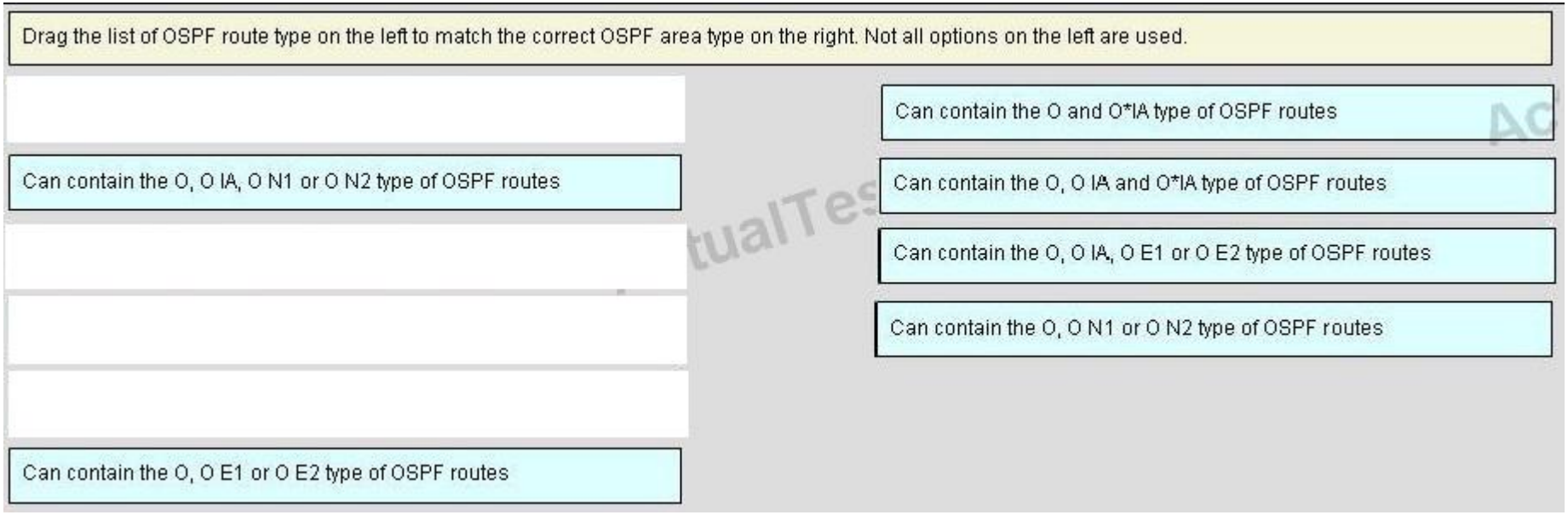
Explanation/Reference:

QUESTION 79

Select and Place:



Correct Answer:

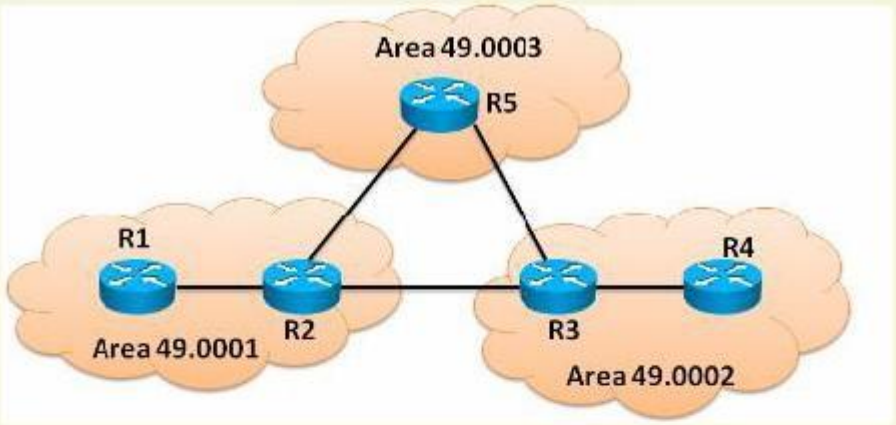


Section: (none)
Explanation

Explanation/Reference:

QUESTION 80

Select and Place:



Refer to the IS-IS topology diagram. You are tasked with troubleshooting IS-IS configurations errors. Drag the router on the left to match the most optimal IS-IS router type it should use on the right.

R1

R2

R3

R4

R5

L1

Target

Target

L2

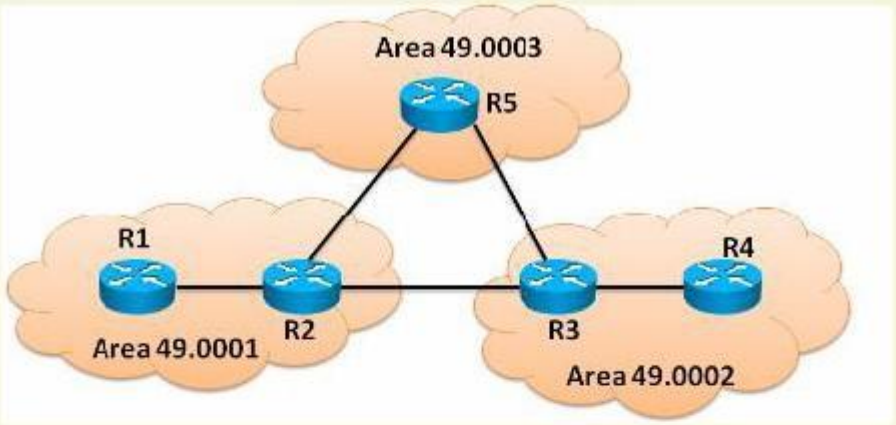
Target

L1/L2

Target

Target

Correct Answer:



Refer to the IS-IS topology diagram. You are tasked with troubleshooting IS-IS configurations errors. Drag the router on the left to match the most optimal IS-IS router type it should use on the right.

L1
- R1
- R4

L2
- R5

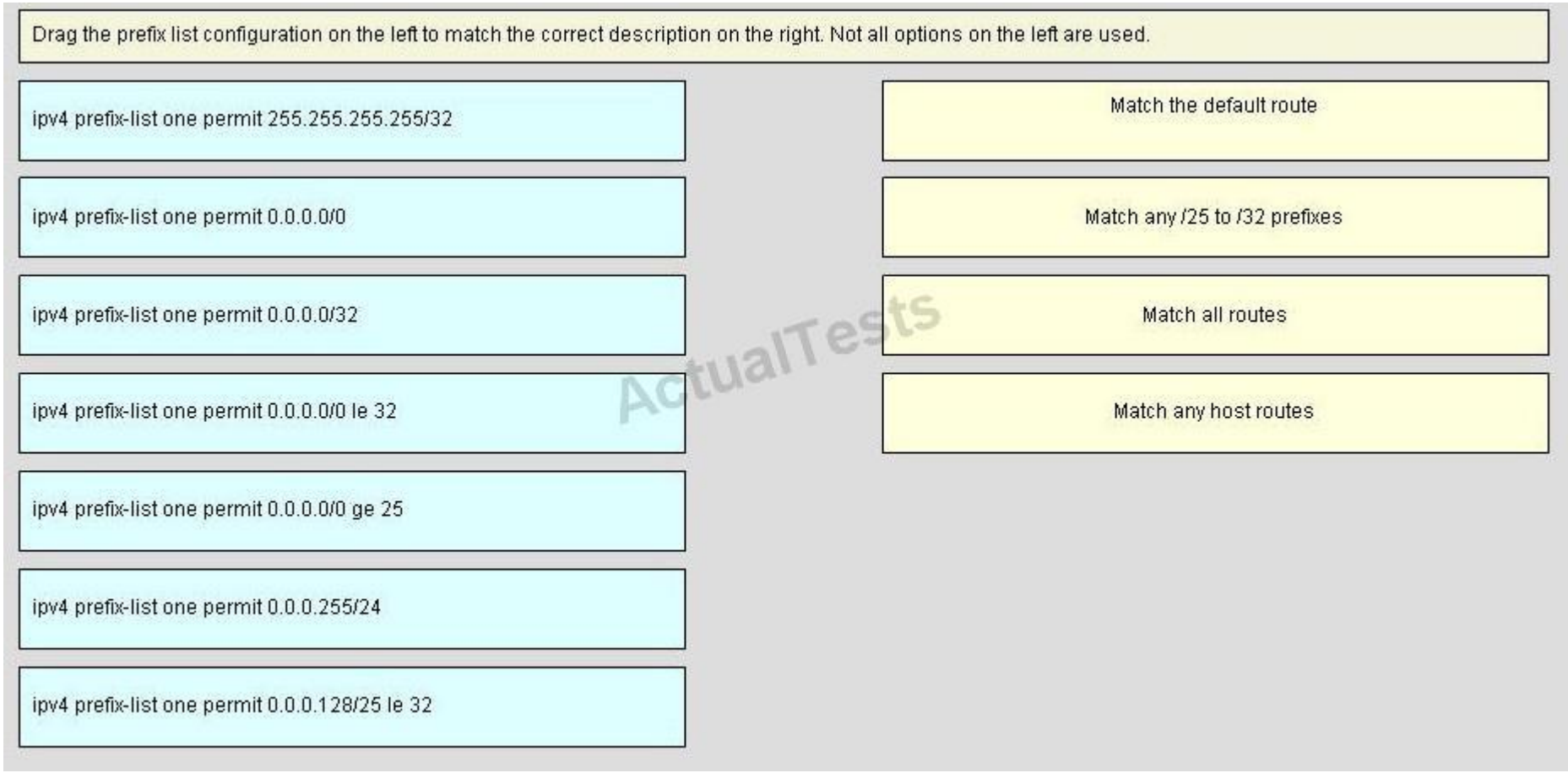
L1/L2
- R2
- R3

Section: (none)
Explanation

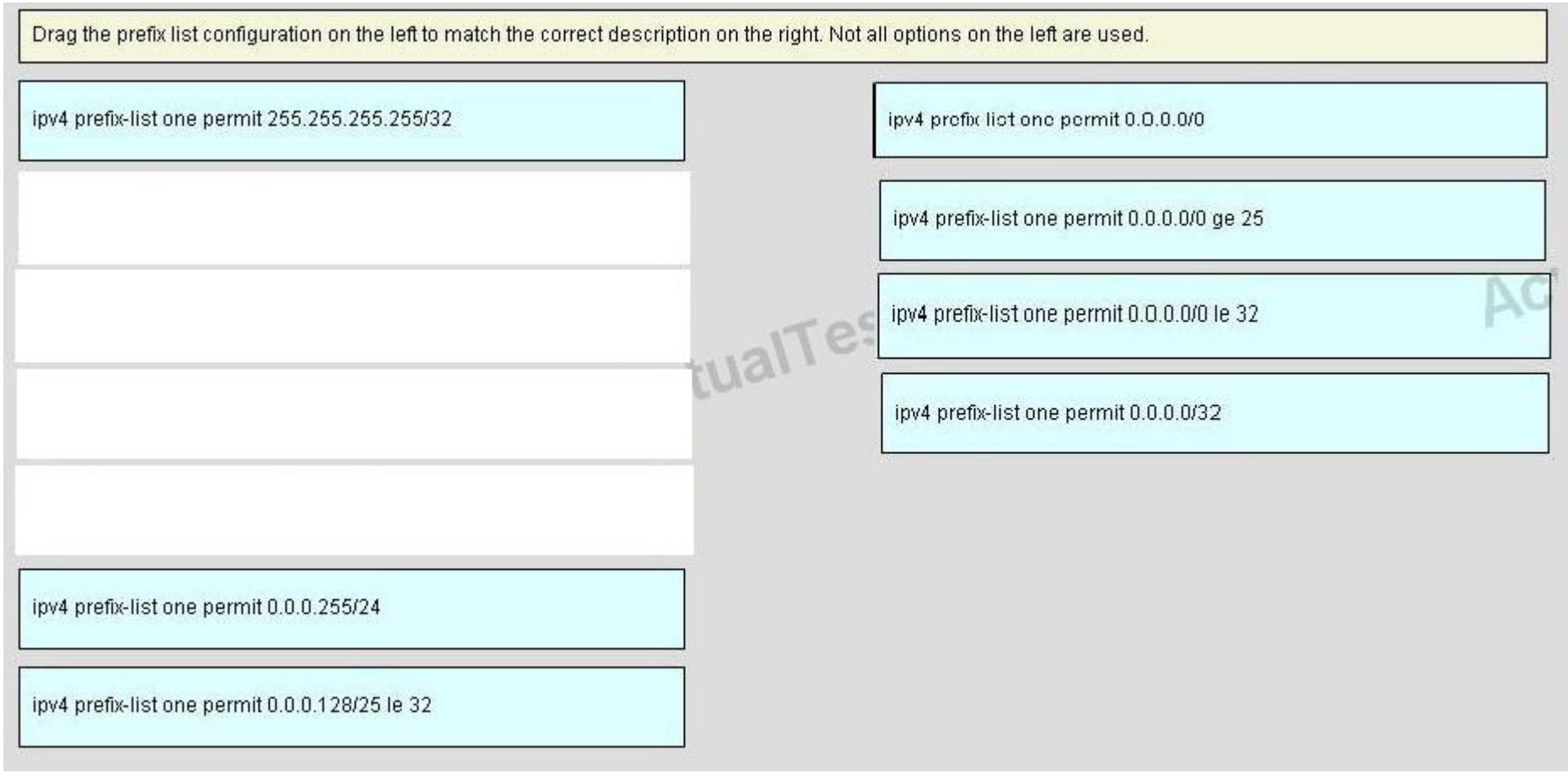
Explanation/Reference:

QUESTION 81

Select and Place:



Correct Answer:

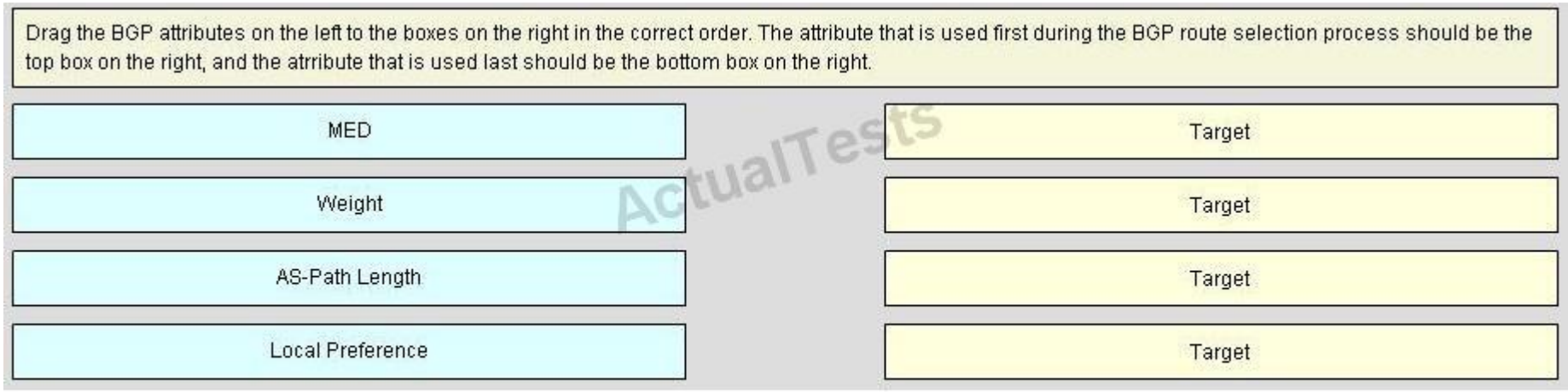


Section: (none)
Explanation

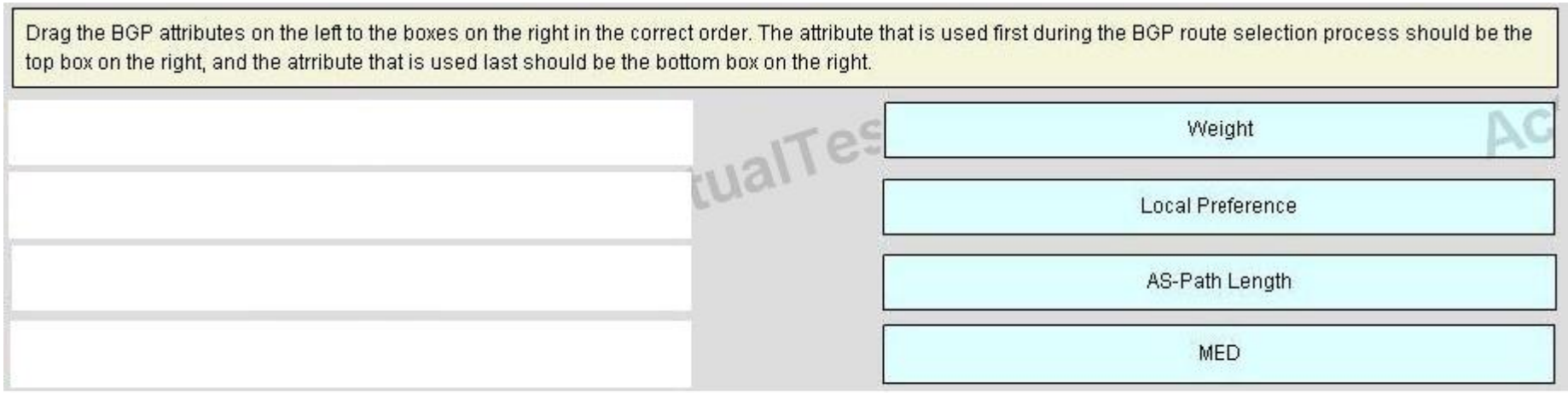
Explanation/Reference:

QUESTION 82

Select and Place:



Correct Answer:



Section: (none)
Explanation

Explanation/Reference: