Vendor: Cisco

Exam Code: 300-101

Exam Name: Implementing Cisco IP Routing (ROUTE v2.0)

Version: Demo

QUESTION 1
What is the benefit of deploying IPv6 in a campus network using dual stack mode?

A. Dual Stack Mode takes advantage of IPv6 over IPv4 tunnel within a network.
B. IPv4 and IPv6 run alongside one another and have no dependency on each other to function
C. IPv4 and IPv6 share network resources.
D. IPv6 can depend on existing IPv4 routing, QoS, security, and multicast policies.

Correct Answer: B
Explanation:
Deploying IPv6 in the campus using the dual-stack model offers several advantages over the hybrid and service block models. The primary advantage of a dual stack model is that it does not require tunneling within the campus network. The dual stack model runs the two protocols as ships in the night, meaning that IPv4 and IPv6 run alongside one another and have no dependency on each other to function except that they share network resources. Both have independent routing.

QUESTION 2
What two situations could require the use of multiple routing protocols? (Choose two)

A. when using UNIX host-based routers
B. when smaller broadcast domains are desired
C. because having multiple routing protocols confuses hackers
D. when migrating from an older Interior Gateway Protocol (IGP) to a new IGP
E. when all equipment is manufactured by Cisco
F. when there are multiple paths to destination networks

Correct Answer: AD
Explanation:
Simple routing protocols work well for simple networks, but networks grow and become more complex. While running a single routing protocol throughout your entire IP internetwork is desirable, multiprotocol routing is common for a number of reasons, including company mergers, multiple departments managed by multiple network administrators, multivendor environments, or simply because the original routing protocol is no longer the best choice. Often, the multiple protocols are redistributed into each other during a migration period from one protocol to the other.

QUESTION 3
Refer to the exhibit. Will redistributed RIP routes from OSPF Area 2 be allowed in Area 1?

A. Because Area 1 is an NSSA, redistributed RIP routes will not be allowed.
B. Redistributed RIP routes will be allowed in Area 1 because they will be changed into type 5 LSAs in Area 0 and passed on into Area 1.
C. Because NSSA will discard type 7 LSAs, redistributed RIP routes will not be allowed in Area 1.
D. Redistributed RIP routes will be allowed in Area 1 because they will be changed into type 7 LSAs in Area 0 and passed on into Area 1.
E. RIP routes will be allowed in Area 1 only if they are first redistributed into EIGRP.

Correct Answer: A

QUESTION 4
A router is configured for redistribution to advertise EIGRP routes into OSPF on a boundary router. Given the configuration:

router ospf 1

redistribute eigrp 1 metric 25 subnets

What is the function of the 25 parameter in the redistribute command?

A. It specifies the seed cost to be applied to the redistributed routes.
B. It specifies the administrative distance on the redistributed routes.
C. It specifies the metric limit of 25 subnets in each OSPF route advertisement.
D. It specifies a new process-id to inject the EIGRP routes into OSPF.

Correct Answer: A

QUESTION 5
Router E is configured with the EIGRP variance 2 command. What path will Router E take to reach Router A?
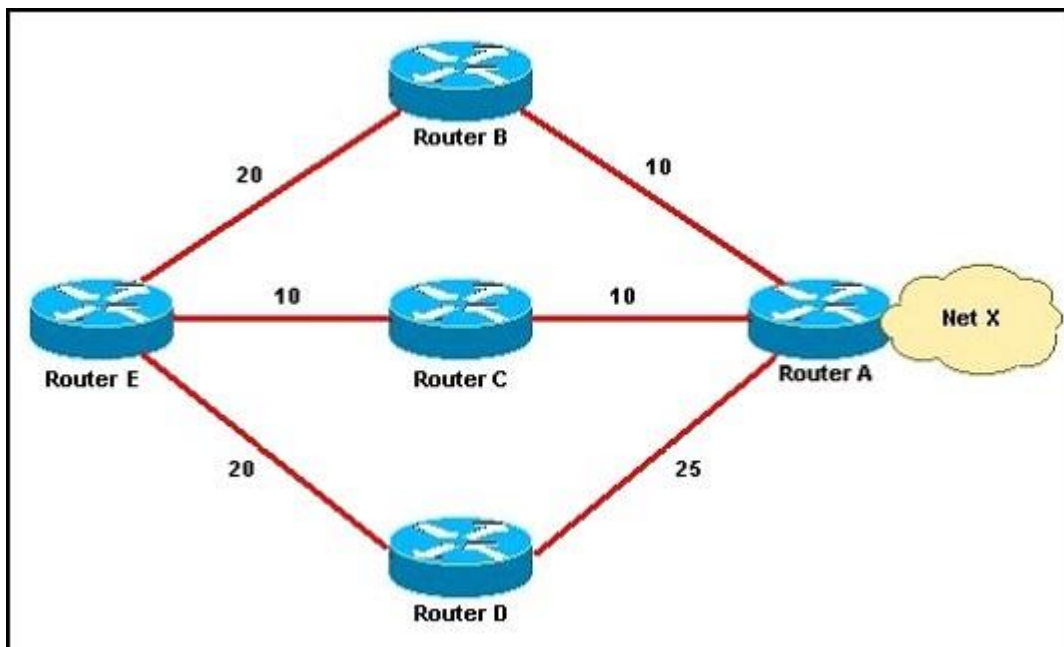
A. only E-D-A
B. only E-B-A
C. only E-C-A
D. both E-B-A and E-C-A
E. both E-B-A and E-D-A
F. all available paths.

Correct Answer: D
Explanation:
By using the "variance 2 command we can share traffic to other feasible successor routes. But by default, EIGRP only shares traffic to 4 paths. So we need to use the "maximum- paths 6 to make sure all of these routes are used.

QUESTION 6
How is network layer addressing accomplished in the OSI protocol suite?

A. Internet Protocol address
B. Media Access Control address
C. Packet Layer Protocol address
D. Network Service Access Point address
E. Authority and Format Identifier address

Correct Answer: D
Explanation:
OSI network-layer addressing is implemented by using two types of hierarchical addresses: network service access-point addresses and network-entity titles.
A network service-access point (NSAP) is a conceptual point on the boundary between the network and the transport layers. The NSAP is the location at which OSI network services are provided to the transport layer. Each transport-layer entity is assigned a single NSAP, which is individually addressed in an OSI internetwork using NSAP addresses.

QUESTION 7
R3#show run | include defaultip

default-network 140.140.0.0

ip default-network 130.130.0.0

R3#show ip route | begin Gateway

Gateway of last resort is 0.0.0.0 to network 130.130.0.0

116.0.0.0/8 is variably subnetted, 5 subnets, 3 masks

C 116.16.37.0/30 is directly connected, Serial1/0.2

C 116.16.32.0/30 is directly connected, Serial2/0.2

C 116.16.34.0/28 is directly connected, Serial1/0.1

C 116.16.35.0/28 is directly connected, Serial2/0.1

S 116.0.0.0/8 [1/0] via 116.16.34.0

* 140.140.0.0/32 is subnetted, 3 subnets

O 140.140.1.1 [110/65] via 116.16.34.4, 00:14:54, Serial1/0.1

O 140.140.3.1 [110/65] via 116.16.34.4, 00:14:54, Serial1/0.1

O 140.140.2.1 [110/65] via 116.16.34.4, 00:14:54, Serial1/0.1

* 130.130.0.0/16 is variably subnetted, 4 subnets, 2 masks

D* 130.130.0.0/16 is a summary, 00:30:04, Null0

C 130.130.1.0/24 is directly connected, Ethernet0/0

C 130.130.2.0/24 is directly connected, Ethernet0/1

C 130.130.3.0/24 is directly connected, Ethernet1/0

D 150.150.0.0/16 [90/679936] via 116.16.35.5, 00:02:58, Serial2/0.1

Refer to the exhibit. Why is the 140.140.0.0 network not used as the gateway of last resort even though it is configured first?

A. The last default-network statement will always be preferred.
B. A route to the 140.140.0.0 network does not exist in the routing table.
C. Default-network selection will always prefer the statement with the lowest IP address.
D. A router will load balance across multiple default-networks; repeatedly issuing the show ip route command would show the gateway of last resort changing between the two networks.

Correct Answer: B
Explanation:
As you can see in the exhibit, 140.140.0.0 doesn't appear in the routing table.

QUESTION 8
Refer to the exhibit. Which two statements are correct regarding the routes to be redistributed into OSPF? (Choose two.)

```
<output omitted>
!
router ospf 10
  redistribute rip route-map rip-in
!
<output omitted>
!
route-map rip-in permit 10
 match ip address 10 20
 set metric 100
 set metric-type type-1

route-map rip-in deny 20

 match ip address 30

route-map rip-in permit 30
 set metric 200
 set metric-type type-2
!
access-list 10 permit 10.0.10.0 0.0.0.255
access-list 20 permit 192.168.1.0 0.0.0.255
access-list 30 permit 10.0.0.0 0.255.255.255
```

A. The network 192.168.1.0 will be allowed and assigned a metric of 100.
B. The network 192.168.1.0 will be allowed and assigned a metric of 200.
C. All networks except 10.0.0.0/8 will be allowed and assigned a metric of 200.
D. The network 172.16.0.0/16 will be allowed and assigned a metric of 200.
E. The network 10.0.10.0/24 will be allowed and assigned a metric of 200.

Correct Answer: AD

QUESTION 9
Refer to the exhibit. R1 and R2 belong to the RIP routing domain that includes the networks
10.20.0.0/16 and 10.21.0.0/16. R3 and R4 are performing two-way route redistribution between
OSPF and RIP. A network administrator has discovered that R2 is receiving OSPF routes for the
networks 10.20.0.0/16 and 10.21.0.0/16 and a routing loop has occurred. Which action will
correct this problem?
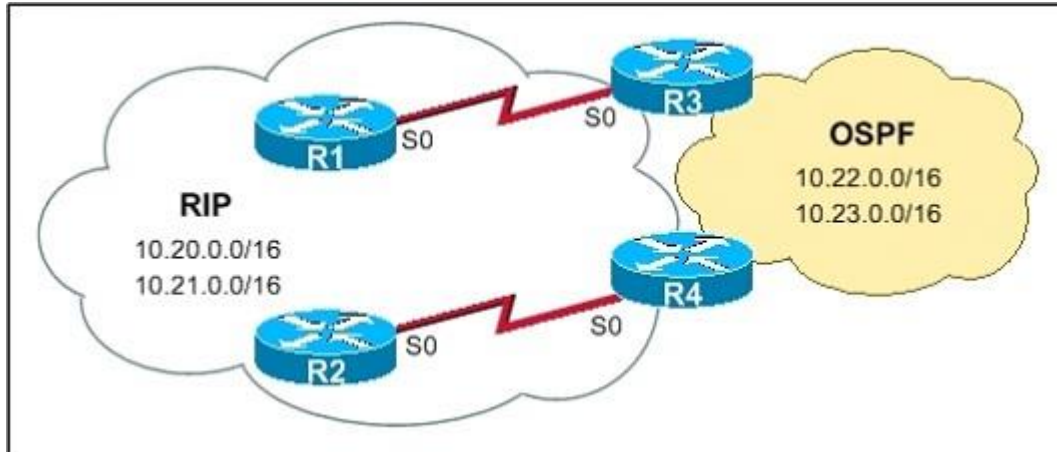
A. Apply an inbound ACL to the R2 serial interface.
B. Change the RIP administrative distance on R3 to 110.
C. Configure distribute-lists on R3 and R4.
D. Set the OSPF default metric to 20.
E. Change the OSPF administrative distance on R3 to 110.

Correct Answer: C
Explanation:
Distribute List is Like an access-list, use to deny or permit the routing update to pass through a router/interface. Distribute List allow you apply an access list to a routing updates.
It can be apply on in or out bond of an interface under a routing process. e.g in fig. R1 want to send a routing update to it neighbor, this update will go through from interface S0/0, router will check, is there some Distribute List apply to this interface. If there is a Distribute List which would contain the allow route to pass through this interface.

QUESTION 10
Router RTA is configured as follows:

RTA (config)#router rip

RTA(config-router)#network 10.0.0.0

RTA(config-router)#distribute-list 44 in interface BRIO

RTA(config-router)#exit

RTA(config)#access-list 44 deny 172.16.1.0 0.0.0.255

RTA(config)#access-list 44 permit any

What are the effects of this RIP configuration on router RTA? (Choose two)
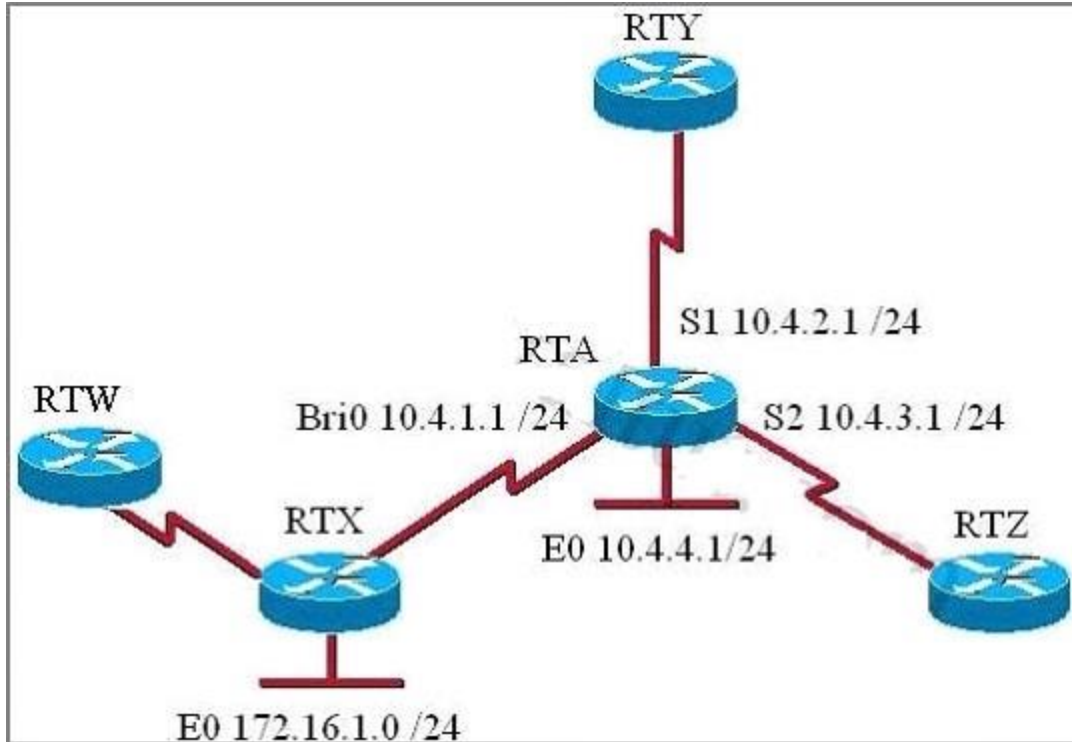
A. no routing updates will be sent from router RTA on interface BRIO to router RTX
B. router RTA will not advertise the 10.0.0.0 network to router RTX
C. the route to network 172.16.1.0 will not be entered into the routing table on router RTA
D. user traffic from the 172.16.1.0 network is denied by access-list 44
E. the routing table on router RTA will be updated with the route to router RTW

Correct Answer: CE
Explanation:
Distribute list are used to filter routing updates and they are based on access lists. In this case, an access list of 44 was created to deny the route from network 172.16.1.0/24 so this route will not be entered into the routing table of RTA. But the route from RTW can be entered because it is not filtered by the access list A and B are not correct because the distribute list is applied to the inbound direction of interface BRI0 so outgoing routing updated will not be filtered.
Distribute list just filters routing updates so user traffic from network 172.16.1.0 will not be denied.

QUESTION 11
Into which two types of areas would an area border router (ABR) inject a default route? (Choose two.)

A. stub
B. the autonomous system of an exterior gateway protocol (EGP)
C. NSSA
D. totally stubby
E. the autonomous system of a different interior gateway protocol (IGP)
F. area 0

Correct Answer: AD
Explanation:

Both stub area & totally stubby area allow an ABR to inject a default route. The main difference between these 2 types of areas is:
+ Stub area replaces LSA Type 5 (External LSA - created by an ASBR to advertise network from another autonomous system) with a default route + Totally stubby area replaces both LSA Type 5 and LSA Type 3 (Summary LSA - created by an ABR to advertise network from other areas, but still within the AS, sometimes called interarea routes) with a default route.
Below summarizes the LSA Types allowed and not allowed in area types:

Area Type	Type 1 & 2 (within area)	Type 3 (from other areas)	Type 4	Type 5	Type 7
Standard & backbone	Yes	Yes	Yes	Yes	No
Stub	Yes	Yes	No	No	No
Totally stubby	Yes	No	No	No	No
NSSA	Yes	Yes	No	No	Yes
Totally stubby NSSA	Yes	No	No	No	Yes

QUESTION 12
Which three statements are true when configuring redistribution for OSPF? (Choose three)

A. The default metric is 10.
B. The default metric is 20.
C. The default metric type is 2.
D. The default metric type is 1.
E. Subnets do not redistribute by default.
F. Subnets redistribute by default.
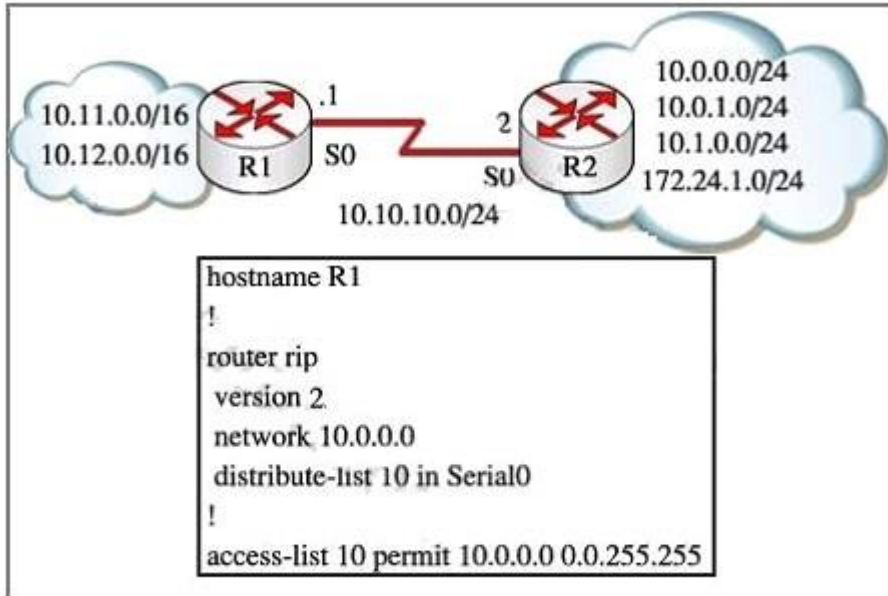
Correct Answer: BCE

QUESTION 13
To configure 6to4 on a dual-stack edge router. Which three of the following are valid in 6to4 Tunneling configuration? (Choose three)

A. IPv4 Tunnel IP address
B. Tunnel mode (6to4)
C. Tunnel Keepalives
D. IPv4 Tunnel Destination
E. IPv4 Tunnel Source.
F. 6to4 IPv6 address (within 2002 /16)

Correct Answer: BEF

QUESTION 14
Study this exhibit below carefully. What is the effect of the distribute-list command in the R1 configuration?

```
hostname R1
!
router rip
 version 2
 network 10.0.0.0
 distribute-list 10 in Serial0
!
access-list 10 permit 10.0.0.0 0.0.255.255
```

A. R1 will permit only the 10.0.0.0/24 route in the R2 RIP updates
B. R1 will not filter any routes because there is no exact prefix match
C. R1 will filter the 10.1.0.0/24 and the 172.24.1.0/24 routes from the R2 RIP updates
D. R1 will filter only the 172.24.1.0/24 route from the R2 RIP updates

Correct Answer: C
Explanation:
The command "distribute-list 10 in Serial0 will create an incoming distribute list for interface serial 0 and refers to access list 10. So it will permit routing updates from 10.0.x.x network while other entries (in this case the 10.1.0.0/24 and 172.24.1.0/24 networks) will be filtered out from the routing update received on interface S0.

QUESTION 15
Refer to the exhibit. Routers R2, R3, R4, and R5 have OSPF enabled. What should be configured on the routers in area 1 to ensure that all default summary routes and redistributed EIGRP routes will be forwarded from R6 to area 1, and only a default route for all other OSPF routes will be forwarded from R5 to area 1?
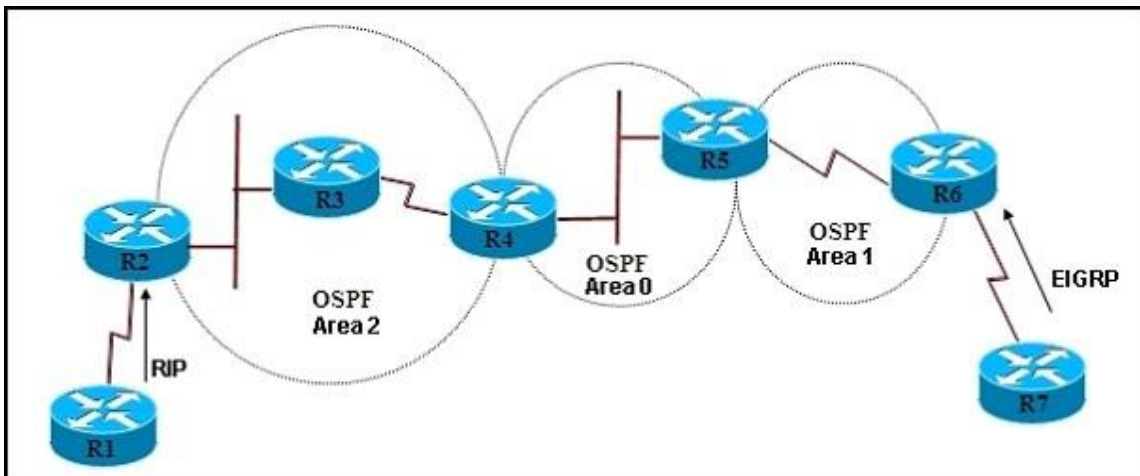
A. R5(config-router)# area 1 stub
   R6(config-router)# area 1 stub
B. R5(config-router)# area 1 stub no-summary
   R6(config-router)# area 1 stub
C. R5(config-router)# area 1 nssa
   R6(config-router)# area 1 nssa
D. R5(config-router)# area 1 nssa no-summary
   R6(config-router)# area 1 nssa

Correct Answer: D
Explanation:
External RIP routes are being routed in OSPF area 1 where they are injected as type 7 so we use (area 1 NSSA) command on the ASBR(R2) and (Area 1 NSSA no-summary) command on R3 and R4.
You can verify issuing the command "show ip ospf database" and you will see the type 7 lsa's on ASBR(R2) and LSA's Type 5 and 7 on both the ABR routers(R3, R4)

QUESTION 16
Which routing protocol will continue to receive and process routing updates from neighbors after the passive interface router configuration command is entered?

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

Correct Answer: B

QUESTION 17
A network administrator recently redistributed RIP routes into an OSPF domain. However, the administrator wants to configure the network so that instead of 32 external type-5 LSAs flooding into the OSPF network, there is only one. What must the administrator do to accomplish this?
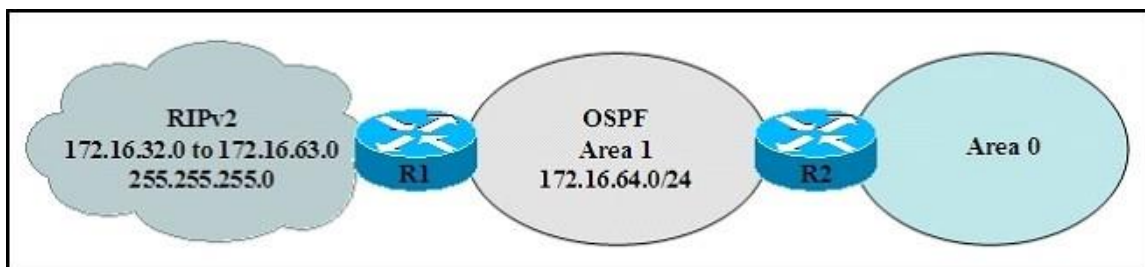
A. Configure summarization on R1 with area 1 range 172.16.32.0 255.255.224.0
B. Configure summarization on R1 with summary-address 172.16.32.0 255.255.224.0
C. Configure area 1 as a stub area with area 1 stub
D. Configure area 1 as a NSSA area with area 1 stub nssa
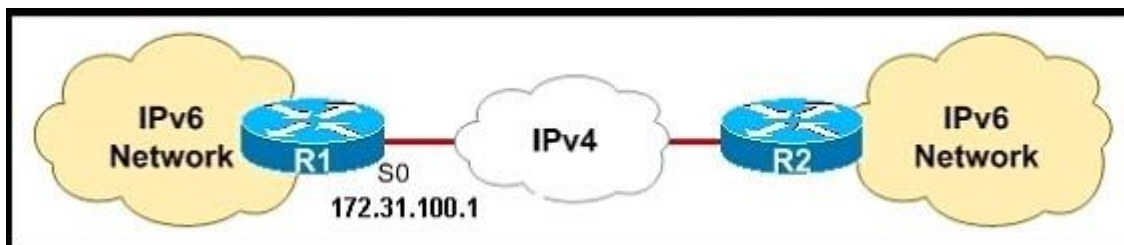
Correct Answer: B
Explanation:
In many cases, the router doesn't even need specific routes to each and every subnet (for example, 172.16.1.0/24). It would be just as happy if it knew how to get to the major network (for

example, 172.16.0.0/16) and let another router take it from there. In our telephone network example, the local telephone switch should only need to know to route a phone call to the switch for the called area code. Similarly, a router's ability to take a group of subnetworks and summarize them as one network (in other words, one advertisement) is called route summarization. Besides reducing the number of routing entries that a router must keep track of, route summarization can also help protect an external router from making multiple changes to its routing table due to instability within a particular subnet. For example, let's say that we were working on a router that connected to 172.16.2.0/24. As we were working on the router, we rebooted it several times. If we were not summarizing our routes, an external router would see each time 172.16.2.0/24 went away and came back. Each time, it would have to modify its own routing table. However, if our external router were receiving only a summary route (i.e., 172.16.0.0/16), then it wouldn't have to be concerned with our work on one particular subnet. This is especially a problem for EIGRP, which can create stuck in active (SIA) routes that can lead to a network melt-down. Summarization Example We have the following networks that we want to advertise as a single summary route: * 172.16.100.0/24 * 172.16.101.0/24 * 172.16.102.0/24 * 172.16.103.0/24 * 172.16.104.0/24 * 172.16.105.0/24 * 172.16.106.0/24

QUESTION 18
Refer to the exhibit. If R1 is configured for 6to4 tunneling, what will the prefix of its IPv6 network be?
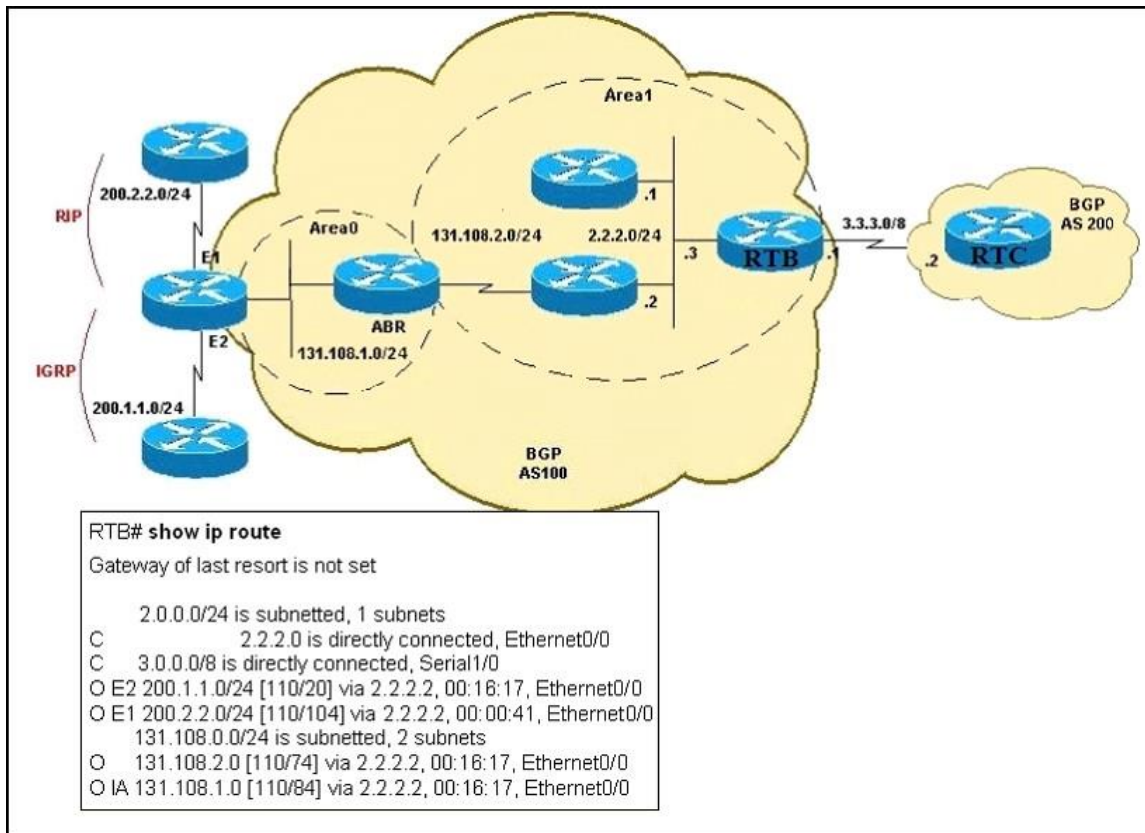

A. 1723:1100:1::/48
B. FFFF:AC1F:6401::/16
C. AC1F:6401::/32
D. 2002:AC1F:6401::/48
E. 3FFE:AC1F:6401::/32

Correct Answer: D

QUESTION 19
Which command should be added to RTB under router bgp 100 to allow only the external OSPF routes to be redistributed to RTC?

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

        2.0.0.0/24 is subnetted, 1 subnets
C               2.2.2.0 is directly connected, Ethernet0/0
C    3.0.0.0/8 is directly connected, Serial1/0
O E2 200.1.1.0/24 [110/20] via 2.2.2.2, 00:16:17, Ethernet0/0
O E1 200.2.2.0/24 [110/104] via 2.2.2.2, 00:00:41, Ethernet0/0
        131.108.0.0/24 is subnetted, 2 subnets
O    131.108.2.0 [110/74] via 2.2.2.2, 00:16:17, Ethernet0/0
O IA 131.108.1.0 [110/84] via 2.2.2.2, 00:16:17, Ethernet0/0
```

A. redistribute ospf 1
B. redistribute ospf 1 match external 1
C. redistribute ospf 1 match external 2
D. redistribute ospf 1 match external 1 external 2

Correct Answer: D
Explanation:
Use the external keyword along with the redistribute command under router bgp to redistribute OSPF external routes into BGP. With the external keyword, you have three choices: 1. redistribute both external type-1 and type-2 (Default) 2. redistribute type-1 3. redistribute type-2 Enter the commands in the configuration mode as described here:
RTB(config-router)# router bgp 100
RTB(config-router)# redistribute ospf 1 match external.

QUESTION 20
A network administrator is troubleshooting a redistribution of OSPF routes into EIGRP.

router eigrp 1

network 10.0.0.0

!

router ospf 1

network 172.10.0.0 0.0.255.255 area 0

redistribute eigrp 1

Given the exhibited commands, which statement is true?

A. Redistributed routes will have an external type of 1 and a metric of 1.
B. Redistributed routes will have an external type of 2 and a metric of 20.
C. Redistributed routes will maintain their original OSPF routing metric.
D. Redistributed routes will have a default metric of 0 and will be treated as reachable and advertised.
E. Redistributed routes will have a default metric of 0 but will be treated as unreachable and not advertised.

Correct Answer: B
Explanation:
By default, all routes redistributed into OSPF will be tagged as external type 2 (E2) with a metric of 20, except for BGP routes (with a metric of 1).
Note: The cost of a type 2 route is always the external cost, irrespective of the interior cost to reach that route. A type 1 cost is the addition of the external cost and the internal cost used to reach that route.