4.4.6 Practice Questions

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Date: 2/10/2025, 1:56:02 PM • **Time Spent:** 01:29

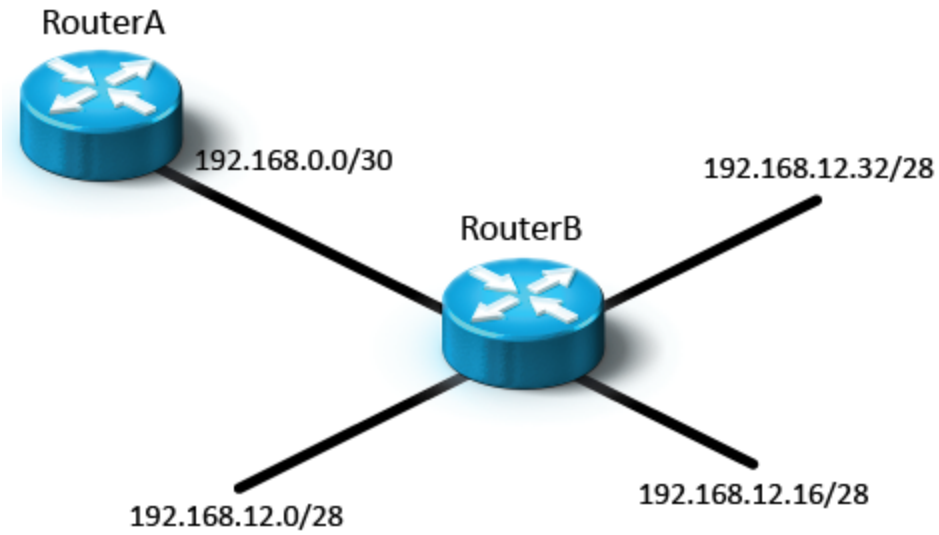
Score: 100%

Passing Score: 80%

Question 1. ✓ Correct

You have a network with two routers as shown. RouterA and RouterB are configured to use RIP version 2 with auto-summarization enabled.

Which summarized network entry will RouterA have in its routing table for the subnets connected to RouterB?



→ ◉ 192.168.12.0/24

○ 192.168.12.32/29

○ 192.168.12.48/28

○ 192.168.12.32/27

○ 192.168.0.0/16

Explanation

Subnets on RouterB will be summarized as 192.168.12.0/24. Auto-summarization with RIP v2 or EIGRP summarizes routes along classful network boundaries (meaning the default subnet mask is used).

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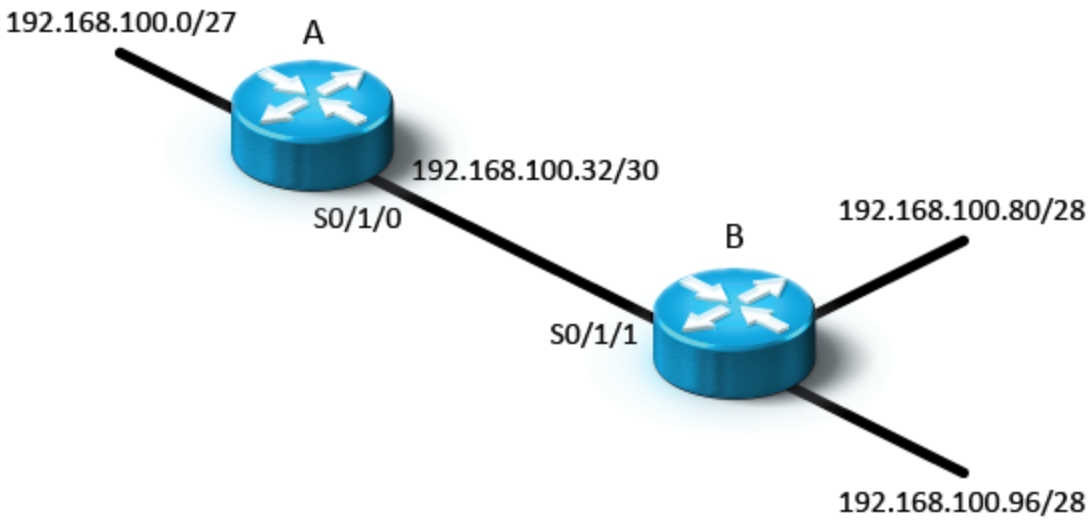
Question 2. ✓ Correct

You have a network with two routers as shown. You would like to configure a single static route on RouterA that summarizes the routes accessible through RouterB.

Which static route would you configure?



- ip route 192.168.100.80 255.255.255.192 192.168.100.34
- ip route 192.168.100.80 255.255.255.240 192.168.100.34
- ip route 192.168.100.80 255.255.255.224 192.168.100.34
- → ip route 192.168.100.64 255.255.255.192 192.168.100.34
- ip route 192.168.100.64 255.255.255.224 192.168.100.34

Explanation

The summarized route will use the subnet address of 192.168.100.64 with a mask of 255.255.255.192. When you summarize routes, you use a smaller subnet mask. This means the mask must be 27 bits or smaller. Converting the last octet of each subnet that must be summarized gives you:

80 = 01010000 96 = 01100000

This means that the subnet address is 01000000 (64), and the mask value is 11000000 (192).

You cannot use a subnet address of 192.168.100.80 because this is not a valid subnet address for a 26-bit mask. Valid addresses are multiples of 64 (0, 64, 128, 192). You cannot use a mask value of 255.255.255.224 with network 192.168.100.80 because this is not a valid subnet for that mask.

A better design in this scenario would be to use subnet addresses of 192.168.100.96/28 and 192.168.100.112/28. This would allow you to summarize both routes as 192.168.100.96/27.

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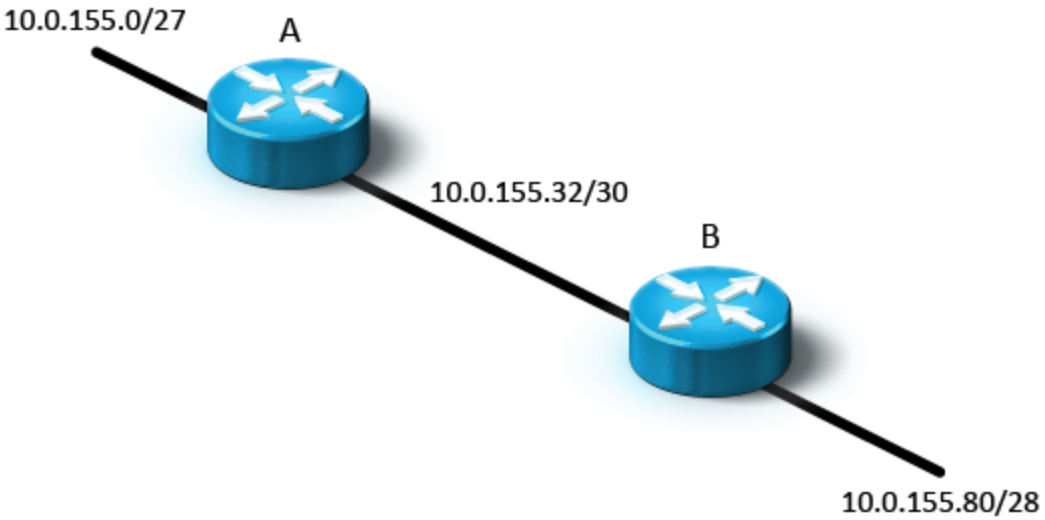
Question 3. ✓ Correct

You have a network with two routers as shown. Router A currently has a single static route to network 10.0.155.80/28.

You need to add another subnet to router B. This subnet should also use a 28-bit mask. You would like to replace the existing static route to network 10.0.155.80/28 with a single summarized static route that includes the old network and the new network. You want to minimize wasted addresses.

What should you do? (Select two.)



→ ☑ Configure the static route to use a network of 10.0.155.64 and a mask of 255.255.255.224.

☐ Configure the static route to use a network of 10.0.155.80 and a mask of 255.255.255.224.

☐ Configure the static route to use a network of 10.0.155.80 and a mask of 255.255.255.192.

→ ☑ Use 10.0.155.64/28 for the new subnet.

☐ Use 10.0.155.96/28 for the new subnet.

☐ Configure the static route to use a network of 10.0.155.64 and a mask of 255.255.255.192.

Explanation

For efficient summarization, use 10.0.155.64/28 for the new subnet and configure the static route with a network of 10.0.155.64 and a mask of 255.255.255.224. With the 27-bit mask, the IP address range for the summarized network includes 10.0.155.64 to 10.0.155.96. This includes hosts on both subnets.

Using a mask of 255.255.255.192 would include IP addresses from 10.0.155.64 to 10.0.155.127. IP addresses between 96-127 are currently not on any defined subnets, meaning that this route definition would block out addresses that would be wasted. Using a network of 10.0.155.80 for the summarized route is impossible when using a 27-bit or 26-bit mask, as that address is not a valid subnet address for the mask value.

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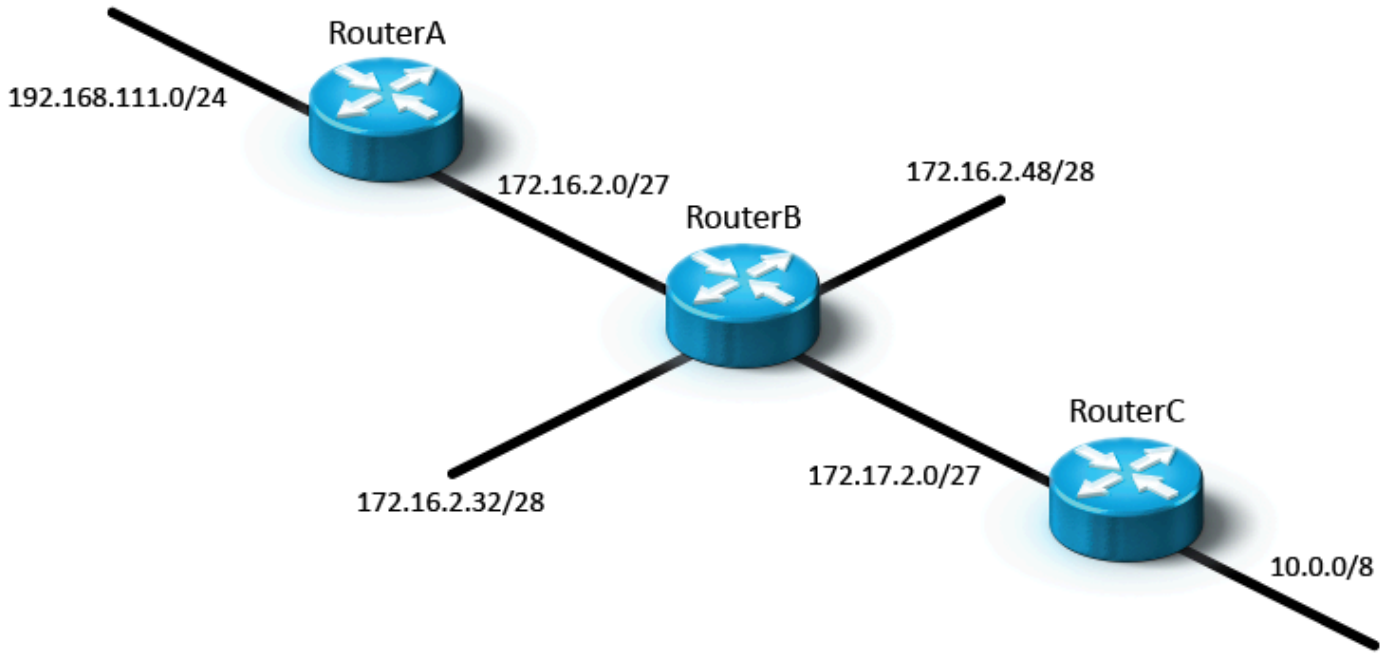
Question 4. ✓ Correct

You have a network with three routers as shown.

All routers are configured to share information for all known routes using the same routing protocol. Automatic summarization is enabled.

Router B shares its known networks with router A. Which of the following routes will be in router A's routing table?



- ○ 172.16.2.0/24
- ○ 172.16.2.0/27 and 172.16.2.32/27
- → ◉ 172.16.2.0/27, 172.16.2.32/28, and 172.16.2.48/28
- ○ 172.16.0.0/16

Explanation

Router A will have routes to networks 172.16.2.0/27, 172.16.2.32/28, and 172.16.2.48/28. Auto-summarization only takes place on classful network boundaries, and only when the router is sharing information with a router in a different classful network. Because router B is in the same classful network as router A, it cannot summarize its networks when reporting them to router A.

If you had turned the routing protocol off, you could summarize the two networks on router B as a single network of 172.16.2.32/27. If the link between router A and router B was not on the 172.16.0.0/16 classful network, then router B would have summarized its networks as 172.16.0.0/16 when advertising them to router A.

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Question 5. ✓ Correct

Which of the following allow you to disable automatic summarization? (Select two.)

- [ ] OSPF v2
- [ ] RIP
- [x] EIGRP
- [ ] OSPF
- [x] RIP2

Explanation

With automatic summarization, the router identifies adjacent networks and calculates the summarized route.

- Auto-summarization is supported on classless and classful routing protocols.
- Auto-summarization uses the default class boundary to summarize routes.
- RIP (version 1 and version 2) and EIGRP support auto-summarization; OSPF does not.
- For RIPv2 and EIGRP, you can disable automatic summarization.

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Question 6. ✓ Correct

A network administrator is working with a range of subnets from 172.16.16.0/24 through 172.16.31.0/24. They need to identify a summarized route for this group of subnets.

What should be the subnet address and mask of the summarized route?

- Subnet Address: 172.16.0.0, Mask: 255.255.0.0
- Subnet Address: 172.16.31.0, Mask: 255.255.255.0
- Subnet Address: 172.16.16.0, Mask: 255.255.255.0
- → Subnet Address: 172.16.16.0, Mask: 255.255.240.0

Explanation

Subnet Address: 172.16.16.0, Mask: 255.255.240.0 is the correct answer. The subnet address of the summarized route is 172.16.16.0 and the mask is 255.255.240.0 (/20). This is determined by converting the last significant octet of the first and the last subnet in the contiguous range to binary, identifying the last consecutive binary bit that is shared, and converting all bits to the right of the shared bit to 0 for the subnet address and all bits to the left of the shared bit to 1 for the mask.

Subnet Address: 172.16.16.0, Mask: 255.255.255.0 is incorrect because the mask 255.255.255.0 (/24) would only cover a single subnet, not a range of subnets from 172.16.16.0 through 172.16.31.0.

Subnet Address: 172.16.0.0, Mask: 255.255.0.0 is incorrect because the mask 255.255.0.0 (/16) would cover all subnets in the 172.16.0.0 network, not just the range from 172.16.16.0 through 172.16.31.0.

Subnet Address: 172.16.31.0, Mask: 255.255.255.0 is incorrect because the mask 255.255.255.0 (/24) would only cover a single subnet, not a range of subnets from 172.16.16.0 through 172.16.31.0. Also, the subnet address should be the first subnet in the range, not the last.

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Question 7. ✓ Correct

On your network, you have subnetting the network address 10.0.0.0 into smaller subnets, and it is separated by a network with different classful network addresses, such as 12.0.0.0. Which route summarization command do you need to execute?

- Router(config-router)#**auto-summary**
- Router(config-if)#**ip summary-address rip 12.0.0 255.0.0.0**
- Router(config-if)#**show ip ospf summary-address**
- → Router(config-router)#**no auto-summary**

Explanation

no auto-summary disable automatic summarization if you have a network address (such as 10.0.0.0) subnetted into smaller subnets and separated by a network with a different classful network address (such as 12.0.0.0).

ip summary-address rip 12.0.0 255.0.0.0 configures a summary address on a specified interface.

auto-summary enables automatic route summarization. By default, subnets are summarized based on classful boundaries when advertising routes on networks with a different class boundary.

show ip ospf summary-address is a command unrelated to automatic summarization. This command shows a summary of all address redistribution information configured in an OSPF instance.

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Question 8. ✓ Correct

The following commands have been executed on a router:

Router(config-router)#no auto-summary
Router(config-router)#exit
Router(config)#int fa 0/1
Router(config-if)#ip summary-address rip 172.16.0.0 255.255.0.0

Which interface type is fa 0/1?

→ ◉ Outbound

○ Inbound null

○ Inbound

○ Outbound null

Explanation

ip summary-address rip 172.16.0.0 255.255.0.0 configures a summary address on a specified interface.

- Use this command on outbound interfaces of the appropriate routers.
- The neighboring device will have only a summary route in its routing table.
- If the neighboring devices receive a query packet for a network that matches the summary route, they send a network a.b.c.d/m unreachable message in response and do not extend the query packets any further.
- This command adds a summary route to the routing table with the route's next-hop interface set to null0.

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Question 9. ✓ Correct

When using the **ip summary-address** command, which of the following is true?

- The interface being configured should be an inbound interface.
- The routing table contains the next-hop interface set to the IP address of the next router.
- The summary route will be added to all inbound interfaces on the router.
- → Neighboring devices only have a summary route in their routing tables.

Explanation

Neighboring devices only have a summary route in their routing tables. The command should be used on outgoing interfaces. The command adds a summary route to the routing table with the route's next-hop interface set to null0.

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Question 10. ✓ Correct

Which of the following describes route summarization?

→ ◉ Combines a contiguous set of addresses into a single address.

○ Provides a summary of all routes on the entire network.

○ Aggregates multiple routers to appear as the same router.

○ Increases the size of the routing table, but reduces network traffic when using OSPF in automatic mode.

Explanation

Route summarization combines a contiguous set of addresses into a single address to reduce network traffic. Route summarization is also referred to as route aggregation.

OSPF does not support automatic route summarization.

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