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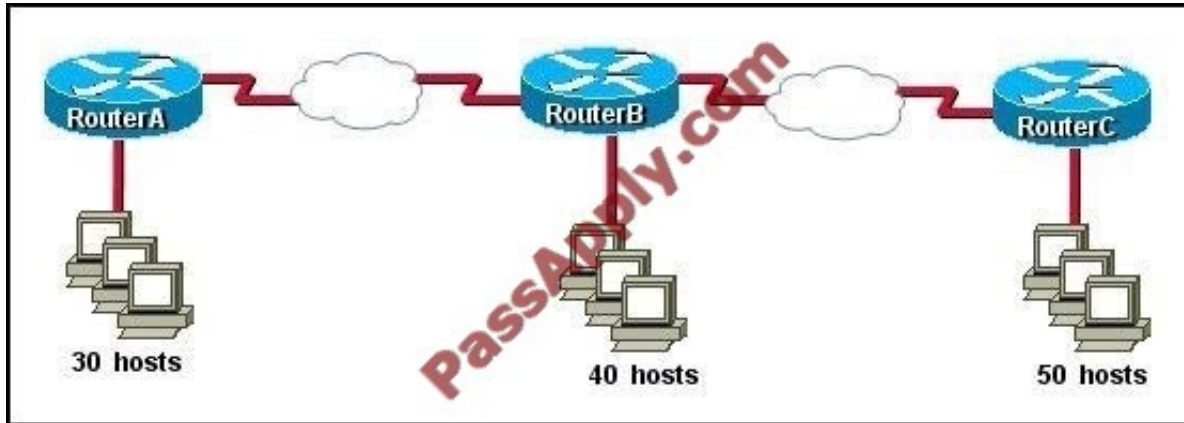
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**QUESTION 1**

Refer to the exhibit.



The internetwork is using subnets of the address 192.168.1.0 with a subnet mask of 255.255.255.224. The routing protocol in use is RIP version 1. Which address could be assigned to the FastEthernet interface on RouterA?

- A. 192.168.1.31
- B. 192.168.1.64
- C. 192.168.1.127
- D. 192.168.1.190
- E. 192.168.1.192

Correct Answer: D

Subnet mask 255.255.255.224 with CIDR of /27 which results in 32 hosts per.

192.168.1.31 is the broadcast address for subnet '0' 192.168.1.64 is the network address for subnet '2'
192.168.1.127 is the broadcast address for subnet '3' 192.168.1.192 is the network address for subnet '6'

| Subnet | Network Address | Starting Host | End Host | Broadcast | Netmask |
|--------|-----------------|---------------|---------------|---------------|-----------------|
| 0 | 192.168.1.0 | 192.168.1.1 | 192.168.1.30 | 192.168.1.31 | 255.255.255.224 |
| 1 | 192.168.1.32 | 192.168.1.33 | 192.168.1.62 | 192.168.1.63 | 255.255.255.224 |
| 2 | 192.168.1.64 | 192.168.1.65 | 192.168.1.94 | 192.168.1.95 | 255.255.255.224 |
| 3 | 192.168.1.96 | 192.168.1.97 | 192.168.1.126 | 192.168.1.127 | 255.255.255.224 |
| 4 | 192.168.1.128 | 192.168.1.129 | 192.168.1.158 | 192.168.1.159 | 255.255.255.224 |
| 5 | 192.168.1.160 | 192.168.1.161 | 192.168.1.190 | 192.168.1.191 | 255.255.255.224 |
| 6 | 192.168.1.192 | 192.168.1.193 | 192.168.1.222 | 192.168.1.223 | 255.255.255.224 |
| 7 | 192.168.1.224 | 192.168.1.225 | 192.168.1.254 | 192.168.1.255 | 255.255.255.224 |



QUESTION 2

Which two characteristics apply to Layer 2 switches? (Choose two.)

- A. Increases the number of collision domains
- B. Decreases the number of collision domains
- C. Implements VLAN
- D. Decreases the number of broadcast domains
- E. Uses the IP address to make decisions for forwarding data packets

Correct Answer: AC

Layer 2 switches offer a number of benefits to hubs, such as the use of VLANs and each switch port is in its own separate collision domain, thus eliminating collisions on the segment.

QUESTION 3

Which statements are TRUE regarding Internet Protocol version 6 (IPv6) addresses? (Choose three.)

- A. An IPv6 address is divided into eight 16-bit groups.
- B. A double colon (::) can only be used once in a single IPv6 address.
- C. IPv6 addresses are 196 bits in length.
- D. Leading zeros cannot be omitted in an IPv6 address.
- E. Groups with a value of 0 can be represented with a single 0 in IPv6 address.

Correct Answer: ABE

IPv6 addresses are divided into eight 16-bit groups, a double colon (::) can only be used once in an IPv6 address, and groups with a value of 0 can be represented with a single 0 in an IPv6 address. The following statements are also true

regarding IPv6 address:

IPv6 addresses are 128 bits in length.

Eight 16-bit groups are divided by a colon (:).

Multiple groups of 16-bit 0s can be represented with double colon (::).

Double colons (::) represent only 0s.

Leading zeros can be omitted in an IPv6 address.

The option stating that IPv6 addresses are 196 bits in length is incorrect. IPv6 addresses are 128 bits in length.

The option stating that leading zeros cannot be omitted in an IPv6 address is incorrect. Leading zeros can be omitted in



an IPv6 address.

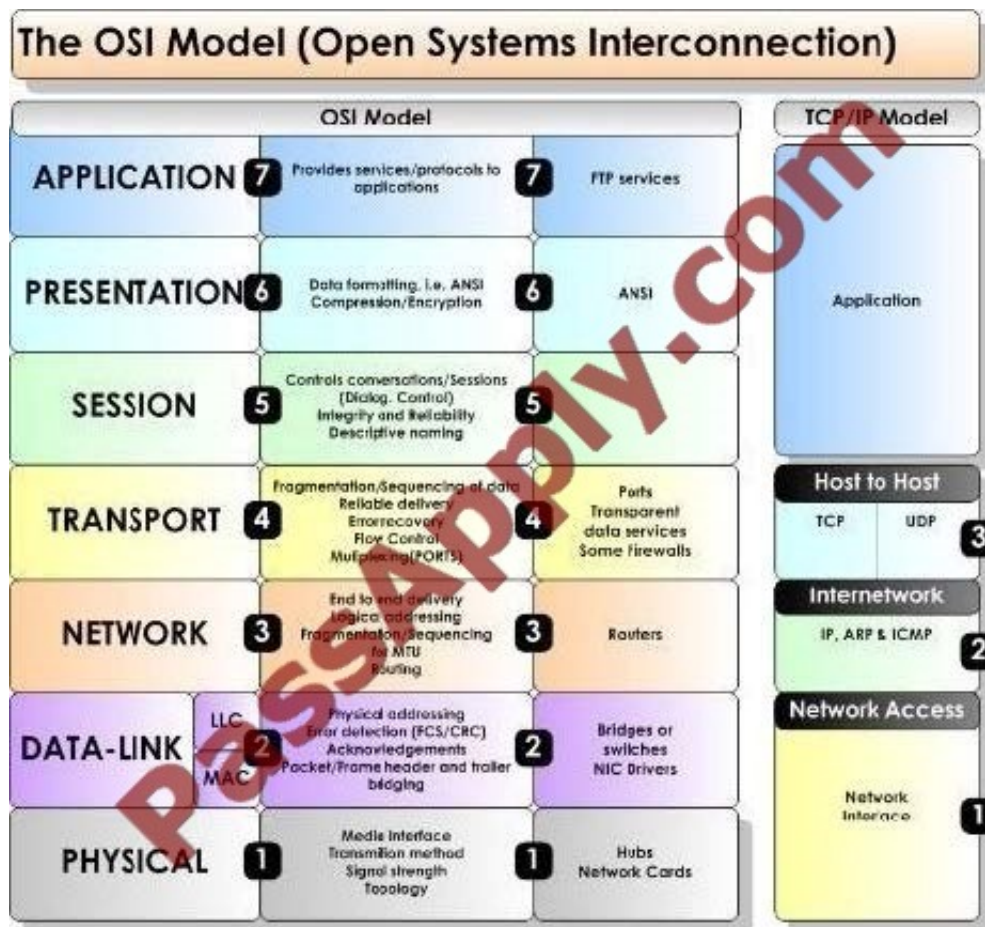
QUESTION 4

Which layer of the TCP/IP stack combines the OSI model physical and data link layers?

- A. Internet layer
- B. transport layer
- C. application layer
- D. network access layer

Correct Answer: D

The Internet Protocol Suite, TCP/IP, is a suite of protocols used for communication over the internet. The TCP/IP model was created after the OSI 7 layer model for two major reasons. First, the foundation of the Internet was built using the TCP/IP suite and through the spread of the World Wide Web and Internet, TCP/IP has been preferred. Second, a project researched by the Department of Defense (DOD) consisted of creating the TCP/IP protocols. The DOD's goal was to bring international standards which could not be met by the OSI model. Since the DOD was the largest software consumer and they preferred the TCP/IP suite, most vendors used this model rather than the OSI. Below is a side by side comparison of the TCP/IP and OSI models.





QUESTION 5

What must occur before a workstation can exchange HTTP packets with a web server?

- A. A UDP connection must be established between the workstation and its default gateway.
- B. A UDP connection must be established between the workstation and the web server.
- C. A TCP connection must be established between the workstation and its default gateway.
- D. A TCP connection must be established between the workstation and the web server.
- E. An ICMP connection must be established between the workstation and its default gateway.
- F. An ICMP connection must be established between the workstation and the web server.

Correct Answer: D

HTTP uses TCP port 80. <http://pentestlab.wordpress.com/2012/03/05/common-tcpip-ports/>

QUESTION 6

Which statements are true regarding ICMP packets? (Choose two.)

- A. They acknowledge receipt of TCP segments.
- B. They guarantee datagram delivery.
- C. TRACERT uses ICMP packets.
- D. They are encapsulated within IP datagrams.
- E. They are encapsulated within UDP datagrams.

Correct Answer: CD

Ping may be used to find out whether the local machines are connected to the network or whether a remote site is reachable. This tool is a common network tool for determining the network connectivity which uses ICMP protocol instead of TCP/IP and UDP/IP. This protocol is usually associated with the network management tools which provide network information to network administrators, such as ping and traceroute (the later also uses the UDP/IP protocol). ICMP is quite different from the TCP/IP and UDP/IP protocols. No source and destination ports are included in its packets. Therefore, usual packet-filtering rules for TCP/IP and UDP/IP are not applicable. Fortunately, a special "signature" known as the packet's Message type is included for denoting the purposes of the ICMP packet. Most commonly used message types are namely, 0, 3, 4, 5, 8, 11, and 12 which represent echo reply, destination unreachable, source quench, redirect, echo request, time exceeded, and parameter problem respectively. In the ping service, after receiving the ICMP "echo request" packet from the source location, the destination

QUESTION 7

Which two of these functions do routers perform on packets? (Choose two.)

- A. Examine the Layer 2 headers of inbound packets and use that information to determine the next hops for the packets



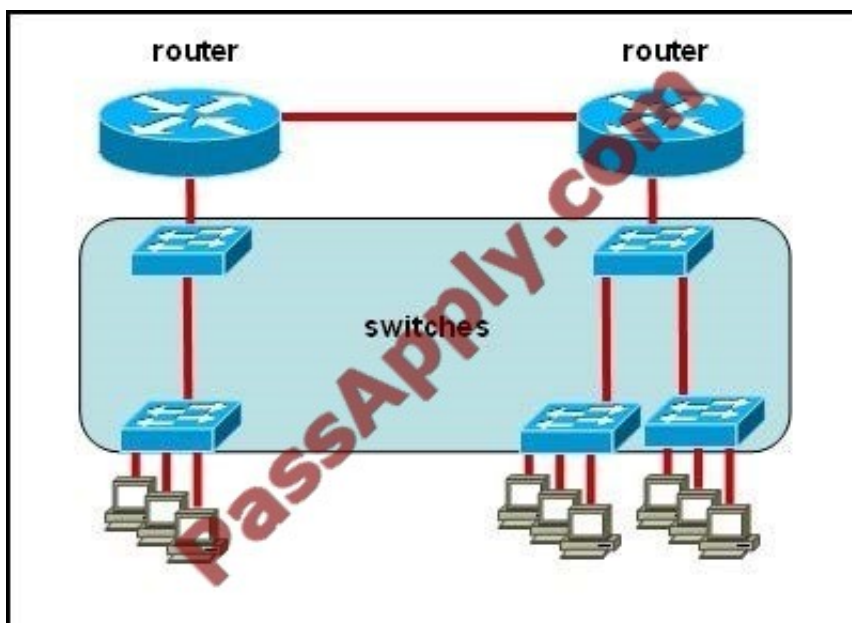
- B. Update the Layer 2 headers of outbound packets with the MAC addresses of the next hops
- C. Examine the Layer 3 headers of inbound packets and use that information to determine the next hops for the packets
- D. Examine the Layer 3 headers of inbound packets and use that information to determine the complete paths along which the packets will be routed to their ultimate destinations
- E. Update the Layer 3 headers of outbound packets so that the packets are properly directed to valid next hops
- F. Update the Layer 3 headers of outbound packets so that the packets are properly directed to their ultimate destinations

Correct Answer: BC

This is the basic function of the router to receive incoming packets and then forward them to their required destination. This is done by reading layer 3 headers of inbound packets and update the info to layer 2 for further hopping.

QUESTION 8

Refer to the exhibit.



All devices attached to the network are shown. How many collision domains are present in this network?

- A. 2
- B. 3
- C. 6
- D. 9
- E. 15



Correct Answer: E

A switch uses a separate collision domain for each port so there are a total of 9 for each device shown. In addition to this, the switch to switch connections (3) are a separate collision domain. Finally, we add the switch to router connections

(2) and the router to router connection (1) for a total of 15.

QUESTION 9

Refer to the exhibit.

```
HQ# configure terminal
HQ(config)# interface fastethernet 0/0
HQ(config-if)# ip address 192.168.1.17 255.255.255.0
HQ(config-if)# no shutdown
HQ(config-if)# interface serial 0/0
HQ(config-if)# ip address 192.168.1.65 255.255.255.240
HQ(config-if)# no shutdown
% 192.168.1.0 overlaps with FastEthernet0/0
```

After configuring two interfaces on the HQ router, the network administrator notices an error message. What must be done to fix this error?

- A. The serial interface must be configured first.
- B. The serial interface must use the address 192.168.1.2
- C. The subnet mask of the serial interface should be changed to 255.255.255.0
- D. The subnet mask of the FastEthernet interface should be changed to 255.255.255.240
- E. The address of the FastEthernet interface should be changed to 192.168.1.66

Correct Answer: D

QUESTION 10

A network administrator is troubleshooting the OSPF configuration of routers R1 and R2. The routers cannot establish an adjacency relationship on their common Ethernet link.



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

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

The graphic shows the output of the show ip ospf interface e0 command for routers R1 and R2. Based on the information in the graphic, what is the cause of this problem?

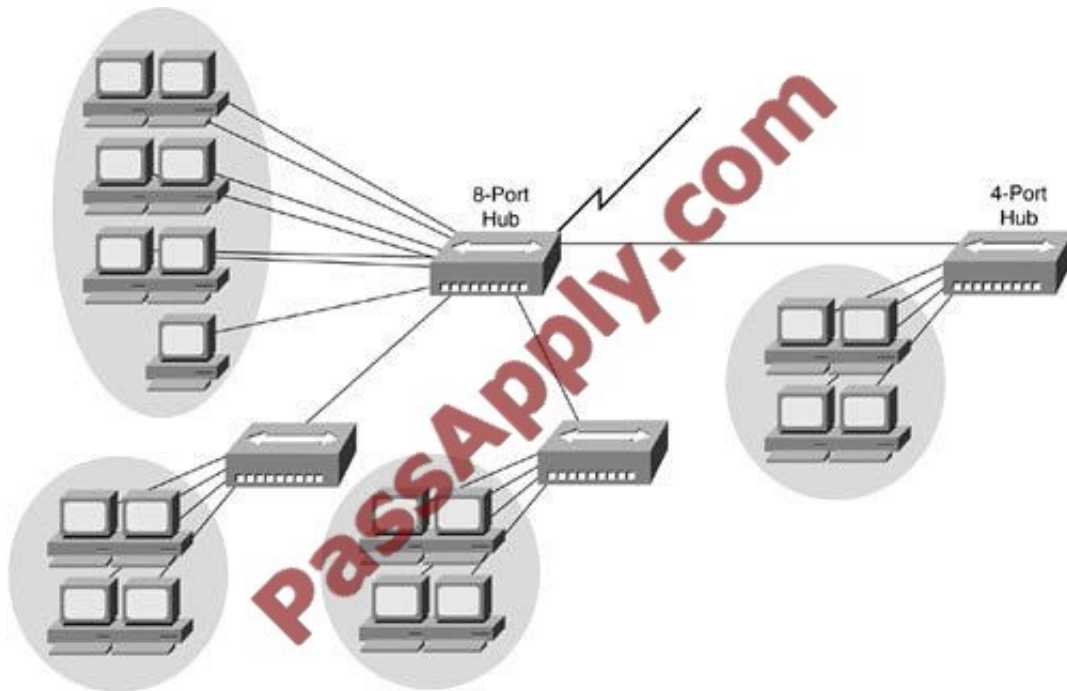
- A. The OSPF area is not configured properly.
- B. The priority on R1 should be set higher.
- C. The cost on R1 should be set higher.
- D. The hello and dead timers are not configured properly.
- E. A backup designated router needs to be added to the network.
- F. The OSPF process ID numbers must match.

Correct Answer: D

In OSPF, the hello and dead intervals must match and here we can see the hello interval is set to 5 on R1 and 10 on R2. The dead interval is also set to 20 on R1 but it is 40 on R2.

QUESTION 11

Refer to the exhibit.



If the hubs in the graphic were replaced by switches, what would be virtually eliminated?

- A. broadcast domains
- B. repeater domains
- C. Ethernet collisions
- D. signal amplification
- E. Ethernet broadcasts

Correct Answer: C

Modern wired networks use a network switch to eliminate collisions. By connecting each device directly to a port on the switch, either each port on a switch becomes its own collision domain (in the case of half duplex links) or the possibility of collisions is eliminated entirely in the case of full duplex links.

QUESTION 12

What command sequence will configure a router to run OSPF and add network 10.1.1.0 /24 to area 0?

- A. router ospf area 0 network 10.1.1.0 255.255.255.0 area 0
- B. router ospf network 10.1.1.0 0.0.0.255
- C. router ospf 1 network 10.1.1.0 0.0.0.255 area 0
- D. router ospf area 0 network 10.1.1.0 0.0.0.255 area 0
- E. router ospf network 10.1.1.0 255.255.255.0 area 0



F. router ospf 1 network 10.1.1.0 0.0.0.255

Correct Answer: C

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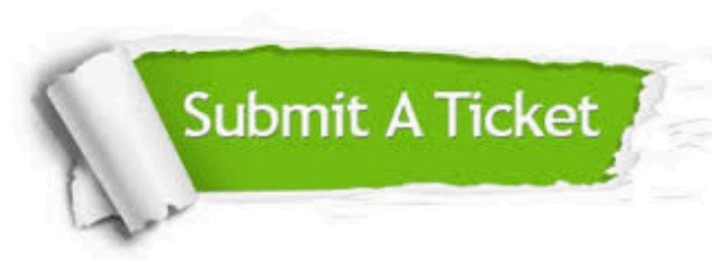
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