Part 1: Examine the Network and Evaluate the Need for Static Routing

a. **5**

b. How many networks are directly connected to R1, R2, and R3?

R1: 172.31.1.0, 172.31.1.192

R2: 172.31.1.192,172.31.1.196, 172.31.0.0

R3: 172.31.1.196, 172.31.1.128

c. How many static routes are required by each router to reach networks that are not directly connected?

R1: 172.31.0.0, 172.31.1.196, 172.31.1.128

R2: 172.31.1.0, 172.31.1.128

R3: 172.31.1.0, 172.31.1.192, 172.31.0.0

d. Test connectivity to the R2 and R3 LANs by pinging PC2 and PC3 from PC1.Why were you unsuccessful?

Configure of static router not done yet.

Part 2: Configure Static and Default Routes

Step 1:

a. What is recursive static route?

Routing configuration that is done by using the next hop ip address

b. Why does a recursive static route require two routing table lookups? **To find destination IP and IP address of the next hop**

d. Test connectivity to the R2 LAN and ping the IP addresses of PC2 and PC3.Why were you unsuccessful?

The static route does not remember how the packet was sent and where it came from. The packet was sent from R1, R1 points to the way since R1 configure is done to PC2 successfully sent but R2 and R3 is not configured yet so it does not send the request and request timed out is shown.

Step 2:

a. How does a directly attached static route differ from a recursive static route?

Directly attached static route requires only one routing table lookup while recursive static route requires two lookups

b. Configure a directly attached static route from R2 to every network not directly connected.

c. Which command only displays directly connected networks?

show ip route connected

d. Which command only displays the static routes listed in the routing table?

show ip route static

e. When viewing the entire routing table, how can you distinguish between a directly attached static route and a directly connected network?

Directly connected networks have C written on left of them while static routes have S on their left

Step 3: Configure a default route on R3.
a. How does a default route differ from a regular static route?
We do not set any destination IP address or subnet mask for the default route. Destination IP and subnet mask are always 0.0.0.0 .

c. How is a static route displayed in the routing table?
It has S* written on its left .

Step 4: Document the commands for fully specified routes.
a. Explain a fully specified route.
Has destination IP, subnet mask, next hop IP and exit interface [ip route destination IP subnet mask next hop IP exit interface]
b. Which command provides a fully specified static route from R3 to the R2 LAN?
ip route 172.31.0.0 255.255.255.0 se0/0/1 172.31.1.197
c. Write a fully specified route from R3 to the network between R2 and R1. Do not configure the route; just calculate it.
ip route 172.31.1.192 255.255.255.252 se0/0/1 172.31.1.197
d. Write a fully specified static route from R3 to the R1 LAN. Do not configure the route; just calculate it.
ip route 172.31.1.0 255.255.255.128 se0/0/1 172.31.1.197

Step 5: Verify static route configurations.Use the appropriate show commands to verify correct configurations.Which show commands can you use to verify that the static routes are configured correctly?
show ip route, show ip route static