Module 8 Network Access Basic routing and advance routing concept, switching concept-

1. Explain Switch
   - A switch is a networking device that operates at Layer 2 (Data Link Layer) of the OSI model. It connects devices on a Local Area Network (LAN) by using MAC addresses to forward data frames to their intended destinations. Switches operate using hardware-based switching methods for efficient data forwarding and typically offer multiple ports for connecting devices.

2. Explain Switch Boot Sequence
   - Power-On Self Test (POST): The switch hardware performs a self-diagnostic to check for hardware failures.
   - Load bootstrap program: Basic functions are loaded from ROM (Read-Only Memory).
   - Find and load the operating system: The switch locates and loads the Cisco IOS or another operating system from flash memory or another storage device.
   - Initialize configuration settings: Configuration settings stored in non-volatile memory are loaded.
   - Check connectivity: The switch verifies connectivity with its interfaces and neighboring devices.

3. Explain Three Methods to access Switch Command Line Interface
   - Console port: Using a console cable to connect directly to the switch's console port and access the CLI.
   - Telnet/SSH: Remote access using Telnet or SSH over a network connection to the switch's IP address.
   - In-band management: Accessing the switch's management interface through an IP address configured on one of its VLAN interfaces.

4. Explain and Configuring the Cisco Internet Operating System
   - Accessing privileged EXEC mode: Entering privileged mode using the enable command.
   - Entering configuration mode: Using configure terminal command to make changes to the switch's configuration.
   - Configuring interfaces: Setting up switch ports with appropriate VLAN memberships, IP addresses, etc.
   - Saving configurations: Using copy running-config startup-config to save changes to non-volatile memory.

5. Explain Switch Port

A switch port is a physical connection point on a switch where devices can be connected. Each switch port operates independently and can be configured to belong to different VLANs or have specific settings. Switch ports can be:

   - Access ports: Connect end devices like computers or printers to a single VLAN.
   - Trunk ports: Carry traffic for multiple VLANs, facilitating inter-VLAN communication.
   - Up/Down status: Indicates whether the port is operational (up) or not (down).

4-R1, R2, R3, and R4 have their Fast Ethernet 0/0 interfaces attached to the same VLAN. A network engineer has typed a configuration for each router by using a word processor.

He will later copy and paste the configuration into the routers. Examine the following exhibit, which lists configuration for the four routers, as typed by the network engineer. Assuming that all four routers can ping each other's LAN IP addresses after the configuration has been applied, choose the routers that will be able to form a neighbor relationship with the other routers on the LAN. (You can assume that, if not shown in the exhibit, all other related parameters are still set to their defaults.) (Choose two)
A. R1
B. R2
C. R3
D. R4
E. None of the routers will exchange routing information.

3-enable secret [password] is
hashed using the algorithm.
A. MD5
B. AH
C. PSK
D. ESP
E. WPA2

4- An engineer connects to Router R1 and issues a show ip ospf neighbor command. The status of neighbor 2.2.2.2 lists FULL/BDR. What does the BDR mean?
A. R1 is an Area Border Router.
B. R1 is a backup designated router.
C. Router 2.2.2.2 is an Area Border Router.
D. Router 2.2.2.2 is a backup designated router.

5-Which command is used to view the neighbor discovery table on a PC?
A. show ipv6 neighbor
B. show ipv6 neighbors
C. netsh interface ipv6 show neighbor
D. netsh interface ipv6 show neighbors

6-What type of variable is being shown? Routers = [R1,R2,R3]
A. List
B. Dictionary
C. Simple
D. Unsigned integers

7- Identify the fields in an IPv4 header. (Choose three)
A. Host component
B. Time to Live
C. Source address
D. Destination address
E. Network address