1. Explain Switch

A network switch is a device used in computer networks to connect multiple devices, such as computers, printers, and servers, within a Local Area Network. It operates at Layer 2 the OSI model and uses MAC addresses to forward data efficiently between devices.

Key Features of a Switch:

•MAC Address Learning: Stores the MAC addresses of connected devices in a MAC table.

•Packet Forwarding: Sends data only to the intended recipient instead of broadcasting to all devices.

•Collision Domains: Each port of a switch represents a separate collision domain, reducing network congestion.

•Full Duplex Communication: Supports simultaneous sending and receiving of data.

Types of Switches:

1.Unmanaged Switch – Simple, plug-and-play, no configuration needed.

2.Managed Switch – Configurable via CLI or Web GUI, supports VLANs, security, and  
monitoring.

3.Layer 3 Switch – Functions as both a switch and a router, capable of IP routing.

2. Explain Switch Boot Sequence

The boot sequence of a Cisco switch follows these steps:

1. Power-On Self-Test:

• The switch checks its hardware components.

2. Load the Bootloader:

• If POST is successful, the switch loads the bootloader program from ROM.

3. Find and Load the IOS:

• The switch looks for the Cisco IOS image in Flash memory.

• If IOS is not found, it enters ROMMON mode

4. Load the Configuration File:

• The switch loads its saved configuration from NVRAM.

• If no configuration file is found, it enters Setup Mode to guide the user in configuring basic settings.

5. Start Normal Operations:

• The switch is now operational and ready for user commands.

3. Three Methods to Access Switch Command Line Interface (CLI)

Cisco switches provide multiple ways to access the Command Line Interface (CLI) for configuration and management:

1. Console Port:

• Requires a console cable

• Uses a terminal emulator on a PC.

• Used for initial setup and troubleshooting.

2. Telnet

• Allows remote access via the network.

• Requires an IP address on the switch and login credentials.

• Not encrypted, making it vulnerable to security risks.

3. SSH

• Secure, encrypted remote access.

• Requires enabling SSH and configuring user authentication.

• Recommended over Telnet for security.

4. Explain and Configure the Cisco Internetwork Operating System

Cisco IOS is the operating system used in Cisco networking devices, including routers and switches. It provides an interface to configure and manage network devices.

Cisco IOS User Modes:

• User EXEC Mode (>): Basic access, limited commands.

• Privileged EXEC Mode (#): Full control, allows configuration access.

• Global Configuration Mode ((config)#): Used for configuring device settings.  
  
5-enable secret [password] is

hashed using the algorithm.

A. MD5



B. AH

C. PSK

D. ESP

E. WPA2

6- 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.



7- 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

8- What type of variable is being shown? Routers = [R1,R2,R3]

A. List



B. Dictionary

C. Simple

D. Unsigned integers

9- Identify the fields in an IPv4 header. (Choose three)

A. Host component

B. Time to Live



C. Source address



D. Destination address



E.Network