Module -7: Network fundamental

1- Which of the following messages in the DHCP process are broadcasted? (Choose two)

ANS: - A. Request

C. Discover

2- Which command would you use to ensure that an ACL does not block web-based TCP traffic?

ANS: - B. permit tcp any any eq 80

3- Explain Network Topologies

Network topologies define the arrangement of devices and connections in a network. Common types include:

- Bus Topology: All devices connect to a single central cable (bus). Simple but prone to failure if the cable is damaged.
- Star Topology: Devices connect to a central hub or switch. Faults are easier to isolate, and it is scalable.
- Ring Topology: Devices are arranged in a circular format, with each connected to two others. A failure in one device may affect the entire network unless a dual-ring topology is used.
- Mesh Topology: Every device connects to multiple others. Offers high fault tolerance and redundancy but can be expensive.

- Hybrid Topology: A combination of two or more topologies to suit specific needs.

4- Explain TCP/IP Networking Model?

ANS: - The TCP/IP model is a framework for standardizing network communication and consists of four layers:

- Application Layer: Includes protocols like HTTP, FTP and SMTP for end-user services.
- Transport Layers: Ensure reliable data transfer using TCP or UDP.
- Internet Layer: Handles logical addressing and routing via IP.
- Network Access Layer: Manages hardware addressing and physical media

5- Explain LAN and WAN Network?

ANS: - LAN (Local Area Network): A network covering a small geographic area, like a home, office, or campus. It typically uses Ethernet and Wi-Fi for communication.

- WAN (Wide Area Network): A network spanning a large geographic area, often connecting multiple LANs. It uses technologies like MPLS, leased lines, and the Internet.

6- Explain the Operation of a Switch?

ANS: - A switch Is a network device that connect devices within a LAN. It operates at the data link layer (Layer 2) and performs these functions:

- MAC Address learning: it learns the MAC addresses of devices connected to its ports.
- Frame Forwarding: Sends data only to the intended device, improving efficiency.
- Loop Prevention: Uses spanning Tree Protocol (STP) to prevent loops in the network.

7- Describe the Purpose and Function of various Network Devices?

ANS: - Router: Connects different network and routes data between them.

- Switch: Connects device within a LAN, forwarding data based on MAC addresses.
- Hub: A basic device that broadcasts data to all devices in a LAN.
- Access Point (AP): Provides wireless connectivity to devices in a LAN.
- Firewalls: Filters incoming and outgoing traffic to enhance security.
- Modem: Converts digital data into signals suitable for transmission over telephone lines or Fiber.

8- List of Appropriate Media, Cables, ports, and Connectors to Connect Switches to other Devices?

ANS: Media: Copper (Ethernet), Fiber Optic

- Cables: Ethernet (Cat5e, Cat6, Cat6a) for short distances within a LAN.

- Ports: RJ45 for ethernet cables and SFP (Small Form-Factor Pluggable) for Fiber optic connections.
- Connectors: LC/SC: for Fiber optic and RJ45 for Ethernet.

9- Define Network Devices and Hosts?

AND: Network Devices: hardware facilitating network communication (e.g., switches, routers, hubs, modems).

- Hosts: End devices connected to a network (e.g., computers, smartphones, servers) that consume or provide data