Module -7: Network fundamental

1- Which of the following messages in the DHCP process are broadcasted?

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

Ans-

- Bus Topology: Devices are connected to a single cable, forming a linear arrangement. If the cable fails, the entire network goes down.
- Star Topology: Devices are connected to a central hub or switch. It's a common and reliable topology as failure of one device doesn't affect the others.
- Ring Topology: Devices are connected in a closed loop, with each device connected to its neighbors. Data flows in one direction.
- Mesh Topology: Every device is connected to every other device, providing high redundancy but can be expensive to implement.
- Tree Topology: Bus topology and star topology mix up.

4- Explain TCP/IP Networking Model

Ans-

- Application Layer: Handles user-level applications (e.g., web browsers, email clients).
- Transport Layer: Ensures reliable data delivery between applications (TCP) or efficient data delivery (UDP).
- Internet Layer: Handles the logical addressing and routing of data packets (IP).
- Network Interface Layer: Responsible for the physical transmission of data over the network

5- Explain LAN and WAN Network

Ans -

- LAN (Local Area Network): A network that covers a small geographical area, such as a home, office building, or school. LANs typically use Ethernet technology.
- WAN (Wide Area Network): A network that spans a large geographical area, such as a country or even the world. The internet is the largest WAN. WANs often utilize leased lines, dedicated circuits, or public networks like the internet.

6- Explain Operation of Switch

Ans - A network switch is a device that connects multiple devices on a network. It operates at the Data Link layer of the OSI model. When a switch receives a data frame, it examines the destination MAC address and forwards the frame only to the port connected to the intended recipient. This selective forwarding reduces network congestion and improves performance.

7- Describe the purpose and functions of various network devices

- Router: Connects different networks and forwards data packets between them based on their IP addresses.
- Hub: A simple device that broadcasts data packets to all connected devices.
- Modem: Modulates and demodulates data signals for transmission over communication channels like phone lines or cable lines.
- Firewall: A security device that filters network traffic, blocking unauthorized access and protecting the network from threats.
- Wireless Access Point (WAP): Enables wireless devices to connect to a wired network.

8- Make list of the appropriate media, cables, ports, and connectors to connect switches to other devices

- Media: Ethernet cables (Cat5e, Cat6, Cat6a), fiber optic cables
- Cables: Straight-through cables, crossover cables
- Ports: RJ-45 ports (for Ethernet cables), SFP ports (for fiber optic cables)
- Connectors: RJ-45 connectors, fiber optic connectors

9- Define Network devices and hosts

- Network Device: A hardware component that facilitates communication within a network. Examples include routers, switches, hubs, modems, and firewalls.
- Host: Any device on a network that can send or receive data. Examples include computers, servers, printers, and smartphones.