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# **Assignment Module 7**

# Network Fundamentals

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

A. Request  
B. Offer  
C. Discover  
D. Acknowledge

ANS :- A. Request AND C. Discover

* Client uses broadcast to find and request IP from DHCP server.

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

A. permit any

B. permit tcp any any eq 80

C. permit tcp any eq 80

D. permit any any eq tcp

ANS :- B. permit tcp any any eq 80

* Allows all **TCP traffic on port 80 (HTTP)** — used for web traffic.

3-Explain Network Topologies

ANS :- Network topology refers to the physical or logical arrangement of devices in a network. Common types include:

1. Bus Topology: All devices share a single communication line. Easy to install but hard to troubleshoot.
2. Star Topology: All devices connect to a central hub or switch. Easy to manage and reliable.
3. Ring Topology: Devices are connected in a circular path. Data travels in one direction.
4. Mesh Topology: Every device connects to every other device. Very reliable but expensive.
5. Hybrid Topology: Combination of two or more topologies.

4-Explain TCP/IP Networking Model

ANS :- The TCP/IP model is a set of protocols that define how data is transmitted across a network. It has four layers :

1. Application Layer: Provides network services to end users (e.g., HTTP, FTP, DNS).
2. Transport Layer: Manages end-to-end communication (e.g., TCP for reliable, UDP for fast transmission).
3. Internet Layer: Handles logical addressing and routing (e.g., IP, ICMP).
4. Network Access Layer: Deals with physical data transmission (e.g., Ethernet, Wi-Fi).

5-Explain LAN and WAN Network

ANS :-

1. LAN (Local Area Network): Covers a small geographical area like a home, school, or office. It provides high-speed data transfer and is privately owned.
2. WAN (Wide Area Network): Covers large areas, such as cities or countries. The internet is the best example of a WAN. It uses public or leased communication lines.

6-Explain Operation of Switch

ANS :-

A switch operates at the Data Link Layer (Layer 2) of the OSI model. It forwards data based on MAC addresses. Functions include:  
- Learning MAC addresses of connected devices.  
- Forwarding frames to the correct destination.  
- Reducing network collisions and improving efficiency.

7-Describe the purpose and functions of various network devices

ANS :-

1. Router: Connects different networks and forwards data packets based on IP addresses.
2. Switch: Connects devices within a LAN and forwards frames using MAC addresses.
3. Hub: Broadcasts data to all devices in a network (less efficient than a switch).
4. Access Point: Allows wireless devices to connect to a wired network.
5. Modem: Converts digital data into signals for transmission over telephone or cable lines.
6. Firewall: Monitors and filters incoming and outgoing network traffic for security.

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

ANS :-

1. Cables: Ethernet (Cat5e, Cat6), Fiber optic.
2. Ports: RJ-45 for Ethernet, SFP for fiber.
3. Connectors: RJ-45 connectors for UTP cables, LC/SC connectors for fiber.
4. Media: Copper or fiber optic media depending on distance and speed.

9-Define Network devices and hosts

ANS :-

- Network Devices:Hardware used to connect and manage communication between networked devices (e.g., routers, switches, hubs).  
- Hosts:Any device that sends or receives data over the network (e.g., computers, printers, servers).