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**Assignment:**

**Module -7: Network fundamental –**

1. Which of the following messages in the DHCP process are broadcasted? (Choose Two)
   1. Request
   2. Offer
   3. Discover
   4. Acknowledge

**Answer:- C. Discover**

**A. Request**

1. Which command would you use to ensure that an ACL does not block web-basedTCP traffic?
   1. Permit any
   2. Permit tcp any any eq 80
   3. Permit tcp any eq 80
   4. Permit any any eq tcp

**Answer:- B. permit tcp any eq 80**

**3-Explain Network Topologies**

**Answer:-** Network topologies refer to the physical or logical arrangement of devices on a network. Here are some common network topologies:

**1. Bus Topology**

- Data is transmitted in a linear sequence.

- Advantages: simple installation, less cable required.

**2. Star Topology**

- Data is transmitted through the central device.

- Advantages: easy to install and troubleshoot, scalable.

**3. Ring Topology**

- Devices are connected in a circular configuration.

- Data is transmitted in a circular sequence.

**4. Mesh Topology**

- Each device is connected to every other device.

- Advantages: reliable, fault-tolerant, secure.

**5. Tree Topology**

- Combination of bus and star topologies.

- Advantages: scalable, easy to install.

**6. Hybrid Topology**

- Combination of two or more topologies.

- Devices are connected in a way that combines the advantages of multiple topologies.

**4-Explain TCP/IP Networking Model**

**Answer:-** The TCP/IP (Transmission Control Protocol/Internet Protocol) networking model is a conceptual framework that describes the communication process over the internet. It’s a simplified version of the OSI (Open Systems Interconnection) model, consisting of four layers:

**TCP/IP Layers**

**1. \*Application Layer\*:** Provides services to end-user applications, such as email, file transfer, and web browsing. Protocols: HTTP, FTP, SMTP, DNS.

**2. \*Transport Layer\*:** Ensures reliable data transfer between devices. Provides error-checking, flow control, and segmentation. Protocols: TCP, UDP.

**3. \*Internet Layer\*:** Routes data between networks, using logical addressing (IP addresses). Protocols: IP, ICMP, IGMP.

**4. \*Network Access Layer\*:** Defines how devices access the network, including physical addressing (MAC addresses). Protocols: Ethernet, Wi-Fi.

**5-Explain LAN and WAN Network**

**Answer:-** Local area network (LAN) connects devices in a single location, while a wide area network (WAN) connects devices across multiple locations:

**LAN**

A LAN connects devices that are close together, like in a home, office, or school. LANs can be small or large, but they are limited to a single area. LANs use connectors like routers and switches to allow devices to communicate and share data. LANs are easy to set up and use coaxial or UTP cables for transmission.

**WAN**

A WAN connects devices across multiple locations, like different offices, cities, or countries. WANs are made up of smaller networks, like LANs, that are connected together. WANs use satellite links, leased lines, and other communication technologies to transfer data securely. The internet is the world’s largest WAN.

**6-Explain Operation of Switch**

**Answer:-** A switch is a networking device that connects multiple devices within a network, allowing them to communicate with each other. Here’s how a switch operates:

**Basic Operation**

**1. \*Receiving Frames\*:** A switch receives Ethernet frames from devices connected to its ports.

**2. \*Examining Frame Headers\*:** The switch examines the source and destination Media Access Control (MAC) addresses in the frame header.

**3. \*Looking Up MAC Addresses\*:** The switch checks its MAC address table to see if it has an entry for the destination MAC address.

**Switching Modes**

**1. \*Store-and-Forward\*:** The switch stores the entire frame before forwarding it.

**2. \*Cut-Through\*:** The switch starts forwarding the frame as soon as it receives the destination MAC address.

**7-Describe the purpose and functions of various network devices**

**Answer:-**  Network devices help devices communicate and transmit data, and they also help secure networks.

**Purpose**

**Data transmission:** Network devices help transmit data between devices.

**Network security:** Network devices help secure networks by preventing threats and enforcing access control.

**Network performance:** Network devices help improve network performance and optimize traffic flow.

**Functions**

**Firewalls:-** Monitor and control traffic based on rules, blocking or allowing traffic as needed.

**Routers:-** Forward data packets between computer networks, controlling traffic to ensure data packets reach their destination efficiently.

**Gateways:-** Connect different networks, enabling communication between different systems.

**7-Make list of the appropriate media, cables, ports, and connectors to 8-**

**Answer:-** some types of media, cables, ports, and connectors:

**Networking cables and connectors:** Twisted-pair Category 5e cables, RJ45 connectors, BNC connectors, Lucent Connectors (LC), and straight tip (ST) connectors

**Computer ports:** HDMI, VGA, DVI, USB Type-C, AV, audio ports, display ports, and 3.5mm audio ports

**Video connectors:** HDMI, DVI, VGA, Mini-DVI, Micro-DVI, and DMS-59

**Power connectors:** C5/C6, C7/C8, C13/C14

**Audio connectors:** 3.5mm audio ports

**Cables:** USB-A cables, HDMI cables, DisplayPort cables, straight-through cables, crossover cables, rolled cables

**8-connect switches to other**

**Answer:-**  To connect switches to other switches, you can use a crossover cable or stacking cables.

**Crossover cable**

A crossover cable is a type of Ethernet cable with reversed wiring on each end.

The transmit pins on one end are connected to the receive pins on the other end.

**Stacking cables**

Use stacking cables to connect switches through their stacking ports.

Stacking cables are also known as “daisy-chain” cables.

**Network topologies**

**Cascading:-** A traditional way to connect multiple switches, where each switch has multiple ports that connect to other switches.

**Star:-** A topology where all switches are connected to a core switch, which controls communication between the switches.

**9-Define Network devices and hosts**

**Answer:-** Network devices are hardware components that enable communication between devices on a network. Network hosts are devices that participate in user applications, such as servers or clients

**Network devices**

**Routers:-** Connect local networks to external networks, like the internet, and direct data traffic between networks

**Switches:-** Connect multiple devices on a local area network (LAN) and improve network efficiency

**Repeaters:-** Boost the strength of a signal so it can travel longer distances without losing quality

**Hubs:-** Send data to all hosts connected to it, instead of just the target host

**Network hosts**

**Servers:** Provide resources to other hosts on a network, such as information to clients

**Clients:** Request services from servers on a network