Assignment: module -5 Network Fundamentals and Building Networks

1. What is the primary function of a router in a computer network?

   a) Assigning IP addresses to devices

   b) Providing wireless connectivity to devices

   c) Forwarding data packets between networks

   d) Managing user authentication and access control

2. What is the purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?

   a) Assigning static IP addresses to devices

   b) Resolving domain names to IP addresses

   c) Managing network traffic and congestion

   d) Dynamically assigning IP addresses to devices

3. Which network device operates at Layer 2 (Data Link Layer) of the OSI model and forwards data packets based on MAC addresses?

   a) Router

   b) Switch

   c) Hub

   d) Repeater

4. Which network topology connects all devices in a linear fashion, with each device connected to a central cable or backbone?

   a) Star
   b) Bus
   c) Ring
   d) Mesh

Section 2: True or

True or False: A VLAN (Virtual Local Area Network) allows network administrators to logically segment a single physical network into multiple virtual networks, each with its own broadcast domain.

ANS:- TRUE

True or False: TCP (Transmission Control Protocol) is a connectionless protocol that provides reliable, ordered, and error-checked delivery of data packets over a network.

ANS :- FALSE

True or False: A firewall is a hardware or software-based security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.

ANS:- TRUE

8.Describe the steps involved in setting up a wireless network for a small office or home office (SOHO) environment.

ANS: **Steps to Set Up a Wireless Network for a SOHO Environment**

1. **Plan the Network** – Determine coverage area, ISP, and required equipment.

2. **Get Equipment** – Acquire a **modem, router, Ethernet cables**, and **extenders if needed**.

3. **Connect Hardware** – Link **modem to router**, power them on, and connect a device for setup.

4. **Configure Router** – Access the **router's web interface**, update firmware, and set login credentials.

5. **Set Up Wi-Fi** – Configure **SSID, strong password, WPA3/WPA2 encryption, and channel settings**.

6. **Enhance Security** – Change **default admin credentials**, enable **firewall**, and disable **WPS**.

7. **Optimize & Test** – Place the router centrally, check for dead zones, and test **speed & connectivity**.

8. **Connect Devices** – Join all devices to the Wi-Fi and verify stable connections.

Section 4: Practical

9.Demonstrate how to configure a router for Internet access using DHCP (Dynamic Host Configuration Protocol).

ANS: **Steps to Configure a Router for Internet Access Using DHCP**

1. **Connect the Hardware** – Link the **modem to the router** (WAN port) and power both on.

2. **Access Router Settings** – Open a browser, enter **192.168.1.1**, and log in.

3. **Enable DHCP** – Go to **WAN/Internet Settings**, select **DHCP (Dynamic IP)** as the connection type.

4. **Save & Reboot** – Apply settings, reboot the router, and verify the internet connection.

5. **Test Connectivity** – Connect a device to Wi-Fi and ensure it has internet access.

Section 5:

10.Discuss the importance of network documentation in the context of building and managing networks.

ANS: **Importance of Network Documentation**

1. **Efficient Troubleshooting** – Speeds up issue resolution with clear network records.

2. **Improved Security** – Helps maintain security policies and prevent breaches.

3. **Easier Expansion** – Simplifies upgrades and scaling of the network.

4. **Consistency & Standardization** – Reduces misconfigurations and ensures uniform setups.

5. **Faster Onboarding & Training** – Helps new IT staff understand the network quickly.

6. **Regulatory Compliance** – Ensures adherence to industry standards and audits.