

**Assignment : - 1**

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**Module :- -5 Network Fundamentals and Building Networks**

**Section 1: Multiple Choice**

**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**

**Ans :-** c) Forwarding data packets between networks

* The primary function of a router is to forward data packets between different networks based on their IP addresses.

**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**

**Ans:-** d) Dynamically assigning IP addresses to devices

* The purpose of DHCP is to dynamically assign IP addresses and network configuration settings to devices on a network.

**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**

**Ans :-** b) Switch

* A switch operates at Layer 2 (Data Link Layer) and forwards data packets based on MAC addresses**.**

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

1. **Star b) Bus c) Ring d) Mesh**

**Ans :-** b) Bus

* A bus topology connects all devices in a linear fashion with each device connected to a central cable or backbone.

**Section 2: True or False**

**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

TCP is a connection-oriented protocol that ensures reliable, ordered, and error-checked delivery of data.

**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 :-**

Choose a Wireless Router: Select a router that meets your network size and speed requirements.

1. Connect the Router: Connect the router to your modem using an Ethernet cable and power it on.
2. Access Router Settings: Log in to the router's web interface using its IP address.
3. Configure Network Settings: Set up the SSID (network name), Wi-Fi password, and security protocol (e.g., WPA3).
4. Set Up DHCP: Ensure DHCP is enabled for automatic IP address assignment.
5. Update Firmware: Check for and install any firmware updates for the router.
6. Position the Router: Place the router in a central, elevated location for optimal coverage.
7. Connect Devices: Use the Wi-Fi credentials to connect devices to the network.
8. Test the Network: Verify connectivity and speed across devices.
9. Secure the Network: Enable additional security measures like MAC filtering or firewall settings if needed.

**Section 4: Practical**

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

**Ans:-** Here’s a short guide to configure a router for Internet access using DHCP:

1. Connect the Router: Connect the modem to the router's WAN/Internet port and power both devices.

2.Access Admin Interface: Open a browser, enter the router’s IP and log in.

3.Set Connection Type: Navigate to WAN/Internet settings and select Dynamic

IP (DHCP) as the connection type.

4.Save Settings: Click Save/Apply to confirm.

5.Test Internet: Check connectivity by opening a webpage.

6.Your router is now configured for DHCP-based Internet access**.**

**Section 5:**

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

**Ans:-** Network documentation is crucial for building and managing networks as it provides a clear record of network configurations, devices, IP addresses, and topology. It simplifies troubleshooting, supports scalability, ensures consistency during upgrades, and aids in disaster recovery, reducing downtime and improving efficiency.