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# Assignment: 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

* A router’s main function is to connect different networks and forward data packets using 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

* DHCP automatically provides IP addresses and other network settings (like gateway, DNS) to devices, so users don’t have to configure them manually.

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 works at **Layer 2 (Data Link Layer)** and uses **MAC addresses** to forward data to the correct device within the same network.

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

1. Star
2. Bus
3. Ring
4. Mesh

ANS :- b) Bus

* In a **bus topology**, all devices are connected to a **single central cable (backbone)**, and data travels along this cable.

## Section 2: True or False

5. 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

6. 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**, not connectionless.

7. 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

# Section 3: Short Answer

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

ANS :-

1. Connect modem to wireless router.
2. Power on router and open settings.
3. Set Wi-Fi name (SSID).
4. Set strong password (WPA2/WPA3).
5. Connect devices to Wi-Fi.
6. Test internet connection.

## Section 4: Practical

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

ANS :-

1. Connect router to modem/ISP line.
2. Login to router settings (e.g., 192.168.1.1).
3. Enable **DHCP server** option.
4. Set IP address range (e.g., 192.168.1.2 – 192.168.1.100).
5. Save settings and restart router.
6. Connect devices → they will get IP automatically → Internet access ready

## Section 5: Discussion

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

ANS :-

* Network documentation means writing down all details of the network like devices, IP addresses, cables, and configurations.
* It is very important because it helps in solving problems quickly when the network is not working.
* It reduces mistakes and confusion while adding new devices or making changes.
* It also improves security by keeping track of all devices and settings.  
  New staff can easily understand the network with the help of documentation.
* Overall, it makes managing, repairing, and upgrading the network much easier.