**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

**Reason: -** This is the primary function of a router. It connects different networks and forwards packets toward their correct destination.

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

**Reason:** - This is the main purpose of DHCP. It automatically provides devices with IP addresses and other network configuration details, so users don’t need 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: -** Switch

**Reason:** - A switch operates at Layer 2 (Data Link Layer) and forwards frames 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?

a) Star

b) Bus

c) Ring

d) Mesh

**Ans: -** Bus

**Reason:** - In a bus topology, all devices share a single backbone cable in a linear structure.

**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

**Reason: -** TCP is a connection-oriented protocol, not connectionless.

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

**Section 5: Short Answer**

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

Ans: -

* Choose ISP – Get broadband or fiber internet.
* Set up Modem/Router – Connect modem to ISP line and add wireless router.
* Configure Router – Open settings, set Wi-Fi name (SSID), enable WPA2/WPA3.
* Add Security – Use strong password, disable WPS, turn on firewall.
* Connect Devices – Join laptops, phones, printers to Wi-Fi.
* Test Network – Check speed and connectivity.
* Maintain Network – Update router and monitor devices.

**Section 4: Practical**

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

**Ans: -**

* Connect the router to the modem and power it on.
* Open a web browser and enter the router’s IP address.
* Log in with the admin username and password.
* Go to the WAN/Internet settings section.
* Select DHCP/Automatic IP as the connection type.
* Save the settings and restart the router.
* Test by connecting a device to Wi-Fi and checking internet access.

**Section 5: Essay**

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

Ans: - Network documentation is very important because:

1. Easy Troubleshooting – Helps to quickly find and fix network problems.
2. Better Management – Keeps records of devices, IP addresses, and configurations.
3. Future Expansion – Makes it easier to upgrade or expand the network.
4. Security – Helps to monitor users, access, and possible threats.
5. Team Collaboration – Different admins can understand the same network easily.