

# **Module -5 N+ - 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

**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 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

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:

- Connect the router to ISP using Fiber cable.
- If access point is required then connect the router to access point.
- Configure the router using admin panel (192.168.0.1).
- Set SSID and strong password.
- Configure DHCP.
- For security change admin login password.
- Setup MAC filtering and firewall rules.
- Setup UPS for power back-up.
- Check the ping and monitor the network.

### Section 4: Practical

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

ANS:

- Login to router admin panel using (192.168.0.1).
- Goto network settings.

The screenshot displays the configuration page for a 'Wireless Tri-Band Home Router' (model HomeRouter-PT-AC). The interface is divided into several tabs: Setup, Wireless, Security, Access Restrictions, Applications & Gaming, Administration, and Status. The 'Setup' tab is active, and within it, the 'Basic Setup' sub-tab is selected. The 'Internet Setup' section shows 'Automatic Configuration - DHCP' as the selected connection type. Below this, there are fields for 'Host Name', 'Domain Name', and 'MTU' (set to 1500). The 'Network Setup' section is expanded, showing 'Router IP' (192.168.0.1) and 'Subnet Mask' (255.255.255.0). The 'DHCP Server Settings' section is visible, with the 'DHCP Server' option set to 'Disabled'. Other settings include 'Start IP Address' (192.168.0.100), 'Maximum number of Users' (50), 'IP Address Range' (192.168.0.100 - 149), 'Client Lease Time' (0 minutes), and two 'Static DNS' fields (both set to 0.0.0.0).

- Enable DHCP.

The screenshot shows the configuration interface of a Wireless Tri-Band Home Router. The top navigation bar includes tabs for Setup, Wireless, Security, Access Restrictions, Applications & Gaming, Administration, and Status. The Setup tab is active, and the sub-tab is Basic Setup. The main content area is divided into two sections: Internet Setup and Network Setup. In the Internet Setup section, the Internet Connection type is set to Automatic Configuration - DHCP. In the Network Setup section, the Router IP is 192.168.0.1, and the Subnet Mask is 255.255.255.0. The DHCP Server is enabled, and the Start IP Address is 192.168.0.100. The Maximum number of Users is 50, and the IP Address Range is 192.168.0.100 - 149. The Client Lease Time is 0 minutes. Static DNS 1 and 2 are both 0.0.0.0.

Section	Parameter	Value
Internet Setup	Internet Connection type	Automatic Configuration - DHCP
	Host Name	
	Domain Name	
Network Setup	Router IP	192.168.0.1
	Subnet Mask	255.255.255.0
	DHCP Server	Enabled
	Start IP Address	192.168.0.100
	Maximum number of Users	50
	IP Address Range	192.168.0.100 - 149
	Client Lease Time	0 minutes (0 means one day)
	Static DNS 1	0.0.0.0
	Static DNS 2	0.0.0.0
	DHCP Reservation	

## Section 5: Essay

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

**ANS:** Network documentation is essential for efficiently managing, troubleshooting, and securing a network. It provides a clear overview of the network's structure, including devices, IP addresses, and configurations, making it easier to identify and resolve issues quickly. Proper documentation enhances security by tracking network changes and preventing unauthorized access. It also simplifies network expansion, ensuring smooth upgrades and scalability.

Network Documents:

- 1) Network Topology Diagram
- 2) IP Address Assignments
- 3) Device Inventory
- 4) Configuration Files
- 5) Security Policies
- 6) Troubleshooting Logs