# Module -5: Network Fundamentals and Building Networks

## Section 1: Multiple Choice

1. What is the primary function of a router in a computer network?
Ans: c) Forwarding data packets between networks
A router connects different networks and decides the best path for data to travel – like a traffic guide for the internet.

2. What is the purpose of DHCP (Dynamic Host Configuration Protocol)?
Ans: d) Dynamically assigning IP addresses to devices
DHCP automatically gives devices IP addresses when they connect, so we don't have to set them manually.

3. Which network device works at Layer 2 and forwards data based on MAC addresses?
Ans: b) Switch
Switches use MAC addresses to send data only to the right device – unlike hubs, which send to all.

4. Which network topology connects all devices in a line using one cable (backbone)?
Ans: b) Bus
In a bus topology, all devices are connected in a line, and data travels back and forth on one cable.

## Section 2: True or False

5. A VLAN lets admins divide a network into smaller virtual networks.
Ans: True
It's like having different mini-networks inside one physical network. Each VLAN has its own broadcast domain.

6. TCP is a connectionless protocol that still provides reliable delivery.
Ans: False
Nope! TCP is connection-oriented, not connectionless. It makes sure data arrives correctly and in order.

7. A firewall controls incoming and outgoing network traffic based on rules.
Ans: True
Exactly! Firewalls act like security guards, allowing or blocking traffic based on the rules set by admins.

## Section 3: Short Answer

8. Steps to set up a wireless network for a small/home office (SOHO):

Ans:- 1> Choose a wireless router – Buy a good router with enough range and speed.

2> Connect the router to modem – Use an Ethernet cable to link router to internet

modem.

3> Power it on – Plug in and turn on the router and modem.

4> Access router settings – Open browser, enter IP (like 192.168.1.1), and log in.

5> Set SSID (Wi-Fi name) – Give your Wi-Fi a name so it’s easy to identify.

6> Set a strong password – Use WPA2/WPA3 security with a solid password.

7> Connect your devices – Use the Wi-Fi name and password to connect phones, laptops, etc.

8> Test the network – Make sure internet is working smoothly

Section 4: Practical

9. How to configure a router for Internet access using DHCP:

Ans:- 1> Connect your router to the modem – Use an Ethernet cable from the modem’s LAN port to the router’s WAN/Internet port.

2> Power on – Turn on both the modem and router. Wait a minute for them to boot up.

3> Login to router settings –

Open a browser

Type the router’s IP (usually 192.168.0.1 or 192.168.1.1)

Enter the username and password (default is often admin/admin)

4> Enable DHCP (usually enabled by default) –

Go to Network or LAN settings

Make sure DHCP Server is Enabled

This allows the router to automatically assign IP addresses to all connected devices.

5> Set Internet connection to DHCP –

Go to WAN/Internet settings

Select "Automatic IP" or "DHCP" as the connection type

This tells the router to get its IP from the modem/internet automatically.

6> Save settings and reboot – Save changes and restart the router if needed.

7> Test connection – Connect a device to Wi-Fi or LAN and check if you can access the internet.

Section 5: Long

10. Importance of Network Documentation in Building and Managing Networks:

Ans:- Network documentation is very important when you're building or managing any network — whether it's for a small office or a big company. It basically means keeping a detailed record of everything in your network setup.

1> Clear Understanding of the Network
It helps you (or your team) understand how the network is designed — what devices are connected, which IP addresses are used, which cables go where, and more.

2> Easy Troubleshooting
If something goes wrong — like a connection issue or a device not responding — documentation makes it faster and easier to find the problem and fix it.

3> Saves Time During Upgrades
When you want to upgrade hardware, add new devices, or make changes, proper documentation tells you exactly what’s already there, so you don’t mess anything up.

4> Helps New Team Members
If someone new joins the IT team, they can quickly understand the network by checking the documents — they won’t have to guess or ask around.

5> Useful for Security Audits
During a security check or audit, documentation helps show what security measures are in place and how data flows in the network.

6> Backup and Recovery
In case of a failure or reset, good documentation helps you rebuild the network quickly without confusion.