**Module:5**

**Network Fundamentals and Building Networks**

**Section: 1: Multiple Choice**

**1. What is the primary function of a router in a computer network?**

c) Forwarding data packets between networks

**2. What is the purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?**

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

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

b)bus

**Section 2: True or false**

**5. 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.**

True

**6. 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.**

False

**7. 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**

True

**Section 3: Short**

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

• Determine Requirements

• Choose the Right Equipment

• Connect the Router to the Modem

• Access the Router’s Web Interface

• Configure Wireless Settings

• Set Up Security

• Enable Additional Features (Optional)

• Test the Network

• Regular Maintenance and Updates

**Section 4: Practical**

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

 Connect Everything

• Plug in your router and turn it on.

• Use an Ethernet cable to connect the router’s WAN (Internet) port to your modem.

• Connect your computer to the router (via Wi-Fi or Ethernet).

 Log into the Router

• Open a web browser and type the router’s IP address (e.g., 192.168.1.1).

• Enter the username and password (found on the router label).

 Enable DHCP for Internet Access

• Find the WAN (Internet) settings section.

• Select DHCP (Dynamic Host Configuration Protocol) as the connection type.

• Make sure "Obtain IP Address Automatically" is enabled.

 Set Up Your Local Network

• Go to LAN settings and enable the DHCP server so your router can assign IP addresses to devices automatically.

 Secure Your Wi-Fi

• Choose a Wi-Fi name (SSID).

• Set a strong password with WPA2/WPA3 security.

Save & Restart

• Click Save Settings and restart your router.

Test Your Connection

• Connect a device and check if you can browse the internet.

Section 5: Essay

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

Makes Troubleshooting Easier :

• Helps quickly find and fix network problems.

• Gives a clear reference for settings and connections.

Keeps the Network Secure :

• Records firewall rules, passwords, and access settings.

• Helps track who is connected and prevents unauthorized access.

Helps When Expanding or Upgrading :

• Shows how everything is connected, making upgrades easier.

• Prevents confusion when adding new devices.

Ensures Compliance & Audits :

• Helps follow rules like GDPR or HIPAA.

• Provides proof of security policies when checked.

Helps Teams Work Better Together :

• Makes it easy for new IT staff to understand the network.

• Prevents relying on one person for all network knowledge.

What to Include in Documentation :

• Network Diagram (a simple map of the network).

• List of Devices (routers, switches, computers).

• IP Address List (who has what address).

• Security Policies (firewall settings, passwords).

• Backup Settings (so nothing gets lost).