**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).