**Assignment module 3 : Understanding and Maintenance of**

**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

-The primary function of a router is to forward data packets between different networks, especially between a local network (like your home or office) and the internet…

2. What is the purpose of DNS (Domain Name System) in a computer network?

a) Encrypting data transmissions for security

b) Assigning IP addresses to devices dynamically

c) Converting domain names to IP addresses

d) Routing data packets between network segments

Ans- c) Converting domain names to IP addresses

-The Domain Name System (DNS**)** is like the phonebook of the internet.

3. What type of network topology uses a centralized hub or switch to

connect all devices?

a) Star

b) Bus

c) Ring

d) Mesh

Ans- a) Star

-In a Star topology, all devices are connected to a central hub or switch

4. Which network protocol is commonly used for securely accessing and transferring files over a network?

a) HTTP

b) FTP

c) SMTP

d) POP3

Ans- b) FTP

**Section 2: True or False**

5. 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

A firewall is a security system, either hardware

6. True or False: DHCP (Dynamic Host Configuration Protocol) assigns static IP addresses to network devices automatically.

Ans- false

DHCP (Dynamic Host Configuration Protocol) is used to automatically assign dynamic IPaddresses to devices on a network — **not static IP addresses**.

7. True or False: VLANs (Virtual Local Area Networks) enable network segmentation by dividing a single physical network into multiple logical networks.

Ans- true

-VLANs (Virtual Local Area Networks**)** are used to logically divide a single physical network into multiple separate networks.

**Section 3: Short Answer**

8. Explain the difference between a hub and a switch in a computer network.

**Ans- Hub:**

* A hub is like a dumb repeater. When a device sends data, the hub sends it to all devices connected to it, even if the data is meant for just one device.
* Result: All devices see the same data, which can slow things down.

**Switch:**

* A **switch** is smarter. It **learns** where each device is and only sends data to the device it’s meant for.
* **Result**: More efficient and faster because it doesn't waste bandwidth sending data to unnecessary devices.

9. Describe the process of troubleshooting network connectivity issues .

**Ans-** 1. Check Connections:

* Make sure your Wi-Fi is on or Ethernet cable is plugged in.

2. Restart Devices:

* Turn off and on your computer and router (this often fixes things).

3. Check for an IP Address:

* Open Command Prompt (Windows) or Terminal (Mac) and type ipconfig (Windows) or ifconfig (Mac).
* If you don’t see a valid IP address (something like 192.168.x.x), restart the router.

4. Ping Test:

* In Command Prompt/Terminal, type ping google.com to see if your computer can reach the internet.

5. Check for Outages:

* Check if your internet provider is having issues.

6. Disable Firewall/Antivirus:

* Sometimes they block the connection, so turn them off for a bit to test.

**Section 4: Practical Application**

10. Demonstrate how to configure a wireless router's security settings to enhance network security.

**Ans**- Log in to Your Router

* Open a browser and type 192.168.1.1 (or 192.168.0.1) in the address bar.
* Enter the admin username and password (usually on the router label or manual).

2. Change the Admin Password

* Go to Admin Settings.
* Change the default admin password to something strong, like MyStrongPassword2025!.

3. Set Wi-Fi Password

* Go to Wireless Settings.
* Set a strong Wi-Fi password (e.g., SecureWiFi123!).

4. Enable WPA2 or WPA3 Encryption

* In the Security Settings, select WPA3 (best) or WPA2.
* Avoid WEP — it’s not secure!

5. Change SSID (Network Name)

* Change the default Wi-Fi name (SSID) to something unique (e.g., HomeWiFi\_2025).

6. Disable WPS

* Find WPS settings and turn it off. This helps keep your network more secure.

**Section 5: Essay**

11. Discuss the importance of network documentation and provide examples of information that should be documented.

**Ans**- Network documentation is crucial for managing, troubleshooting, and maintaining a network effectively. It ensures that network configurations, policies, and changes are clearly recorded, which can save time and reduce errors. Here’s why it’s important:

1. Troubleshooting: With detailed documentation, it’s easier to identify and fix issues when they arise.
2. Network Planning: Helps plan for future upgrades, expansions, or changes.
3. Security: Ensures that security configurations and practices are followed and monitored.
4. Compliance: Ensures adherence to industry standards and regulations.
5. Training and Knowledge Sharing: New team members can quickly get up to speed with well-documented networks.

Examples of information to document:

* Network Topology: A diagram showing how devices are connected.
* IP Addressing Scheme: A list of all IP addresses used and their assignments.
* Device Configurations: Settings for routers, switches, firewalls, etc.
* Passwords & Credentials: Securely document usernames and passwords.
* Software & Firmware Versions: Versions of networking hardware and software.
* Change Logs: Record any changes made to the network, including dates and reasons.