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

**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 DNS (Domain Name System) in a computer network?

⇒ c) Converting domain names to IP addresses

3. What type of network topology uses a centralized hub or switch to connect all devices?

⇒ a) star

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

⇒ 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.

⇒ True

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

⇒ False

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

⇒ True

**Section 3: Short Answer**

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

⇒

| HUB | Switch |
| --- | --- |
| ⇒ Operates at the physical layer (Layer 1) of the OSI model. | ⇒ Operates at the data link layer (Layer 2) of the OSI model. |
| ⇒ Broadcasts data to all connected devices. | ⇒ MAC addresses and forwards data only to the intended recipient. |
| ⇒ Creates a single collision domain; only one device can transmit at a time. | ⇒ Divides the network into multiple smaller collision domains. |
| ⇒ Not intelligent; simply repeats incoming signals. | ⇒ More intelligent, learns which devices are connected to each port. |
| ⇒ Slower, as all devices receive the same data. | ⇒ Faster, as data is only sent to the intended recipient. |
| ⇒ Less secure as all devices receive all data. | ⇒ More secure, as only the intended recipient receives the data. |

**9. Describe the process of troubleshooting network connectivity issues**

**⇒ Steps to find the troubleshoot in the network connectivity.**

1. **Check cables** and connections.
2. **Restart** the router or modem.
3. **Check IP settings** on the device.
4. **Ping** other devices or websites.
5. **Disable/enable** the network adapter.
6. **Check firewall** or antivirus settings.
7. **Contact ISP** if the issue persists.

**Section 4: Practical Application**

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

⇒ **Steps to Secure Your Wi-Fi Router:**

1. **Login to Router**
   * Open browser → Type 192.168.1.1 or 192.168.0.1
   * Enter admin username and password.
2. **Change Wi-Fi Name (SSID)**
   * Avoid using personal info.
3. **Use Strong Encryption**
   * Set security to **WPA3** or **WPA2 (AES)**
   * Never use WEP.
4. **Set a Strong Wi-Fi Password**
   * Use a mix of letters, numbers, and symbols.
5. **Update Router Firmware**
   * Check for updates and install if available.
6. **Turn Off WPS**
   * Disable WPS to prevent easy hacking.
7. **Hide Network Name (Optional)**
   * You can choose to hide SSID for extra privacy.
8. **Create Guest Network**
   * Use a separate network for visitors.
9. **Limit Connected Devices**
   * Reduce DHCP range to allow only needed devices.
10. **Enable MAC Filtering (Advanced)**

* Allow only known device MAC addresses.

**Section 5: Essay**

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

⇒ **Importance of Network Documentation:**

**Network documentation** is important because it helps in:

* **Troubleshooting issues** quickly
* **Managing and upgrading** the network easily
* **Keeping track** of all devices and settings
* **Training new staff** or IT members

→ **What to Document:**

1. **Network layout** – Diagram of connected devices
2. **IP addresses** – List of all device IPs
3. **Device details** – Routers, switches, servers, etc.
4. **Login credentials** – Admin usernames and passwords (stored securely)
5. **Configuration settings** – Router/firewall settings
6. **Cables and ports** – Cable types and port connections
7. **Software licenses** – OS, antivirus, and tools used
8. **Backup info** – When and how backups are done