# Assignment module 3 : Understanding and Maintenance of Network

## Section 1: Multiple Choice

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

ANS : c) Forwarding data packets between networks

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

ANS : c) Converting domain names to IP addresses

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

ANS : a) Star

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

ANS : b) FTP

## Section 2: True or False

5. 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

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

ANS : False

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

ANS: True

## Section 3: Short Answer

ANS :

| **Point of Difference** | **Hub** | **Switch** |
| --- | --- | --- |
| **Functionality** | Broadcasts data to all connected devices. | Directs data to the intended recipient. |
| **Efficiency** | Less efficient; causes network congestion. | More efficient; reduces unnecessary traffic. |
| **Speed** | Slower (10 Mbps or 100 Mbps). | Faster (up to several Gbps). |
| **Cost** | Cheaper and simpler. | Slightly more expensive. |
| **Use Case** | Suitable for small, simple networks. | Ideal for larger, performance-critical networks. |

9. Describe the process of troubleshooting network connectivity issues.

ANS : **Steps to Troubleshoot Network Issues**

1. **Check Connections**: Ensure cables and devices are properly connected.
2. **Verify Settings**: Check IP, DNS, and gateway configurations.
3. **Ping Test**: Test connectivity with the ping command.
4. **Restart Devices**: Restart the computer, router, or modem.
5. **Test Other Devices**: Check if other devices face the same issue.
6. **Check ISP**: Confirm no network outage with your ISP.
7. **Update Software**: Update drivers and router firmware.
8. **Inspect Security**: Ensure firewalls aren’t blocking access.
9. **Replace Hardware**: Test with different cables or adapters.
10. **Contact Support**: Seek help if unresolved.

## Section 4: Practical Application

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

ANS : **Steps to Secure Your Wireless Router**

1. **Log In**: Access the router via its IP address (e.g., 192.168.1.1) and log in.
2. **Change Admin Password**: Replace the default admin credentials with a strong password.
3. **Set Strong Wi-Fi Password**: Use WPA3 (or WPA2) encryption and a secure password.
4. **Rename SSID**: Change the default Wi-Fi name to something unique.
5. **Enable Firewall**: Activate the router's built-in firewall.
6. **Disable WPS**: Turn off Wi-Fi Protected Setup for better security.
7. **Update Firmware**: Keep the router's software up to date.
8. **Turn Off Remote Access**: Disable remote management features.
9. **Monitor Devices**: Regularly check and block unknown devices.

## Section 5: Essay

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

ANS : **Importance of Network Documentation**

Network documentation ensures efficient management, troubleshooting, and scalability of a network. It helps IT teams understand the network structure, identify issues quickly, and plan upgrades or changes effectively.

**Examples of Information to Document**

1. **Network Topology**: Diagrams showing device connections and layouts.
2. **IP Addressing**: List of assigned IPs for devices and subnets.
3. **Hardware Details**: Device models, serial numbers, and locations.
4. **Configuration Settings**: Router, switch, and firewall settings.
5. **Cables and Ports**: Information about cable types and port usage.
6. **Access Credentials**: Admin credentials for network devices (securely stored).
7. **Service Providers**: ISP details and service agreements.
8. **Change Log**: Record of updates or modifications to the network.