Assignment module 3:

**Understanding and Maintenance of**

Section 1: Multiple Choice

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

Ans: **Forwarding data packets between networks**

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

Ans: **Converting domain names to IP addresses**

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

Ans: **Star Topology**

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

Ans**: FTP (file transfer protocol)**

Section 2: True or False

1. 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**

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

Ans: **False**

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

Ans: **True**

Section 3: Short Answer

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

Ans: **HUB:**

* Layer 1 device
* Does not recognize MAC (Media Access Control Address)
* Broadcast device, slower in operation
* Cheap device

**SWITCH:**

* Layer 2 device
* Recognize MAC (Media Access Control Address)
* Unicast device, faster in operation
* Expensive device

1. Describe the process of troubleshooting network connectivity issues.

Ans: Troubleshooting network connectivity issues:

1. **Identify symptoms**
2. **Gather information (network settings, physical connections.)**
3. **Isolate the issue (test devices, network segmentation)**
4. **Analyze and test (ping, traceroute, logs)**
5. **Resolve the issue (apply fixes, restart devices)**
6. **Verify and document**

Section 4: Practical Application

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

Ans: Scenario: An employee's computer cannot connect to the company network.

Step-by-Step Troubleshooting:

**1. Access the Router’s Settings**

1. **Connect to the router:**
   * Use a wired connection (recommended) or a wireless connection to the router.
2. **Open the configuration page:**
   * Open a web browser and type the router's IP address (commonly 192.168.0.1 or 192.168.1.1) into the address bar.
3. **Log in:**
   * Enter the admin username and password. These credentials are often printed on the router or in its manual. If not changed, the default is typically "admin" for both

**2. Update the Router’s Firmware**

1. Look for a firmware update option (usually under "Administration" or "Advanced Settings").
2. Follow the prompts to download and install updates. Updated firmware improves security and fixes vulnerabilities.

**. 3 Change the Default SSID (Network Name)**

1. Rename the network name (SSID) to something unique and unrelated to personal information.

**4.Enable a Guest Network**

1. Set up a separate guest network for visitors.
2. Limit access to only internet usage and not to your primary network resources.

**5.Disable Remote Management**

1. Look for options like Remote Management or Web Access from WAN in the router settings.

**6. Enable Firewall and Network Protection Features**

1. Check the router settings for built-in firewall options and ensure they are enabled.
2. Enable features like **DoS Protection** or **Content Filtering** if available.

**7. Regularly Review and Monitor Settings**

1. Periodically log into your router to ensure no unauthorized devices are connected.
2. Update passwords and check for firmware updates regularly.

**Benefits:**

1. Reduced downtime
2. Faster troubleshooting
3. Improved collaboration
4. Simplified maintenance
5. Enhanced security
6. Compliance with regulations