**Assignment Module 3:** Understanding And Maintenance Of Networks

**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

**Answer:** c) Forwarding data packets between networks

1. 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

**Answer:** c) Converting domain names to IP addresses

1. What type of network topology uses a centralised hub or switch to connect all devices?   
   a) Star   
   b) Bus   
   c) Ring   
   d) Mesh

**Answer:** a) Star

1. Which network protocol is commonly used for securely accessing and transferring files over a network?   
   a) HTTP   
   b) FTP   
   c) SMTP   
   d) POP3

**Answer:** b) FTP

**Section 2**: True or False

1. **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**

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

**False**

1. **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

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

**Answer:**

|  |  |  |
| --- | --- | --- |
| **Feature** | **Hub** | **Switch** |
| Sends data | Everyone | Only the intended device |
| Speed | Slower | Faster |
| Network collisions | More | Less |
| Cost | Cheaper | Slightly expensive |
| Use | Small networks or simple setups | Most modern networks |

1. Describe the process of troubleshooting network connectivity issues.

**Answer:**

1. Check Connection – Make sure all cables are plugged in and Wi-Fi is turned on.
2. Check IP address – Open a command prompt and type ipconfig to see if your computer has a valid IP.
3. Refresh IP address – If the IP is wrong, type ipconfig/release, then ipconfig/renew.
4. Clear DNS Cache – Type ipconfig/flushdns to fix website issues.
5. Ping router – Type ping 192.168.1.1 to see if your computer can talk to the router.
6. Ping Internet – Type ping 8.8.8.8 to check internet connectivity.
7. Restart Devices – Restart your computer and router to fix simple issues.
8. Check firewall/antivirus – ensure they are not blocking internet access.
9. Ask for help – If still not working, contact your network admin or ISP.

**Section 4:** Practical Application

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

**Answer:**

1. Connect to the router

* Open your web browser.
* Type the router’s address (like 192.168.1.1) in the address bar.
* Log in using the username and password (Usually written on the router).

1. Change the router password

* Go to “Admin” or “Settings”.
* Change the default password to a strong one (with letters, numbers, and symbols).

1. Set a strong Wi-Fi Password

* Go to wireless settings,🡪 security.
* Choose WPA2 or WPA3 (these are strong lock types).
* Set a password that’s hard to guess (like MyWifi@1234).

1. Rename the Wi-Fi (SSID)

* Change the network name from “TP-Link123” to something unique.
* Don’t use your real name or address.

1. Turn off WPS (if available)

* WPS makes connecting easier, but it can be unsafe. Please turn it off for better security.

1. Update the router’s software (Firmware)

* Look for the “update” or “firmware” option and keep it up to date.
* This fixes bugs and adds new security features.

1. Hide your network (optional)

* You can hide the Wi-Fi name so only people who know it can connect.

**Section 5:** Essay

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

**Answer:**

Why it’s important

1. Helps fix the problem faster

If the internet stops working, can you look at the map to see which part is broken?

1. Saves time for new technicians

When new people join, they can quickly understand the setup.

1. Keeps things organised

It helps you know which computer or cable goes where.

1. Good for upgrades

When you want to add new devices or change something, the documents tell you what’s already there.

Examples for what to write down:

* IP address of all computers and devices
* Router and switch names
* Cable connections
* Login details (saved safely)
* Network diagram or maps
* Date of setup and who did it

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**THANK YOU**