**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. 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**

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

Ans:- **Hub:-** Hub is operated on Physical layer of OSI model.

- Hub is a broadcast type transmission.

- Hub have 4/12 ports.

- In hub, Packet filtering is not provided.

- Cheaper as compared to switch.

**Switch:-** While switch is operated on Data link layer of OSI model.

- While switch is a multicast and broadcast type transmission.

- While switch can have 24 to 48 ports.

- While in switch, Packet filtering is provided.

- Expensive as compared to HUB.

9. Describe the process of troubleshooting network connectivity issues.

Ans:- -checking physical connections,

- then verify device IP settings,

- Check the status of network devices (router, switch),

- Restart hardware if needed, review firewall settings, and confirm DNS

configuration.

- If the issue persists, escalate to deeper diagnostics or support.

**Section 4: Practical Application**

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

**Ans:- 1. Log in to the Router Admin Page:**

* Connect to the router
* Open a browser and enter the router’s IP
* Enter the username and password

**2. Change the Default Admin Credentials:**

- Change the default username and password to something strong and

unique.

**3. Set a Strong Wi-Fi Password:**

- Go to WirelessSettings.

- Set a strong password.

**4. Rename Wi-Fi Network Name:**

- Avoid using personal information.

**5. Disable WPS (Wi-Fi Protected Setup):**

- This feature can be a security risk.

- Find WPS setting and disable it.

**6. Enable Firewall:**

- In Security Settings, make sure the router firewall is enabled.

**7. Update Router Firmware:**

- Go to Firmware Update or Maintenance.

**Section 5: Essay**

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

Ans :- **Importance of Network Documentation:-**

* Information from network documentation is crucial to the success of any networking project. It is essential for everyone involved in the project to understand and adhere to the requirements.  Without this understanding, it will be difficult for them to come up with a viable design. Network documentation should also:
* Explains how the two networks are connected together and what services are provided on these connections.
* List all the devices that are making up the network.
* Identify all network infrastructure elements such as routers switches ,firewalls etc. As well as their configuration.

**Examples of Information That Should Be Documented:-**

| **Category** | **Examples** |
| --- | --- |
| Network Topology | Diagrams showing device connections, VLANs, and network segments |
| Device Inventory | List of all hardware (routers, switches, firewalls, servers), model numbers, serial numbers |
| IP Address Management | IP address assignments, subnets, DHCP scopes |
| Configuration Files | Router/switch/firewall configurations, saved backups |
| Access Control | Admin credentials, SSH keys, access levels (stored securely) |
| Network Services | DNS, DHCP, NTP, VPN, proxy configurations |
| Performance Logs | Bandwidth usage, error rates, uptime/downtime logs |
| Change Logs | Record of any changes to configurations, devices, or policies |
| Security Policies | Firewall rules, intrusion detection/prevention rules, patch management procedures |