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**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 :** Forwarding data packets between networks

1. **What is the primary function of a router 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

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

**Ans :** 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.**

**Ans :** True

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

**Ans :** False

**Note :** Because DHCP assigns IP addresses to network devices Dynamically, not statically

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

**Ans : True**

* **Section 3 : short answers**

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

**Ans. Hub:**

1. Operate in the physical layer of OSI model.
2. Non-intelligent network device.
3. Broadcasts messages.
4. Transmission mode is half duplex.
5. Passive device.

**Switch:**

1. Operate in data link layer.
2. An intelligent network device.
3. Supports unicast, multicast, broadcast as well.
4. Transmission mode is full duplex.
5. **Describe the process of troubleshooting network connectivity issues.**

**Ans. Network troubleshooting :**

* Use network monitoring tools
* Check physical connections such as cables, connectors and network devices.
* Run ping tests to the affected destinations.
* Perform a DNS check.
* Check malware protection is working correctly.
* Contact your ISP after you have checked everything and you haven’t found any problems.
* Use network troubleshooting software.
* **Section 4 : Practical Application**

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

**Ans.**

* Access Admin Interface.
* Update the admin username and password to strong, unique options.
* Enable WPA3/WPA2 Encryption and create a strong Wi-Fi password.
* Disable WPS
* Change SSID
* Enable MAC Address Filtering
* check for and install firmware update
* Monitor Connected Devices
* Restart Router
* **Section 5 : Essay**

1. **Discuss the importance of network documentation and provide examples of information that should be documented.**
2. **Troubleshooting**: Facilitates quick identification and resolution of network issues.
3. **Onboarding New Hires**: Helps new employees understand the network structure and processes faster.
4. **Compliance**: Ensures adherence to industry regulations requiring documentation.
5. **Scaling Up**: Assists in planning and executing network expansions efficiently.
6. **Knowledge Transfer**: Captures critical information to prevent knowledge loss when employees leave.

**Key Documentation Types:**

* **Network Topology**: Diagrams showing device interconnections.
* **Server Rack Diagram**: Layout of equipment organization in racks.
* **Cloud Architecture Diagram**: Illustrations of connections to cloud services.
* **Hardware Directory**: Inventory of hardware with specifications and serial numbers.
* **Configuration Files**: Records of device settings for quick recovery.
* **Policies and Procedures**: Documentation of operational standards.
* **Change Logs**: Historical records of network changes and incidents.