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**Assignment module 5 : Network Fundamentals And Building 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 purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?**

**Ans.** d) Dynamically assigning IP addresses to devices

1. **Which network device operates at Layer 2 (Data Link Layer) of the OSI model and forwards data packets based on MAC addresses?**

**Ans :** b) Switch

1. **Which network topology connects all devices in a linear fashion, with each device connected to a central cable or backbone?**

**Ans :** b) Bus

* **Section 2 : True or False**

1. **True or False: A VLAN (Virtual Local Area Network) allows network administrators to logically segment a single physical network into multiple virtual networks, each with its own broadcast domain.**

**Ans :** True

1. **True or False: TCP (Transmission Control Protocol) is a connectionless protocol that provides reliable, ordered, and error-checked delivery of data packets over a network.**

**Ans :** False

**Note :** The statement is incorrect because TCP is connection-oriented, not connectionless.

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

* **Section 3 : short answers**

1. **Describe the steps involved in setting up a wireless network for a small office or home office (SOHO) environment.**

**Ans.**

1. **Choose a wireless router:** Select a wireless router based on the size of the area and the number of devices you need to support.
2. **Connect the router to the modem:** Plug the router into the modem using an Ethernet cable.
3. **Configure router settings:** Access the router’s configuration page via a web browser and set the SSID (network name), encryption type (preferably WPA2 or WPA3), and a strong password.
4. **Set up DHCP:** Enable DHCP on the router so it can automatically assign IP addresses to connected devices.
5. **Test the connection:** Connect a device (like a laptop or smartphone) to the wireless network to ensure internet connectivity.
6. **Secure the network:** Change the default login credentials for the router to prevent unauthorized access.

* **Section 4 : Practical Application**

1. **Demonstrate how to configure a router for Internet access using DHCP (Dynamic Host Configuration Protocol).**

**Ans** :

1. **Access the router’s configuration page:** Open a web browser and enter the router’s IP address.
2. **Login to the router interface:** Enter the router’s username and password.
3. **Enable DHCP:** Go to the DHCP settings page and enable DHCP. This allows the router to assign IP addresses to connected devices automatically.
4. **Configure the WAN/Internet settings:** Set the router’s WAN interface to get an IP address automatically (using DHCP) from the Internet service provider.
5. **Save and apply the settings:** After configuring the necessary settings, save the changes and restart the router if necessary.
6. **Test Internet access:** Check if the devices connected to the router are able to access the internet.

* **Section 5 : Essay**

1. **Discuss the importance of network documentation in the context of building and managing networks.**

**Ans**. Network documentation is critical for the efficient management and troubleshooting of a network. It provides:

* **A map of the network:** Detailed diagrams and topology maps help understand how devices are connected and their roles.
* **Configuration details:** Documenting device settings, IP address schemes, VLANs, and other configurations ensures consistency and eases troubleshooting.
* **Security management:** Keeping track of firewall rules, access control lists, and device configurations enhances network security.
* **Maintenance and scalability:** Proper documentation allows easier scaling of the network and helps in managing changes without disrupting existing systems.
* **Recovery:** In case of a failure, accurate documentation helps restore systems quickly and reduces downtime.