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**Assignment: module -5 Network Fundamentals and Building Networks**

**Section 1: Multiple Choice**

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

ANS : (c) 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**

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

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

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 Answer**

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

**ANS : Steps to Set Up a Wireless Network for a SOHO (Small Office/Home Office):**

1. **Select Network Equipment**
   * Choose a **wireless router or access point** with good range and security features.
2. **Connect the Router to the Modem**
   * Use an **Ethernet cable** to connect the router to the internet modem.
   * Power on both devices.
3. **Access Router Configuration**
   * Open a browser and enter the router’s **IP address** (e.g., 192.168.1.1).
   * Log in using default credentials.
4. **Set Up Wireless Settings**
   * Create a **network name (SSID)** and **strong password**.
   * Enable **WPA2 or WPA3** encryption for security.
5. **Enable DHCP**
   * Turn on **DHCP** so IP addresses are assigned automatically to connected devices.
6. **Test the Connection**
   * Connect devices (laptops, phones, printers) to the Wi-Fi and check internet access.
7. **Secure and Maintain the Network**
   * **Change default admin password**, **update firmware**, and **position the router centrally** for better coverage.

**Section 4: Practical Application**

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

**Steps to Configure a Router for Internet Access Using DHCP**

1. **Connect the Router to the Modem**
   * Use an **Ethernet cable** to connect the **WAN (Internet) port** of the router to the **modem** provided by your ISP.
   * Power on both devices.
2. **Connect a Computer to the Router**
   * Use a **wired Ethernet cable** or **Wi-Fi** to connect your computer to the router.
3. **Access the Router’s Configuration Page**
   * Open a **web browser** and type the router’s **IP address** (commonly 192.168.0.1 or 192.168.1.1).
   * Enter the **default username and password** (found on the router label or manual).
4. **Configure the Internet (WAN) Settings**
   * In the **Internet Setup** or **WAN Settings** section, select **“Obtain an IP address automatically (DHCP)”**.
   * This allows the router to **get its IP address automatically** from the ISP.
5. **Save and Apply Settings**
   * Click **Save** or **Apply** to confirm changes.
   * The router will now communicate with the ISP and obtain an IP address automatically.
6. **Verify Internet Connection**
   * Open the router’s **Status** or **Network** page to check if an **IP address** is assigned under WAN.
   * Test by opening a website on your connected device.
7. **Secure the Network**
   * Set up a **Wi-Fi name (SSID)** and **strong password**.
   * Enable **WPA2/WPA3 encryption** and **change the default admin password**.

**Section 5: Essay**

9.Importance of Effective Communication Skills in a Helpdesk or Technical Support Role

1. Helps Understand User Problems Clearly
   * Good listening and questioning skills help support staff accurately identify the user’s issue.
2. Builds Trust and Customer Satisfaction
   * Clear, polite, and patient communication makes users feel supported and valued.
3. Simplifies Technical Information
   * Technicians must explain complex technical terms in simple language that non-technical users can understand.
4. Improves Teamwork and Coordination
   * Clear communication ensures smooth information sharing among team members, leading to faster issue resolution.
5. Reduces Errors and Misunderstandings
   * Accurate communication prevents confusion and helps document problems and solutions correctly.
6. Enhances Professionalism and Reputation
   * Courteous and respectful communication creates a positive impression of the helpdesk and organization.