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# **Assignment**

## Module -1: Understanding of Hardware and Its Components

Section 1: Multiple Choice

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

Answer - c) Forwarding data packets between networks

1. What is the purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?

Answer - 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?

Answer - b) Switch

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

Answer - 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.

Answer - 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.

Answer - 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.

Answer - true

Section 3: Short Question

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

Answer –

**Steps Involved in Setting Up a Wireless Network for a Small Office or Home Office (SOHO) Environment:**

1. **Assess Requirements:**  
   Determine the number of devices that will connect, coverage area, and bandwidth needs.
2. **Select Appropriate Hardware:**  
   Choose a suitable wireless router or access point that supports the required Wi-Fi standards (e.g., 802.11ac or 802.11ax), security features, and additional ports if necessary.
3. **Choose Ideal Location:**  
   Place the router in a central, elevated position free from interference (like microwaves or cordless phones) to ensure good coverage.
4. **Connect Hardware:**
   * Connect the router to the internet source (modem) via Ethernet cable.
   * Plug in the power supply and turn on the router.
5. **Configure the Router:**
   * Access the router’s admin interface via a web browser using its default IP address.
   * Log in with default credentials and change these for security.
   * Set up your internet connection details provided by your ISP.
6. **Set Wireless Network Details:**
   * Create a unique network name (SSID).
   * Enable wireless encryption (preferably WPA3 or WPA2).
   * Set a strong Wi-Fi password.
7. **Enhance Security:**
   * Change default admin credentials.
   * Enable firewall and security features.
   * Consider setting up guest networks for visitors.
8. **Connect Devices and Test:**
   * Connect all devices to the new Wi-Fi network using the SSID and password.
   * Test the connection for speed and stability.
9. **Optimize and Maintain:**
   * Update firmware regularly.
   * Adjust placement if needed to improve coverage.
   * Monitor network performance and security periodically.

Section 4: Practical

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

Answer – Done

Section 5:

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

Answer –

**The Importance of Network Documentation in Building and Managing Networks**

Network documentation is a critical aspect of designing, implementing, and managing a network infrastructure. It involves creating detailed records of all network components, configurations, and procedures. The importance of network documentation can be summarized as follows:

1. **Facilitates Troubleshooting and Issue Resolution:**  
   Accurate documentation provides network administrators with quick access to configuration details, IP addresses, hardware inventories, and network topology. This expedites identifying and resolving problems, minimizing downtime.
2. **Supports Network Maintenance and Upgrades:**  
   Proper documentation helps in planning upgrades, expansions, or modifications by providing a clear overview of existing network architecture and dependencies, reducing the risk of errors.
3. **Ensures Consistency and Standardization:**  
   Documented procedures and standards promote consistent configurations and practices, which are essential for maintaining network integrity and security.
4. **Enhances Security:**  
   Maintaining records of security policies, access controls, and device configurations aids in monitoring, auditing, and ensuring compliance with security protocols.
5. **Enables Efficient Network Management:**  
   When issues arise or changes are needed, documentation provides a reference point, saving time and effort, and facilitating efficient management of the network.
6. **Supports Disaster Recovery:**  
   In case of hardware failures, cyberattacks, or other disasters, detailed documentation helps restore the network swiftly by guiding recovery procedures.
7. **Facilitates Knowledge Transfer and Training:**  
   Well-maintained documentation acts as a knowledge base for new staff, ensuring continuity and reducing dependence on individual experts.