Module 4: Network Fundamentals and Building Networks

Section 1: Multiple Choice

1. What is the primary function of a router in a computer network?
a) Assigning IP addresses to devices
b) Providing wireless connectivity to devices
c) Forwarding data packets between networks
d) Managing user authentication and access control

c) Forwarding data packets between networks

2. What is the purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?
a) Assigning static IP addresses to devices
b) Resolving domain names to IP addresses
c) Managing network traffic and congestion
d) Dynamically assigning IP addresses to devices

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3. Which network device operates at Layer 2 (Data Link Layer) of the OSI model and forwards data packets based on MAC addresses?
a) Router
b) Switch
c) Hub
d) Repeater

b) Switch

4. Which network topology connects all devices in a linear fashion, with each device connected to a central cable or backbone?
a) Star
b) Bus
c) Ring
d) Mesh

b) Bus

Section 2: True or False

5. 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

6. 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

7. 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 Answer

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

Connect the router to the internet modem.

Power on the router and connect a computer using Ethernet or Wi-Fi.

Access the router configuration page using IP address (e.g., 192.168.1.1).

Set a wireless network name (SSID).

Enable WPA2/WPA3 security and set a strong Wi-Fi password.

Enable DHCP to assign IP addresses automatically.

Save settings and connect devices to the wireless network.

Section 4: Practical Application

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

Connect the router's WAN port to the ISP modem.

Connect a computer to the router using LAN cable.

Open a web browser and enter the router IP address.

Login using admin credentials.

Set Internet connection type to DHCP / Automatic IP.

Enable DHCP server in LAN settings.

Save configuration and reboot the router.

Verify internet access on connected devices.

Section 5: Essay

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

Network documentation is essential for building and managing computer networks efficiently. It provides a clear record of network design, configuration, and components, making troubleshooting and maintenance easier.

Proper documentation helps network administrators quickly identify network devices, IP addressing schemes, VLAN configurations, and security policies. It reduces downtime during failures and simplifies upgrades or expansions.

Examples of network documentation include network topology diagrams, IP address tables, device configurations, access credentials (secured), and hardware inventory. Good documentation ensures consistency, improves security, and supports smooth network operations.