

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

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

Ans: - d) Dynamically assigning IP addresses to devices

3. 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

4. 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

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.

Ans: - 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.

Ans: - 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.

Ans: - 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.

Ans: -

1. Choose an Internet Service Provider (ISP):

- Subscribe to a reliable ISP to get internet access.

2. Select and Set Up a Wireless Router:

- Purchase a wireless router that supports your needs (Wi-Fi range, speed, security features).
- Connect the router to the modem using an Ethernet cable.

3. Configure Router Settings:

- Access the router's web interface using its IP address.
- Set up a unique SSID (network name) and enable WPA2 or WPA3 encryption for security.
- Create a strong Wi-Fi password.

4. Connect Devices:

- Connect computers, smartphones, printers, and other devices to the wireless network using the SSID and password.

5. Test Connectivity:

- Ensure all devices have internet access and test signal strength in various locations.

6. Secure the Network:

- Change the default admin login for the router.
- Enable a firewall and disable WPS if not needed.
- Regularly update the router's firmware.

Section 4: Practical

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

Section 5: Essay

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

Ans: -

Network documentation refers to the detailed records and diagrams that describe the design, configuration, and structure of a computer network. It plays a crucial role in both building and managing networks effectively.

1. Efficient Troubleshooting and Maintenance:

Well-documented networks help IT personnel quickly identify and resolve issues such as connectivity problems, misconfigurations, or hardware failures.

2. Simplifies Network Management:

Network diagrams, IP address lists, and device inventories help administrators manage large or complex networks more easily, ensuring efficient monitoring and upgrades.

3. Enhances Security:

Documenting firewall rules, VLAN configurations, and access control settings helps ensure consistent security policies across the network and helps in identifying vulnerabilities.

4. Facilitates Scalability and Upgrades:

Clear documentation makes it easier to expand the network or integrate new devices and technologies without disrupting existing operations.

5. Aids in Compliance and Auditing:

Many industries require proof of network structure and security policies. Proper documentation helps meet legal, regulatory, or organizational compliance standards.

6. Supports Team Collaboration:

Multiple administrators or teams can understand the network setup quickly by referring to existing documentation, ensuring continuity even if staff changes occur.

7. Disaster Recovery:

In case of system failure or disaster, documentation provides the necessary information to rebuild or restore the network promptly.