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?

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

ANS: 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

ANS: A) Assigning static 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?

a) Router

b) Switch

c) Hub

d) Repeater

ANS: 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

ANS: B) Bus

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.

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

ANS: 1. Plan Your Network

2. Set Up the Router

3. Configure the Router

4. Set Up Wireless Devices

5. Optimize Your Network

6. Implement Security Measures

Section 4: Practical

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

ANS: Done in Lab

Section 5: Essay

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

ANS:

1. Enhanced Troubleshooting

- **Quick Problem Resolution:** Detailed documentation helps network administrators quickly identify and resolve issues. With clear records of network configurations, device setups, and protocols, troubleshooting becomes more efficient.

- **Historical Reference:** Documentation provides a historical record of changes, allowing administrators to track when and how a problem may have started.

2. Improved Network Management

- **Configuration Management:** Keeping track of device settings, IP addresses, and network architecture ensures that changes are managed consistently and securely.

- **Resource Allocation:** Documentation helps in the optimal allocation and management of network resources, ensuring that the network operates smoothly.

3. Security and Compliance

- **Security Audits:** Accurate documentation is essential for conducting security audits and ensuring that security measures are correctly implemented and updated.

- **Regulatory Compliance:** Many industries require detailed network documentation to comply with regulatory standards. Proper documentation ensures compliance and helps avoid potential fines and penalties.

4. Onboarding and Training

- **New Employees:** Well-documented networks make it easier for new IT staff to understand the network's structure and operation, reducing the learning curve.

- **Training Materials:** Documentation serves as valuable training material for existing employees, helping them stay updated with network configurations and protocols.

5. Network Design and Planning

- **Future Upgrades:** Detailed documentation aids in planning future network upgrades and expansions, ensuring that they are aligned with current configurations and do not cause conflicts.

- **Efficient Design:** Proper documentation ensures that network design is efficient, scalable, and adaptable to changing needs.

6. Disaster Recovery

- **Backup Plans:** In the event of a network failure or disaster, having up-to-date documentation is crucial for restoring services quickly and effectively.

- **Continuity of Operations:** Documentation helps ensure that there is minimal disruption to operations during recovery efforts.

In summary, network documentation is an invaluable resource for maintaining a robust, secure, and efficient network. It supports effective management, enhances security, aids in compliance, facilitates onboarding, and ensures smooth operations during both routine and emergency situations.