Assignment: Module 5 – Network Fundamentals and Building Networks

Section 1: Multiple Choice Questions

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. 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. 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. 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 Questions

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

Answer:
To set up a wireless network in a SOHO environment:

1. **Select a wireless router** that supports modern standards (e.g., Wi-Fi 6).
2. **Connect the router** to the modem using an Ethernet cable (to the WAN/Internet port).
3. **Power on the router** and wait for it to initialize.
4. **Connect a device** (computer or phone) to the router (wired or wirelessly).
5. **Access the router's configuration page** via a browser (usually `192.168.1.1` or `192.168.0.1`).
6. **Set the SSID** (network name) and create a **strong Wi-Fi password** (WPA2 or WPA3 encryption).
7. **Enable DHCP** to automatically assign IP addresses to devices.
8. **Configure security settings** like a firewall, MAC address filtering, and guest networks.
9. **Save the settings** and restart the router if necessary.
10. **Connect your devices** to the new wireless network and test Internet access.

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

Answer:
To configure a router for Internet access using DHCP:

1. **Connect the router** to your Internet modem via an Ethernet cable (to the WAN port).
2. **Power on the router** and connect a computer or device to the router.
3. **Access the router's setup page** via a web browser (e.g., `192.168.1.1`).
4. **Log in** using the default admin username and password.
5. Go to **Internet or WAN settings** and select **DHCP** or "Automatic IP."
6. **Save or apply** the settings.
7. The router will request and receive an IP address from your ISP automatically.
8. **Test the connection** by accessing any website to ensure Internet access is working.

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

Answer:
Network documentation is critical for efficient network management and long-term scalability. Its importance includes:

- **Troubleshooting**: Helps identify and resolve network issues faster.
- **Maintenance**: Assists in regular updates and equipment replacements.
- **Security**: Ensures access control policies are documented and enforceable.
- **Training**: New IT staff can quickly understand the existing network structure.

- **Scalability**: Supports network expansion without disrupting current operations.
- **Compliance**: Aids in meeting industry regulations and audit requirements.