Module -3: A+ - Understanding and Maintenance of 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

2. What is the purpose of DNS (Domain Name System) in a computer network?

a) Encrypting data transmissions for security

b) Assigning IP addresses to devices dynamically

c) Converting domain names to IP addresses

d) Routing data packets between network segments

3. What type of network topology uses a centralized hub or switch to connect all devices?

a) Star

b) Bus

c) Ring

d) Mesh

4. Which network protocol is commonly used for securely accessing and transferring files over a network?

a) HTTP

b) FTP

c) SMTP

d) POP3

SECTION 2: True or False

5. 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

6. DHCP (Dynamic Host Configuration Protocol) assigns static IP addresses to network devices automatically.

ANS: False

7. VLANs (Virtual Local Area Networks) enable network segmentation by dividing a single physical network into multiple logical networks.

ANS: True

Section 3: Short Answer

8. Explain the difference between a hub and a switch in a computer network.

HUB	SWITCH
It Broadcasts to all devices	It unicast to intended device
Higher chances of data collision	Avoid collision by sending data to requested device
It is not an intelligent device	It is an intelligent device
It doesn't create MAC table	It create MAC table

9. Describe the process of troubleshooting network connectivity issues.

ANS:

- Check physical cable connection to network device.
- Check power on in network device.
- Restart network device.
- Run ping command to device IP.
- Check DNS settings.
- Update network drivers.
- Reset network device.

SECTION 4: Practical application

10. Demonstrate how to configure a wireless router's security settings to enhance network security.

ANS:

- Login to router using default ip address
- Change the default admin password
- Change wireless security to WPA 3/ WPA 2-PSK AES
- Change password (use 12–16-character password that contain uppercase, lowercase, numeric and symbols)
- Disable WPS
- Enable firewall

- Enable MAC Filtering
- Disable remote management
- Regularly update router firmware

SECTION 5: ESSAV

11. Discuss the importance of network documentation and provide examples of information that should be documented

ANS: Network documentation is crucial for efficient management, troubleshooting, security, and scalability of an organization's network. It provides a detailed record of network configurations, devices, and policies, making it easier for IT teams to maintain and expand the network.

Information should be documented is described following:

- **Network Topology Diagram** – Visual map of devices and connections.
- **IP Address Allocation** – List of static/dynamic IPs.
- **Hardware Inventory** – Routers, switches, firewalls, and serial numbers.
- **Software & Firmware Versions** – OS, network tools, and updates.
- **Firewall & Security Policies** – ACLs, encryption settings, and access rules.
- **VLAN & Subnet Details** – Network segmentation info.
- **Wi-Fi & Remote Access Configurations** – SSIDs, VPNs, authentication settings.
- **Backup & Recovery Plans** – Data recovery steps and storage locations.
- **Escalation Procedures & IT Contacts** – Support teams and vendor contacts.