Name:MOHMMAD HUSSAIN

ASSIGNMENT

Module -3: Understand and Maintenance of Network

Section 1: Multiple Choice

1. What is the primary function of a router in a computer network?

Assigning IP addresses to devices

Providing wireless connectivity to devices

Forwarding data packets between networks

Managing user authentication and access control

Answer: c) Forwarding data packets between networks

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

Encrypting data transmissions for security

Assigning IP addresses to devices dynamically

Converting domain names to IP addresses

packets between network segments

Answer: c) Converting domain names to IP addresses

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

Bus

Ring

Mesh Answer: a) Star

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

HTTP

FTP

SMTP

POP3 Answer: b) FTP

Section 2: True or 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. Answer: True

True or False: DHCP (Dynamic Host Configuration Protocol) assigns static IP addresses to network devices automatically.

Answer: False

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

Answer: True

Section 3: Short Answer

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

Answer:

Hub: A hub is a simple networking device that connects multiple computers in a network. It broadcasts the data it receives to all connected devices, whether they need it or not.

Switch: A switch is a smarter device that connects computers in a network. It uses MAC addresses to send data only to the specific device it is meant for.

Feature	Hub	Switch
Data Transmission	Broadcasts data to all connected devices	Sends data only to the intended device using MAC addresses
Bandwidth	Shared among all devices	Dedicated for each port/device

Collisions	High, because all devices share the same network	Very low, since data is sent directly
Intelligence	None (dumb device)	Intelligent (uses MAC address table)
Security	Low (any device can receive all data)	High (data sent only to target device)
Efficiency	Low	High
Cost	Cheaper	More expensive
Example Analogy	Shouting in a room so everyone hears	Whispering directly to the right person

Describe the process of troubleshooting network connectivity issues.

Answer:

Identify the Problem: Collect information: which devices are affected, what error is shown, and whether the issue is in wired or wireless connection.

Check Physical Connections: Ensure cables, switches, and routers are properly connected and powered on, In case of Wi-Fi, confirm the device is within range and Wi-Fi is enabled.

Verify Network Configuration: Check IP address, gateway, and DNS server settings, Use commands like ipconfig (Windows)

Test Basic Connectivity: Ping the gateway to confirm LAN connection, Ping an external IP (e.g., 8.8.8.8) to test internet, Ping a domain (e.g., google.com) to verify DNS.

If LAN works but internet doesn't → ISP issue, If DNS fails → DNS server problem, If only one device fails → local configuration problem.

Check Network Devices: Restart router, switch, or firewall, Look for wrong firewall rules or bandwidth limits.

Apply Solutions: Replace faulty cable, reconfigure IP/DNS, update drivers, restart services, or contact ISP.

Verify and Document: Retest connection after fixing..

Section 4: Practical Application

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

Answer:

Access Router Settings: Connect your PC or mobile to the router, Open a browser and type the router's default IP address (e.g., 192.168.1.1 or 192.168.0.1) and Login with the administrator username and password.

Change Default Admin Credentials: Default usernames and passwords (like "admin/admin") are easily known, Change them to a strong admin password.

Configure SSID (Network Name): Change the default SSID to a unique name, Optionally, disable SSID broadcasting to make the network less visible to strangers.

Enable Strong Encryption: Go to Wireless Security settings, Choose WPA3 (best) or WPA2-PSK (AES) encryption.

Set a Strong Wi-Fi Password: Create a password of at least 12–16 characters.

Enable Router Firewall & Security Features: Turn on the built-in firewall to block suspicious traffic.

Disable Vulnerable Features: WPS (Wi-Fi Protected Setup): Turn it off

Verify Security Settings: Save the settings and reboot the router, Test by reconnecting devices with the new password.

Section 5: Essay

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

Network documentation = apne network ka poora record banana.

Jaise ek diary me kis device ne kaunse port use kiya, kaunsa IP hai, kaunsa cable kahan laga — sab likhna.

Kyu important hai?

Problem solve easy ho jaye – jaise network down ho toh turant pata chal jaye kahan problem hai.

Upgrade ya naya device add karna easy ho – sab ka map ready hai.

Security maintain ho – passwords, firewall rules ya VPN sab track ho.

Emergency me fast restore – network down hua toh quickly back chal jaaye.

New staff ko samajhne me easy – kisi ko bhi network samjhana easy.

What to Document

Devices → Router, Switch, Server, MAC address

IP Addresses → Static/Dynamic, Subnet, Gateway

Topology → Network ka diagram (star, bus, mesh)

Cables & Ports → Kaunsa cable kahan, kaunsa port

Security → Passwords, firewall, VPN

Software/Firmware → Version aur license

Backup & Restore → Kab backup hua, kaise restore ka