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 DNS (Domain Name System) in a computer network?

Ans 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

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

Ans SFTP

5. 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.

True

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

False

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

True

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

Answer:

A hub broadcasts data to all devices on a network segment, regardless of the destination. This leads to more collisions and less efficiency.

A switch sends data only to the specific device it is intended for, using MAC addresses. It reduces collisions and improves performance.

9. Describe the process of troubleshooting network connectivity issues.

Answer:

Check physical connections (cables, ports, power).

Verify IP configuration using ipconfig (Windows) or ifconfig/ip a (Linux).

Ping local and remote devices to check communication.

Check firewall settings and access control lists.

Restart networking equipment (modem, router, switch).

Check for software issues like incorrect drivers or DNS problems.

Review logs on routers, firewalls, or servers for anomalies.

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

Answer:

Log into the router’s admin panel (usually via a browser like 192.168.1.1).

Change the default username and password.

Enable WPA3 (or WPA2 if WPA3 is not available) for encryption.

Set a strong SSID and password.

Disable WPS (Wi-Fi Protected Setup) to prevent brute-force attacks.

Enable MAC address filtering (optional for advanced control).

Update router firmware regularly.

Disable remote management unless needed.

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

Answer:

Importance of Network Documentation

Network documentation is the process of recording detailed information about a computer network's structure, configuration, and operation. It is a critical part of effective network management and offers numerous benefits:

Why Network Documentation Is Important:

1. Simplifies Troubleshooting

When network issues arise, accurate documentation helps technicians quickly pinpoint the source of the problem.

2. Ensures Continuity

If key IT personnel leave or are unavailable, others can still manage and maintain the network using existing documentation.

3. Aids in Planning and Expansion

Clear records of the current setup help in planning upgrades, expansions, or migrations without disrupting existing services.

4. Supports Security and Compliance

Proper documentation ensures that security configurations and access controls are consistently followed and can be audited.

5. Improves Efficiency

Saves time and reduces guesswork when configuring new devices or making changes to the network.

6. Facilitates Disaster Recovery

In case of system failures or cyberattacks, documented backup and recovery procedures help restore services more quickly.

Examples of Information That Should Be Documented

To be useful, network documentation should include the following types of information:

Category Examples

Network Topology: Diagrams showing routers, switches, firewalls, access points, and servers.

IP Addressing: iP addresses, subnet masks, DHCP scope details, and VLAN configurations.

Device Inventory:List of all network devices (e.g., model, serial number, location, firmware).

Configuration Files: Backup copies of router, switch, and firewall configurations.

Login Credentials:Securely stored admin usernames and passwords for devices and systems.

Access Control : Permissions, user roles, and network access policies.

Service Details : Info on DNS, DHCP, VPN, file servers, and internet services.

Change Logs : Records of changes made to network hardware, software, or settings.

Maintenance Schedules : Routine maintenance tasks and schedules for updates and checks.

Vendor Contacts : Support info, warranty details, and contact numbers for hardware vendors.