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MODULE -3: UNDERSTANDING AND MAINTENANCE OF NETWORK SYSTEMS

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
Explanation:- A router's main job is to direct data packets from one network to another, allowing different networks to communicate. Without a router, devices on different networks wouldn't be able to share information effectively.

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

Ans:- c) Converting domain names to IP addresses
Explanation:- DNS translates human-friendly domain names like "www.example.com" into IP addresses that computers use to identify each other on the network. This makes it easier for people to access websites without needing to remember complex numerical addresses.

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

a) Star
b) Bus
c) Ring
d) Mesh

Ans:- a) Star
Explanation:- In a star topology, all devices are connected to a central hub or switch. This setup allows easy management and troubleshooting, as all data passes through the central point.

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

a) HTTP
b) FTP
c) SMTP
d) POP3

Ans:- b) FTP
Explanation:- FTP (File Transfer Protocol) is used for transferring files over a network. While it's not inherently secure, there are secure versions like FTPS or SFTP that encrypt the data during transfer to protect it from unauthorized access.

Section 2: True or False

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.
Ans:- True
Explanation:- Firewalls are critical for network security, as they act as barriers that prevent unauthorized access while allowing legitimate communication to pass through.

6. True or False: DHCP (Dynamic Host Configuration Protocol) assigns static IP addresses to network devices automatically.
Ans:- False
Explanation:- DHCP dynamically assigns IP addresses to devices on a network, meaning the IP addresses can change over time. Static IP addresses are manually assigned and remain constant.

7. True or False: VLANs (Virtual Local Area Networks) enable network segmentation by dividing a single physical network into multiple logical networks.
Ans:- True
Explanation:- VLANs allow for better organization and security by creating separate logical networks within a single physical network, limiting access and reducing traffic.

Section 3: Short Answer

8. Explain the difference between a hub and a switch in a computer network.
Ans:- A hub sends data to all devices in the network, regardless of the destination, causing unnecessary traffic. A switch, on the other hand, sends data only to the device it is intended for, making the network more efficient.
Explanation:- Hubs are less intelligent devices that broadcast data to all connected devices, while switches are smarter and only forward data to the appropriate recipient, reducing collisions and improving performance.

9. Describe the process of troubleshooting network connectivity issues.
Ans:-

1. Start by checking physical connections like cables and switches.
2. Then, verify IP settings and run diagnostic tools like ping and traceroute.
3. If necessary, reset the router or switch and check for any firewall issues that might be blocking the connection.

Explanation:- Troubleshooting network issues involves a systematic approach, starting with basic checks and moving to more complex diagnostics to identify and resolve the problem.

Section 4: Practical Application

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

1. Access the router's admin panel through a web browser
2. Then go to the wireless security settings.
3. Enable WPA3,WEP,WPA encryption.
4. Change the default SSID and password.
5. Set up a guest network if needed.
6. Save the changes to apply the new security settings.

Explanation:- Securing a wireless router involves configuring settings that protect the network from unauthorized access, ensuring that only trusted devices can connect.

Section 5: Essay

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

Ans:-

- Network documentation is crucial for maintaining, troubleshooting, and upgrading a network.
- Important details to document include network topology diagrams, IP address allocations, device configurations.
- Proper documentation helps in quickly identifying issues and planning for future network expansions or changes.

Explanation:- Comprehensive network documentation provides a clear overview of the network