**LAKSHY JAIN**

**Assignment module 3 : Understanding and Maintenance of**

**Section 1: Multiple Choice**

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

Ans..

Assigning IP addresses to devices

Providing wireless connectivity to devices

Forwarding data packets between networks

Managing user authentication and access control

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

Ans. Converting domain names to IP addresses

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

Ans. Star

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

Ans. FTP (File Transfer Protocol)



**Section 2: True or False**

1. **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

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

Ans. True

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

Ans. True

**Section 3: Short Answer**

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

|  |
| --- |
| Ans |
| HUB work on Physical Layer of OSI Model | Switch work on Data Link Layer of OSI Model |  |
| HUB is Broadcast Device | Switch is Multicast Device |  |
| Hub sends data in the form of binary bits | Switch sends data in the form of frames |  |
| Hub only works in half duplex | Switch works in full duplex |  |
| Only one device can send data at a time | Multiple devices can send data at the same time |  |
| Hub does not store any mac address or IP address | Switch store MAC Address |  |

1. **Describe the process of troubleshooting network connectivity issues.**

**Ans.**

Step 1: Define the Problem and Check the Physical Connections. ...

Step 2: Track and Fix Duplicate IP Address Entry. ...

Step 3: Run a DNS Check. ...

Step 4: Check Your Malware Protection. ...

Step 5: Examine Logs.

**Section 4: Practical Application**

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

Ans. Use a strong password

Create a strong, unique password that is at least 20 characters long and includes letters, numbers, and symbols.

Update your router

Keep your router's firmware up to date. Automatic updates can improve your router's security, stability, and performance.

Enable encryption

Set your router's encryption to WPA2-AES, WPA3 Personal, or WPA2/WPA3 Transitional. WPA3 Personal is the most secure option, while WPA2/WPA3 Transitional is a mixed mode that works with older devices.

Disable features

Turn off features that can weaken your network, such as Wi-Fi Protected Setup (WPS), Universal Plug and Play (UPnP), and remote management.

Set up a guest network

Create a separate network with a different name and password for guests.

Enable a firewall

Ensure your router's built-in firewall is enabled.

Limit DHCP leases

Limit the number of DHCP leases to prevent your network from becoming a hotspot for public Wi-Fi.

Monitor connected devices

Regularly check the list of devices connected to your network and look for unrecognized devices.

Enable two-factor authentication

Require users to enter a code generated by an authenticator app in addition to their username and password.

**Section 5: Essay**

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

Ans. Network documentation is important because it helps you:

Troubleshoot issues faster: Well-documented networks can be troubleshooted faster and more efficiently.

Onboard new hires: Documentation can help you onboard new hires more quickly.

Plan for scaling up: Documentation can help you plan for scaling up your network, such as adding new users, servers, and routers.

Prevent security issues: Documentation can help you identify potential security vulnerabilities.

Save money: Documentation can help you save money by ensuring you're using resources efficiently.

Here are some examples of information you can include in your network documentation:

Network topology: A physical or logical map of your network

Cloud architecture diagram: A diagram that shows how you connect to your cloud services

Server rack diagram: A diagram that shows the organization of equipment on your server rack

Server addresses: Details about network servers, including their hostname, IP address, subnet mask, default gateway, DNS servers, and more

Backup documentation: Details about your backup software, backup operations, and the location of your backups

Policies and procedures: A full description of the policies and procedures used by your organization

Contact information: Contact information for the administrative staff

Cabling system: A wire mapping device can help you document your cabling system