Module 3 : : Understanding and Maintenance of Computer Network

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

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

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

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

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

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

Ans : False

7. 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

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

Ans :

- **Hub:** A hub is a basic networking device that broadcasts incoming data to all connected devices, causing unnecessary traffic and collisions. It works at the physical layer (Layer 1) and does not understand MAC addresses.
- **Switch:** A switch is more intelligent, sending data only to the intended device using its MAC address. It works at the data link layer (Layer 2) and reduces collisions, making the network more efficient.

9. Describe the process of troubleshooting network connectivity issues.

Ans :

1. **Check physical connections –** cables, Wi-Fi, power.
2. **Verify network settings –** IP address, subnet mask, gateway.
3. **Test connectivity –** use ping to check local device, router, and internet.
4. **Check DNS resolution –** test if domain names resolve correctly.
5. **Restart devices –** reboot computer, router, or modem.
6. **Check firewall/antivirus –** ensure they are not blocking access.
7. **Escalate if needed –** contact network admin or ISP if the issue persist

Section 4: Practical Application

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