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 DHCP (Dynamic Host Configuration Protocol) in a computer network?
a) Assigning static IP addresses to devices
b) Resolving domain names to IP addresses
c) Managing network traffic and congestion
d) Dynamically assigning IP addresses to devices

ANS-d) Dynamically assigning IP addresses to devices

3. Which network device operates at Layer 2 (Data Link Layer) of the OSI model and forwards data packets based on MAC addresses?
a) Router
b) Switch
c) Hub
d) Repeater

ANS-b) Switch

4. Which network topology connects all devices in a linear fashion, with each device connected to a central cable or backbone?
a) Star
b) Bus
c) Ring
d) Mesh

ANS-b) Bus

5.True or False: A VLAN (Virtual Local Area Network) allows network administrators to logically segment a single physical network into multiple virtual networks, each with its own broadcast domain

ANS-True

6.True or False: TCP (Transmission Control Protocol) is a connectionless protocol that provides reliable, ordered, and error-checked delivery of data packets over a network.

ANS-False

7.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

8.Describe the steps involved in setting up a wireless network for a small office or home office (SOHO) environment.

ANS-Setting up a wireless network for a small office or home office (SOHO) environment requires a structured approach to ensure reliability and security. Below is a topic-wise guide in 250–300 words:

.Network Planning:
Evaluate the number of devices (e.g., laptops, phones, printers), coverage area, and bandwidth needs (e.g., for video conferencing or file transfers). Select a dependable Internet Service Provider (ISP) with a suitable plan. Choose a router supporting Wi-Fi 6 or 6E for enhanced speed and capacity. For larger spaces, plan for range extenders or a mesh network to ensure consistent coverage.

.Equipment Setup:
Acquire a router and connect the ISP-provided or purchased modem to the internet source (e.g., cable or fiber). Link the modem to the router’s WAN port using an Ethernet cable and power on both devices to establish connectivity.

.Router Configuration:
Access the router’s admin interface through a browser (e.g., 192.168.0.1) using default credentials (check the router’s label or manual). Configure WAN settings as instructed by the ISP (e.g., DHCP or PPPoE). Update the router’s firmware to address security vulnerabilities and improve performance.

.Wireless Settings:
Assign a unique SSID (network name) and a strong password with WPA3 or WPA2 encryption for security. Configure the 2.4 GHz band for broader range and the 5 GHz band for higher speeds. Optionally, set up a guest network to segregate visitor traffic from the main network.

.Security and Testing:
Change the default admin credentials, enable the router’s firewall, and disable WPS to reduce risks. Position the router centrally, avoiding interference from walls or devices. Connect devices to the Wi-Fi, test internet speed, and adjust placement if coverage is weak.

.Ongoing Maintenance:
Regularly update firmware, monitor network performance, and review connected devices to ensure security and efficiency.

9. Demonstrate how to configure a router for Internet access using DHCP (Dynamic Host Configuration Protocol).

ANS-To configure a router for Internet access using DHCP,
connect the router to the modem via an Ethernet cable (modem to router's WAN port).

Power on both devices. Access the router's admin interface by entering its IP address (e.g., 192.168.0.1) in a browser,
using default credentials (check router's label).
Navigate to the WAN or Internet settings section. Select "DHCP" as the connection type,
which allows the router to automatically obtain an IP address from the ISP. Save the settings and reboot the router if required.
Test connectivity by connecting a device to the Wi-Fi and browsing the Internet.

10. Discuss the importance of network documentation in the context of building and managing networks.

ANS-Network documentation is critical for building and managing networks,
As it provides a detailed record of the network's architecture, configurations, and devices.
It ensures efficient troubleshooting by offering quick access to IP addresses, device locations,
And connection details, reducing downtime. Documentation supports scalability,
Enabling seamless upgrades or expansions by mapping existing infrastructure.
It enhances security by tracking configurations and access controls, helping identify vulnerabilities. For teams,
It fosters collaboration and continuity, ensuring consistent management despite staff changes.
Regular updates to documentation maintain accuracy, streamline audits, and comply with regulatory requirements,
Ultimately improving network reliability and operational efficiency.