Assignment: Network Fundamentals and Building Networks

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

- 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

- 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

- 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

- A) Star Topology

Section 2: True or False

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.
    - 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.
    - True

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.
    - True

Section 3: Short Answer

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

    - A SOHO environment involves connecting a router to the modem, configuring the router's settings, and securing the network.

Section 4: Practical Application

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

    - Done

Section 5: Essay

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

    - In today's digital age, networks are the backbone of any

organization's operations. From small businesses to large enterprises, Reliable and secure networks are essential for communication, data exchange, and the overall functionality of technological systems.

- Facilitating Network Design and Deployment

- When building a network, documentation provides a clear blueprint for its structure. It includes detailed diagrams of network topology, lists of hardware components, IP address allocations, configurations of routers and switches, and information on cabling and connectivity.

- Supporting Troubleshooting and Maintenance

  Network issues can cause significant disruptions. Well-maintained documentation helps IT professionals quickly identify and resolve problems. For instance, if a device fails, documentation can show its location, configuration settings, and how it connects to other devices.

- Enhancing Security.

  Security is a major concern in network management. Documentation helps in identifying all devices connected to the network and ensures that security policies are applied consistently. It also makes it easier to spot unauthorized devices or configuration changes.

- Enabling Efficient Upgrades and Scalability.

  As organizations grow, so do their networking needs. Without documentation, scaling a network can be chaotic and error prone. With detailed records, network administrators can assess current capacity, plan for future needs, and integrate new components seamlessly.

- Ensuring Continuity and Knowledge Transfer.

  Networks are often managed by teams rather than individuals. Over time, staff may change roles or leave the organization. Network documentation ensures that knowledge is not lost, and new team members can understand the network quickly.