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**Assignment: module -5 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

Answer:c)Forwarding data packets between networks

Reason:A router connects different network and forwards data packets so that information reaches the right destination.

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

Answer:d) Dynamically assigning IP addresses to devices

Reason:DHCP automatically gives IP address to devices in a network so they can communcate,without setting them manually.

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

Answer:b)Switch

Reason:A switch works at the Data Link Layer.It uses MAC addresses to decide where to forward data making communication faster and avoiding unnecessary traffic .

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

Answer:B)bus

Reason:In a Bus topology, all device are connected to one main cable in a straight line.If the backbone fails ->whole network stops.

**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.

Answer: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.

Answer:False

Reason:TCP is connection-oriented (not connectionless).  
It makes a connection first, then sends data in order with error checking to ensure reliable delivery.Connectionless protocol = UDP, not TCP.

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.

Answer: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.

Answer: Steps to Set Up a Wireless Network (SOHO)

1. **Choose a Router/Modem** – Get a wireless router (Wi-Fi router).
2. **Connect Router to Internet** – Plug the router into the modem or ISP connection.
3. **Power On** – Switch on the router and check the lights (power, WAN, LAN).
4. **Access Router Settings** – Open browser

type router IP (e.g., 192.168.1.1)

login.

1. **Set Wi-Fi Name (SSID)** – Give a unique name to your Wi-Fi.
2. **Set Security** – Use WPA2/WPA3 encryption and create a strong password.
3. **Save Settings & Restart Router** – Apply changes.
4. **Connect Devices** – Use the Wi-Fi name and password to connect laptops, mobiles, printers, etc.

**Section 4: Practical**

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

Answer:Steps to Configure a Router for Internet Access using DHCP:

1. **Connect Router to Modem/ISP Line** – Plug the internet cable into the router’s WAN/Internet port.
2. **Login to Router Setting**-

- Open a browser.

-Type router IP(eg. 192.168.1.1).

-Enter username & password.

3. **Enable DHCP on WAN Side** -

-Go to Internet/WAN settings.

-Select “Obtain IP automatically (DHCP)”.

-This lets the ISP’s DHCP server give your router an IP address.

4. **Enable DHCP on LAN Side** -

-In LAN/DHCP settings, turn on DHCP.

-Set IP range (eg 192.168.1.100 - 192.168.1.200).

-This will allow the router to give automatic IPs your device.

5. **Save & Reboot Router** – Apply changes and restart.

6. **Connect Devices** – Now your PC/phone will get IPs automatically and connect to the Internet.

**Section 5: Essay**

9. Discuss the importance of effective communication skills in a helpdesk or technical support role.

Answer:Importance of Communication in Helpdesk

* Helps understand the user’s problem clearly.
* Makes it easy to explain solutions in simple words.
* Avoids confusion and saves time.
* Builds trust and keeps users happy.