**Module -5 Network Fundamentals and Building Networks**

**Section 1: Multiple Choice**

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

- c) Forwarding data packets between networks.

2. What is the purpose of DHCP (Dynamic Host Configuration Protocol) in a computer network?

-c) Converting domain names to IP address

3. Which network device operates at Layer 2 (Data Link Layer) of the OSI model and forwards data packets based on MAC addresses?

-A) Star

4. Which network topology connects all devices in a linear fashion, with each device connected to a central cable or backbone?

-b) FTP.

**Section 2: True or False**

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

- False

7. 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 question**

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

- Step 1: Hardware Setup.

Step 2: Access Router Settings.

Step 3: Configure Basic Settings.

Step 4: Security Settings.

Step 5: Device Configuration.

Step 6: Testing.

**Section 4: Practical**

9] Describe the process of troubleshooting network connectivity issues.

1. Check problem - Check if the device is connected to the network by plugging it directly into the router.
2. Check connectivity - Use the ping command followed by the IP address of the default gateway.If the ping is successful, it means the device can reach the router.

Example (Ping 192.168.29.27)

1. Check Network Setting - Ensure that the device's network settings are correct, including IP address, subnet mask, default gateway.
2. Check physical connections - Make sure the cables are properly plugged in and not damaged.Check the physical connections between the device and the router or modem.
3. Reset the device - If the above steps do not resolve the connectivity issue, reset the device to see if it fixes the problem.This can be done by turning off and then turning on the device

**Section 4: Practical Application**

10) Demonstrate how to configure a wireless router’s security to enhance network security.

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1. Log in to the router's web interface.
2. Navigate to the "Security" or "Wireless Security" section.
3. Set the security mode to "WPA2-Personal" or "WPA3-Personal".
4. Choose a strong password for the network. Avoid using common passwords and create a unique, complex password.
5. If available, enable encryption for the network traffic.
6. Set the maximum number of allowed connections to limit the number of devices that can connect to the network simultaneously.
7. Enable MAC filtering to prevent unauthorized devices from connecting to the network.
8. Set up a firewall to block unwanted traffic and protect the network from external threats.
9. Regularly update the router's firmware to ensure it has the latest security patches.

11) Discuss the importance of network documentation and provide examples of information that should be documented.

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Network security is a critical aspect of maintaining the integrity and confidentiality of data transmission across a network. It involves the protection of both the physical infrastructure and the software and hardware components of a network. Network security involves various techniques to protect data from unauthorized access, modification, or disclosure. Here are some essential aspects of network security.

Network segmentation involves dividing a network into smaller, more manageable segments or zones. Each segment is given its own security policy and access controls. This helps to limit the impact of a security breach to a specific segment and reduces the risk of unauthorized access to other parts of the network.

Network security is a continuous process that requires constant monitoring, patching, and updating of security controls. It is crucial for organizations of all sizes and industries to implement robust security measures to protect their networks and sensitive data.

Ex:-

1. Network Topology: A table or diagram showing the logical connections between network devices, including switches, routers, servers, and endpoints.

Network topology is a critical aspect of network security because it defines the logical structure and connectivity of the network.

1. IP Addressing Scheme: A table or diagram showing the IP address allocation for each network segment, including subnet masks, default gateways, and DNS servers.