**Module 4:** **Understanding And Maintenance Of Networks**

**Section 1: Multiple Choice:-**

1. What is the primary function of a router in a computer network?
   1. Assigning IP addresses to devices
   2. Providing wireless connectivity to devices
   3. Forwarding data packets between networks
   4. Managing user authentication and access control

**Ans:** (c)Forwarding data packets between networks

1. What is the purpose of DNS (Domain Name System) in a computer network?
   1. Encrypting data transmissions for security
   2. Assigning IP addresses to devices dynamically
   3. Converting domain names to IP addresses
   4. Routing data packets between network segments

**Ans:** (c) Converting domain names to IP addresses

1. What type of network topology uses a centralized hub or switch to connect all devices?
   1. Star
   2. Bus
   3. Ring
   4. Mesh

**Ans:** (a) Star

1. Which network protocol is commonly used for securely accessing and transferring files over a network?
   1. HTTP
   2. FTP
   3. SMTP
   4. POP3

**Ans:** (b) FTP

**Section 2: True or False:-**

1. 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

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

**Ans:** False

1. 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:-**

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

**Ans:**

|  |  |  |
| --- | --- | --- |
| **COMPARISON** | **HUB** | **SWITCH** |
| Work: | 🡪Sends data to all devices. | 🡪 Sends data only to the right device. |
| Smartness: | 🡪 Not smart, doesn’t know devices. | 🡪 Smart, knows where each device is. |
| Speed & Collisions: | 🡪 It is slow and can mess up the flow of network data . | 🡪 Fast, keeps network smooth. |
| Price: | 🡪 Low price | 🡪 Costly but better. |
| Use Today: | 🡪 Almost not used now. | 🡪Used in almost every network. |

1. Describe the process of troubleshooting network connectivity issues.

**Ans:** This steps is process of troubleshooting network connectivity issue:

1. Check cables and devices:
   1. See if internet cable or Wi-Fi router is connected.
   2. Router and modem must be ON.
2. Restart devices:
   1. Turn off computer/phone.
   2. Restart router or modem.
   3. Turn device back on.
3. Check Wi-Fi / settings:
   1. Wi-Fi must be ON.
   2. Connect to right Wi-Fi.
   3. Airplane mode must be OFF.
4. Test with another device:
   1. Try internet on another phone or PC.
   2. If it works there, problem is in your first device.
5. Use Network Troubleshooter (Windows):
   1. Go to: Settings → Network & Internet → Troubleshoot.
   2. It will try to fix problem.
6. Check internet / ISP:
   1. Open browser and try website.
   2. If “No internet,” router or ISP has issue.
7. Update device:
   1. Update drivers or software.
8. Call Internet Provider:
   1. If nothing works, contact ISP for help.

**Section 4: Practical Application:-**

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

**Ans:** This is a configure a wireless router’s security setting to enhance network security:

1. **Login to the Router:**
   1. Connect your laptop/phone to the Wi-Fi.
   2. Open a web browser (like Chrome).
   3. Type the router’s IP address (usually 192.168.0.1 or 192.168.1.1).
   4. Enter username & password (written on the back of the router).
   5. And open lock
2. **Change the Default Password:**
   1. Go to Admin Settings.
   2. Change the default login password to your own strong one.

🡪 This keeps unknown people out of the router’s settings.

1. **Set a Strong Wi-Fi Password:**
   1. Open Wireless / Wi-Fi Settings.
   2. Choose WPA2 or WPA3 security mode (never keep it on WEP or Open).
   3. Create a password with letters, numbers, and symbols.

🡪This makes your Wi-Fi safe from neighbors or hackers.

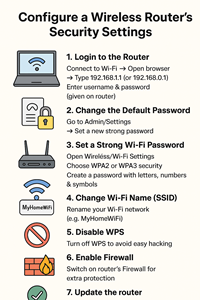
1. **Change the Network Name:**
   1. Rename your Wi-Fi network.

🡪Use for easy identify your network.

1. **Turn Off WPS:**
   1. Find the WPS (Wi-Fi Protected Setup) option and disable it.  
      🡪WPS is like a weak lock that hackers can break easily.
2. **Enable Network Firewall:**
   1. In Security settings, turn on the router’s Firewall.  
      🡪This blocks unwanted traffic and protects your devices.
3. **Keep Router Updated:**
   1. Check for Firmware Update in the settings.  
      🡪Updates fix security holes, just like repairing a broken lock.

**Then Result:** After doing these steps, your Wi-Fi is now like a house with a strong lock, CCTV, and alarm system. Only people with the correct password can enter.

Any confuse then so this image:



**Section 5: Essay :-**

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

**Ans:** The importance of network documentation and provide examples of information that should be documented :

1. **Introduction:**
   1. A computer network is like the “nervous system” of a company.
   2. To manage it well, we must keep **records** (documentation).
   3. Network documentation means **writing down all details** about the network.
2. **Why is Network Documentation Important?**

**a) Easy to Understand the Network**

* Helps people know how the network is built.
* Even new staff can understand the setup quickly.

**b) Helps in Problem Solving**

* If something goes wrong (like internet not working), documentation guides the technician.
* Saves time in fixing the issue.

**c) Future Changes Become Easy**

* When we want to expand the network, we can see old records and make safe changes.

**d) Saves Money and Effort**

* No need to guess or redo the work again.
* Proper records avoid mistakes.

**e) Useful for Training New Employees**

* New IT staff can learn faster using the documents.

1. **What Information Should Be Documented?**

a) Network Devices:

🡪Details of routers, switches, firewalls, servers, etc.

🡪Example: Device name, model, IP address.

b) Network Diagram:

🡪A simple picture showing how all devices are connected.

c) IP Addressing:

🡪List of all IP addresses given to computers, printers, cameras, etc.

d) User Information

🡪Who uses which computer or which part of the network.

e) Configuration Settings

🡪Important settings of routers, switches, and Wi-Fi.

🡪Helps to restore quickly if something fails.

f) Security Information

🡪Password policies, firewall rules, antivirus used.

g) Vendor/Support Details

🡪Contact numbers of companies or people who provide network devices or support.

1. **Conclusion:**

🡪Network documentation is like a map and guidebook for the network.

🡪It makes managing, fixing, and growing the network simple, safe, and cheaper.

🡪Without documentation, networks become confusing and risky.