**Week 21**

**Question 01.** What are the differences between the OSI and the TCP/IP reference model?

**Ans,**

|  |  |
| --- | --- |
| OSI | TCP |
| * 4 layers | * 7 layers |
| * OSI stands for Open Systems Interconnection. | * TCP/IP stands for Transmission Control Protocol/Internet Protocol. |
| * It is low in usage | * It is mostly used |
| * It is less relaiable | * It is more relaible |
| * It is fast then tcp | * It is no more fast like osi |
| * It is the real model | * It is the reference model of osi |
| * Delivery of packet is not garentee | * Dalevery of packet is garentee |

**Question 02.** Elaborate the use of telnet, ftp, tftp, smtp, pop, imap, ssl, http and the dhcp protocols.

**Ans-**

**Telnet (Terminal Network):**

Use: Allows remote access and management of devices or systems.

Functionality: Provides a virtual terminal connection for remote command-line interaction.

Security Concerns: Transmits data in plain text, vulnerable to interception. Often replaced by SSH for security.

**FTP (File Transfer Protocol):**

Use: Facilitates file transfer between client and server.

Functionality: Allows uploading, downloading, and management of files on a remote server.

Security: Lacks encryption; FTPS and SFTP offer more secure alternatives.

**TFTP (Trivial File Transfer Protocol):**

Use: Simplified file transfer, often for basic requirements.

Functionality: Used for booting diskless workstations, firmware updates, and simple file transfers.

Security: Lacks authentication and encryption, suitable for trusted environments.

**SMTP (Simple Mail Transfer Protocol):**

Use: Sends email messages between servers.

Functionality: Facilitates email transmission between clients and servers.

Security: Lacks encryption but can be secured with SMTPS or STARTTLS.

**POP (Post Office Protocol):**

Use: Retrieves emails from a mail server.

Functionality: Allows users to download emails to their local device.

Security: Usually operates without encryption but can use POP3S for security.

**IMAP (Internet Message Access Protocol):**

Use: Accesses emails stored on a mail server.

Functionality: Retains emails on the server for organizing and managing across devices.

Security: Can operate over IMAPS for encrypted communication.

**SSL (Secure Sockets Layer):**

Use: Provides secure communication over a network.

Functionality: Encrypts data transmission for confidentiality and integrity.

Applications: Commonly used in web browsing (HTTPS) and email communication (SMTPS, POP3S, IMAPS).

**HTTP (Hypertext Transfer Protocol):**

Use: Foundation of data communication on the web.

Functionality: Defines communication between browsers and servers for accessing web resources.

Security: HTTPS secures HTTP connections with SSL/TLS encryption.

**DHCP (Dynamic Host Configuration Protocol):**

Use: Automates IP address assignment and network configuration.

Functionality: Dynamically allocates IP addresses to devices on a network.

Benefits: Simplifies network administration and enables plug-and-play networking.

**Question 03.** Write down the key differences between the TCP and the UDP protocols.

Ans-,

| **Aspect** | **TCP** | **UDP** |
| --- | --- | --- |
| **Connection** | Connection-oriented | Connectionless |
| **Reliability** | Provides reliable delivery of data | Does not guarantee reliable delivery |
| **Acknowledgment** | Uses acknowledgments for data delivery | No acknowledgments for data delivery |
| **Ordering** | Guarantees in-order delivery of data | Does not guarantee in-order delivery |
| **Error Checking** | Error checking and retransmission of lost packets | Minimal error checking; no retransmission |
| **Overhead** | Higher overhead due to connection setup, sequencing, and acknowledgment | Lower overhead without connection setup and sequencing |
| **Usage** | Suitable for applications requiring data integrity and order, such as web browsing, email, file transfer | Suitable for real-time applications, streaming media, online gaming, where speed is critical |

**Question 05.**  Why is ICMP required? In which protocol does ICMP belong to TCP or UDP.

**Question 09.** What are the Ethernet cabling types?

* Crossover
* Over Rolling
* Straight forward