

# **Key Network Protocols and Their Functions**

## **TCP (Transmission Control Protocol)**

- Reliable data transfer between devices. Used in: web browsing, email, FTP.

## **UDP (User Datagram Protocol)**

- Fast but unreliable data transfer. Used in: live streaming, gaming, VoIP.

## **IP (Internet Protocol)**

- Assigns IP addresses and routes data. Includes IPv4 and IPv6.

## **ICMP (Internet Control Message Protocol)**

- Sends error messages and diagnostics, e.g., ping.

## **SMTP**

- Sends emails from client to server.

## **POP3**

- Downloads emails to a device and deletes them from the server.

## **IMAP**

- Accesses emails on the server without deleting them.

## **HTTP**

- Transfers web pages (not encrypted).

## **HTTPS**

- Secure version of HTTP using SSL/TLS.

## **FTP**

- Transfers files between client and server.

## **SFTP**

- Secure file transfer over SSH.

## **SMB**

- Shares files and printers on local networks.

## **SSH**

- Secure remote access to servers.

## **TLS/SSL**

- Encrypts internet communication, used in HTTPS.

## **DNS**

- Translates domain names to IP addresses.

## **DHCP**

- Automatically assigns IP addresses to devices on a network.