PRACTICAL-1

Layers in OSI MODEL:

- **Physical Layer**
- **Datalink Layer**
- **Network Layer**
- **Transport Layer**
- **Session Layer**
- **Presentation Layer**
- **Application Layer**

PHYSICAL LAYER:

❖ Overview:

- The lowest layer of OSI reference model
- It is responsible for actual physical connection between devices
- It contains information in form of bits
- It is responsible for transmitting individual bits from one node to next

❖ Functions:

- Bit synchronization
- Bit rate control
- Physical topologies
- Transmission mode

❖ Devices:

- Hub
- Repeater
- Modem

❖ Protocols used:

- Ethernet

Datalink Layer:

❖ Overview:

- it is responsible for node to node delivery of the message
- it ensures that data transfer is error-free
- When packet arrives in a network datalink layer transmit it to Host using MAC address
- The packet received from network layer is further divided into frames depending on the frame size of NIC

❖ Functions:

- Framing
- Physical addressing
- Error control
- Flow control
- Access control

❖ Devices:

- Switch
- Bridge

❖ Protocol Used:

- Ethernet

Network Layer:

❖ Overview:

- Network layer works for the transmission of data from one host to the other located in different networks
- takes care of packet routing i.e. selection of the shortest path to transmit the packet, from the number of routes available
- The sender & receiver's IP address are placed in the header by the network layer.

❖ Functions:

- Routing
- Logical Addressing

❖ Devices:

- Routers

❖ Protocols Used:

- IP(Internet Protocol)

Transport Layer:

❖ Overview:

- Transport layer provides services to application layer and takes services from network layer.
- The data in the transport layer is referred to as *Segments*.
- responsible for the End to End Delivery of the complete message
- also provides the acknowledgement of the successful data transmission and re-transmits the data if an error is found.

❖ Functions:

- Segmentation
- Reassembly
- Service Point Addressing

❖ Devices:

- Gateways
- Firewall

❖ Protocols Used:

- TCP(Transmission Control Protocol)

Session Layer:

❖ Overview:

- responsible for establishment of connection, maintenance of sessions, authentication and also ensures security

❖ Function:

- Session establishment
- maintenance
- termination
- Synchronization

❖ Devices:

- Gateways
- Firewall
- PCs/Devices

Presentation Layer:

❖ Overview:

- also called the Translation layer.
- The data from the application layer is extracted here and manipulated as per the required format to transmit over the network.

❖ Functions:

- Translation
- Encryption
- Decryption
- Compression

❖ Devices:

- Gateways
- Firewalls
- PC’s.

Application Layer:

❖ Overview:

- implemented by the network applications
- These applications produce the data, which has to be transferred over the network.
- serves as a window for the application services to access the network and for displaying the received information to the user.

❖ Functions:

- Network Virtual Terminal
- FTAM-File transfer access and management
- Mail Services
- Directory Services

❖ Devices:

- Gateways
- Firewalls
- all end devices like PC's, Phones, Servers

❖ Protocols Used:

- HTTP
- FTP
- DNS
- TELNET