

Lab 4

Question 1:

What are the layers in OSI Reference Models? Describe each layer briefly.

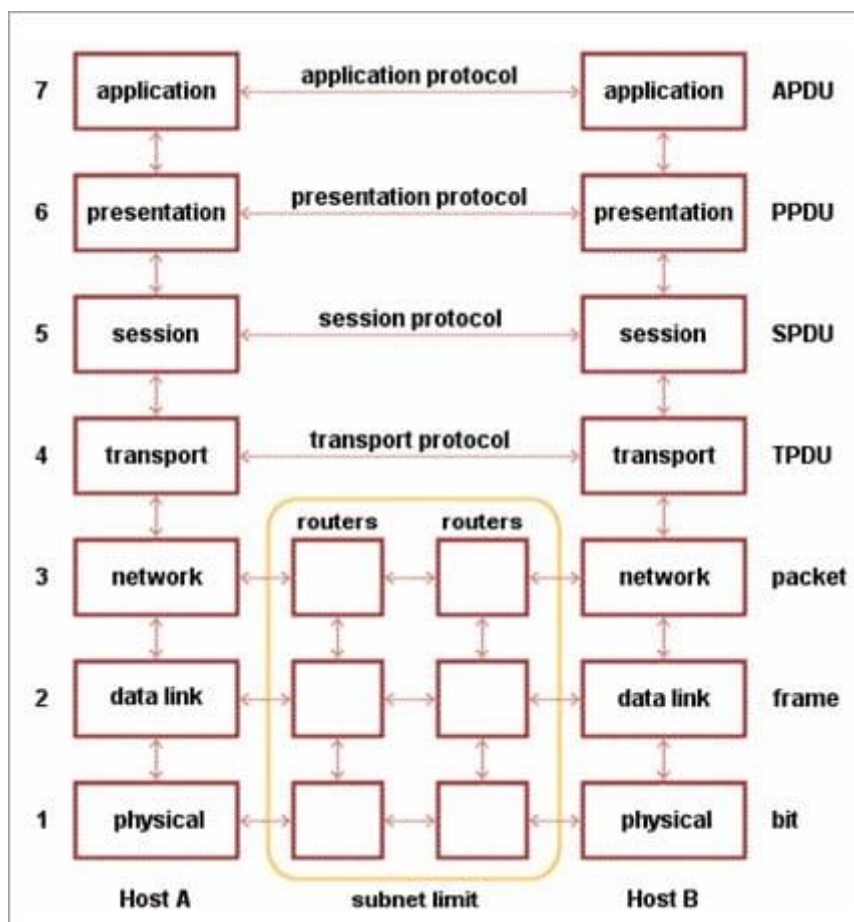
Answer:

a) Physical Layer (Layer 1): It converts data bits into electrical impulses or radio signals. Example: Ethernet.

b) Data Link Layer (Layer 2): At the Data Link layer, data packets are encoded and decoded into bits and it provides a node to node data transfer. This layer also detects the errors that occurred at Layer 1.

c) Network Layer (Layer 3): This layer transfers variable length data sequence from one node to another node in the same network. This variable-length data sequence is also known as “Datagrams”.

d) Transport Layer (Layer 4): It transfers data between nodes and also provides acknowledgment of successful data transmission. It keeps track of transmission and sends the segments again if the transmission fails.



[image source]

e) Session Layer (Layer 5): This layer manages and controls the connections between computers. It establishes, coordinates, exchange and terminates the connections between local and remote applications.

f) Presentation Layer (Layer 6): It is also called as “Syntax Layer”. Layer 6 transforms the data into the form in which the application layer accepts.

g) Application Layer (Layer 7): This is the last layer of the OSI Reference Model and is the one that is close to the end-user. Both the end-user and application layer interacts with the software application. This layer provides services for email, file transfer, etc.

Explanation:

Explaining each of the 7 layers of the OSI Reference Model.

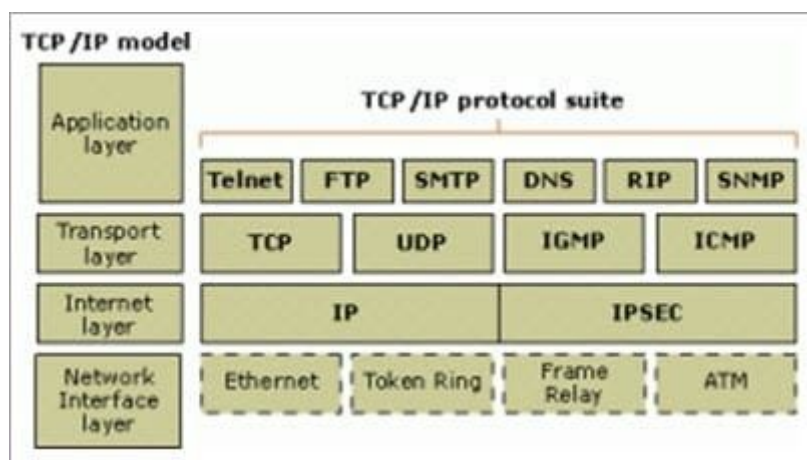
Question 2:

Explain TCP/IP Model

Answer:

The most widely used and available protocol is TCP/IP i.e. Transmission Control Protocol and Internet Protocol. TCP/IP specifies how data should be packaged, transmitted and routed in their end to end data communication.

There are four layers as shown in the below diagram:



Given below is a brief explanation of each layer:

- **Application Layer:** This is the top layer in the TCP/IP model. It includes processes that use the Transport Layer Protocol to transmit the data to

their destination. There are different Application Layer Protocols such as HTTP, FTP, SMTP, SNMP protocols, etc.

- **Transport Layer:** It receives the data from the Application Layer which is above the Transport Layer. It acts as a backbone between the host's system connected with each other and it mainly concerns the transmission of data. TCP and UDP are mainly used as Transport Layer protocols.
- **Network or Internet Layer:** This layer sends the packets across the network. Packets mainly contain source & destination IP addresses and actual data to be transmitted.
- **Network Interface Layer:** It is the lowest layer of the TCP/IP model. It transfers the packets between different hosts. It includes encapsulation of IP packets into frames, mapping IP addresses to physical hardware devices, etc.

Explanation:

Explaining what a TCP/IP is. Each of the 4 layers are then described briefly.