Protocol stack design issues of the layers

Addressing :-

- Maintains the address at the frame header of both source and destination and performs addressing to detect various devices in network.

- **Classful Addressing**
  The 32 bit IP address is divided into five sub-classes. These are:
- Class A
- Class B
- Class C
- Class D
- Class E
- Each of these classes has a valid range of IP addresses. Classes D and E are reserved for multicast and experimental purposes respectively. The order of bits in the first octet determine the classes of IP address.
  IPv4 address is divided into two parts:

- **Network ID**
- **Host ID**
- The class of IP address is used to determine the bits used for network ID and host ID and the number of total networks and hosts possible in that particular class. Each ISP or network administrator assigns IP address to each device that is connected to its network.

- Addressing:-

- At a particular time, innumerable messages are being transferred between large numbers of computers. So, a naming or addressing system should exist so that each layer can identify the sender and receivers of each message.

- Error Control :-

- Unreliable channels introduce a number of errors in the data streams that are communicated. So, the layers need to agree upon common error detection and error correction methods so as to protect data packets while they are transferred.

- Flow Control:-
- If the rate at which data is produced by the sender is higher than the rate at which data is received by the receiver, there are chances of overflowing the receiver. So, a proper flow control mechanism needs to be implemented.