

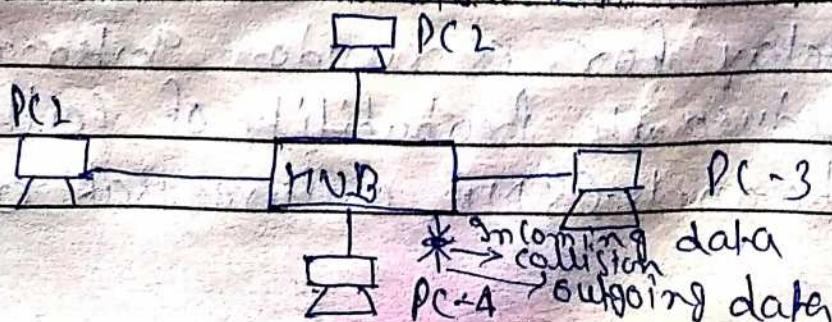
## UNIT 1: Broadcast Networks & their Protocols.

Topic:- Collision.

⇒ In a half-duplex network a collision is the result of two devices on the same network attempting to transmit data at exactly the same time. The network detect the collision of the two transmitted packet and discard them both.

Topic:- Data Collision.

⇒ A data collision is the result of simultaneous data packet transmission b/w two or more network devices or node is called data collision. For example when a two PC try to send a data to PC via hub through the connected channel to hub, if some other data traffic of some other PC in the network is all coming come in down in the same channel through the hub down to PC, then the data meet each other and form a collision.





## Topic:- CSMA/CA (Carrier Sense Multiple Access / Collision Avoidance)

2) CSMA is a network protocol that listens or senses network signal on the medium before ~~any~~ transmitting any data. CSMA is implemented in Ethernet network with more than one computer or network devices attached to it. In CSMA/CA, once the channel is clear, a station send a signal <sup>telling</sup> to all other station not to transmit and then sends its packet. In Ethernet the station continues to wait for a time and check to see if the channel is ~~still~~ <sup>still</sup> free. If it is free the station transmits and wait for an acknowledgement signal that the packet was received. Collision avoidance is used to improve the performance of CSMA by attempting to be less greedy on the channel. If the channel is sensed busy before transmission then the transmission is delay for a random interval. This reduce the probability of collision on channel. CSMA ensure that only one



network node is transmitted on the network at any one time.

## TOPIC 2 - CSMA/CD (Collision detection)

⇒ It is a set of rules determining how network devices respond when two devices attempt to use a data channel simultaneously. Standard ethernet N/w use CSMA/CD to physically ~~no~~ monitor the traffic on the line at a Participating Station. Collision detection is used to improve CSMA performance by terminating transmission as soon as a collision is detected and reducing the probability of a second collision on a retry method for collision detection are dependent on the transmitting media. On an electrical bus such as ethernet collisions can be detected transmitted data and received data. If they differ it means that another station has also transmitted a signal and is overlapping the first transmitter's signal that is a collision has occurred. The transmission is terminated immediately and a Jam signal is sent. The Jam signal will cause all frame transmitters to back off by random



Intervals, reducing the probability of a collision when the first retry is attempted.

### Topic: Ethernet.

⇒ Ethernet is the most popular network architecture for LAN. Ethernet was originally developed by Xerox in the 1970s and was proposed as a standard by Xerox, Digital Equipment Corporation and Intel in 1980. A separate standardization council for Ethernet technology was established in 1985 by the IEEE (Institute of Electrical and Electronics Engineers). A system for connecting a number of computer systems to form a LAN, with protocols to control the passing of information and to avoid simultaneous transmission by two or more systems. Ethernet is a link layer protocol in the TCP/IP describing how network devices can format data for transmission to other network devices on the same network segment and how to put that data out on the network connection. It is available in 3 different speeds —

- 1) 10 Mbps which is simply called Ethernet.