Q3) Explain about frame format of CSMA/CD.

Answer:- The frame format as per IEEE 802.3 standard is as shown below -

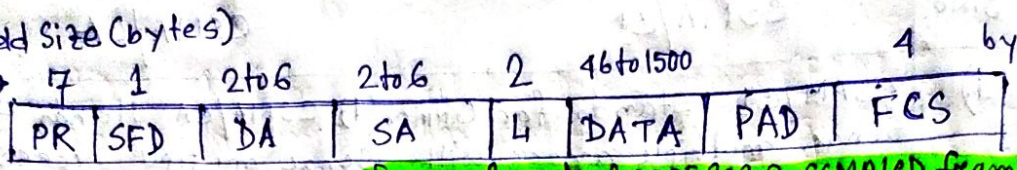


Fig: Frame format of IEEE 802.3 CSMA/CD frame.

The frame consists of following fields -

Preamble (PR): PR is a seven byte long pattern which is used for bit synchronization.

Start frame Delimiter (SFD): It is one byte long, unique bit pattern which is used to mark the start of the frame.

Destination Address (DA): This field is 2 to 6 bytes (octet) long and contain the destination address.

Source Address (SA): The field is 2 to 6 bytes (octet) long and contain source address.

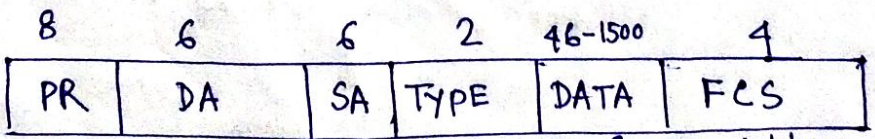
Length (L): This field is 2 bytes long. It indicates the number of bytes (octets) in the data field.

Data field (DATA): It can have 46 to 1500 bytes if the address field has 6 bytes.

Frame Check Sequence (FCS): This is 4 octet long and contain CRC code, for error detection.

Ethernet CSMA/CD frame format.

[* TYPE: This field defines the upper- lower protocol which packet is encapsulated in the frame. Protocol can be IP, ARP, OSPF and so on.]



PR: Preamble, DA: Destination Address, SA: Source Address, FCS: Frame Check Sequence.

Fig: Format of Ethernet CSMA/CD format.

Q1) Write difference between Token Ring and Token Bus.

Token Ring	Token Bus
1) The token is passed over the Physical ring formed by the stations and the Coaxial Cable network.	1) The token is passed along the virtual ring of stations Connected to a LAN.
2) It is defined by IEEE 802.5 standard.	2) It is defined by IEEE 802.4 standard.
3) The maximum time for a token to reach a station can be calculated here.	3) It is not feasible to calculate the time fore token transfer.
4) The station are Connected by ring topology, or Sometimes star topology.	4) The underelying topology that Connects the stations is either bus or tree topology.

5)

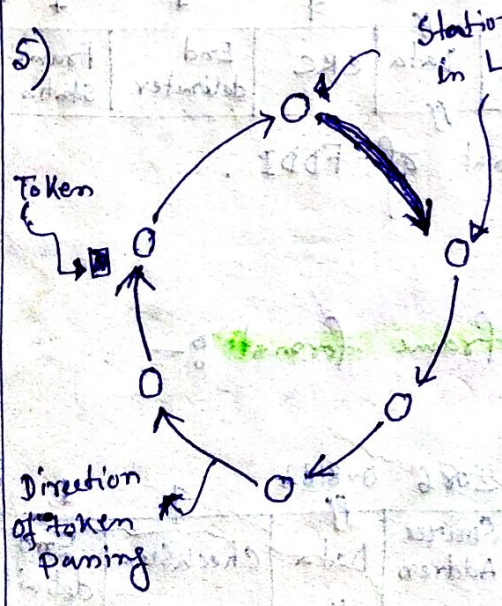


Fig: Token Ring.

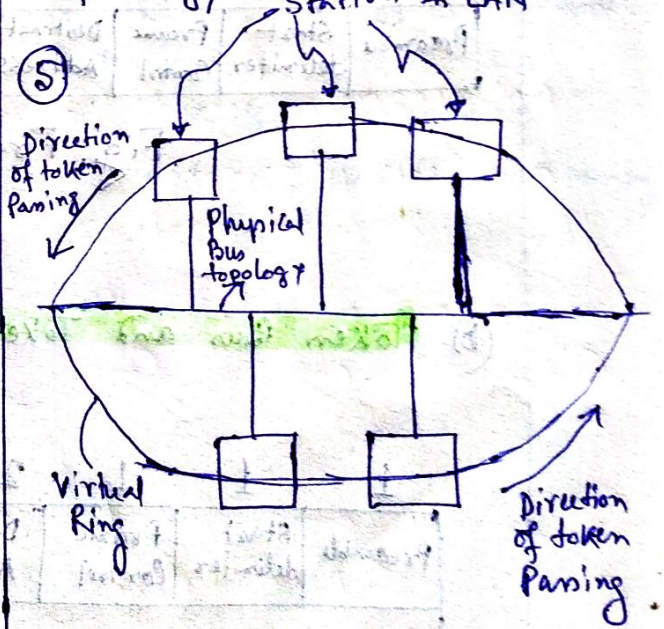


Fig: Token Bus.

Q(5) Write short notes on – (a) FDDI (b) Token Bus and Token ring frame format (c) Wirless LAN (d) Poll/Select method (Controlled Access method or polling)

Answer:- (a) Fiber Distributed Data Interface (FDDI): It is a high performance fiber optic token ring. It is similar to 802.5 and IBM token ring, except the different that FDDI runs on fiber, not on Copper. FDDI Cable Consists of two fiber rings, one transmitting clockwise and other transmitting Counter clockwise. If either one breaks, the other can be used as a backup. if both break at the same point, due to a fire or other accident in Cable duct, ~~the two~~ rings can be joined into a Single ring. Each station contains relays that can be used to joint the two rings or bypass the station in the event of station problems.

Bytes ⩾ 8	1	1	2 or 6	2 or 6	variable	4	1	1 Bytes
Preamble	Start delimiter	Frame Control	Destination Address	Source Addren	Data	ERC	End delimiter	Frame status

Fig: Frame format of FDDI.

(b) Token Bus and Token Ring frame format:-

1	1	1	2 or 6	2 or 6	0-8182	4	1 byte
Preamble	Start delimiter	Frame Control	Destination Address	Source Addren	Data	checkSum	End delimiter

Fig: Token bus frame format.

Token Ring frame format :-

Field length in bytes

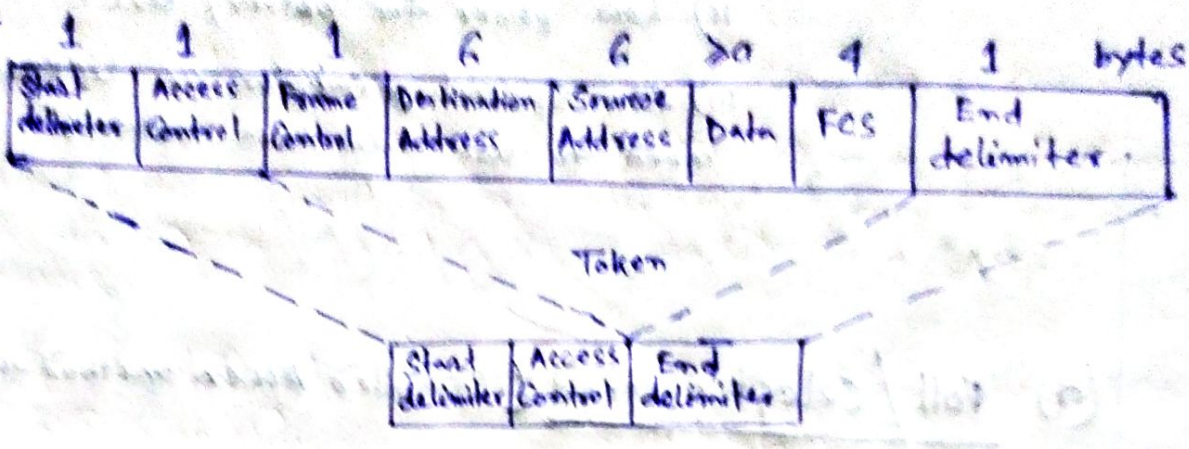


Fig: Token Ring frame format.

(c) **Wirless lan** : A Wireless local area network (WLAN) is a Wirless distribution method for two or more device that use high frequency radio waves and often include an access point to the internet. A WLAN allows users to move around the Coverage area, often a home or small office, while maintaining a network Connection.

Advantages of WLAN

i) Flexibility.
ii) Planning very Easy.
iii) Design very Simple and portable.
iv) Robustness transmission Technology.
v) Low Cost for Designing.
vi) Easy of use.

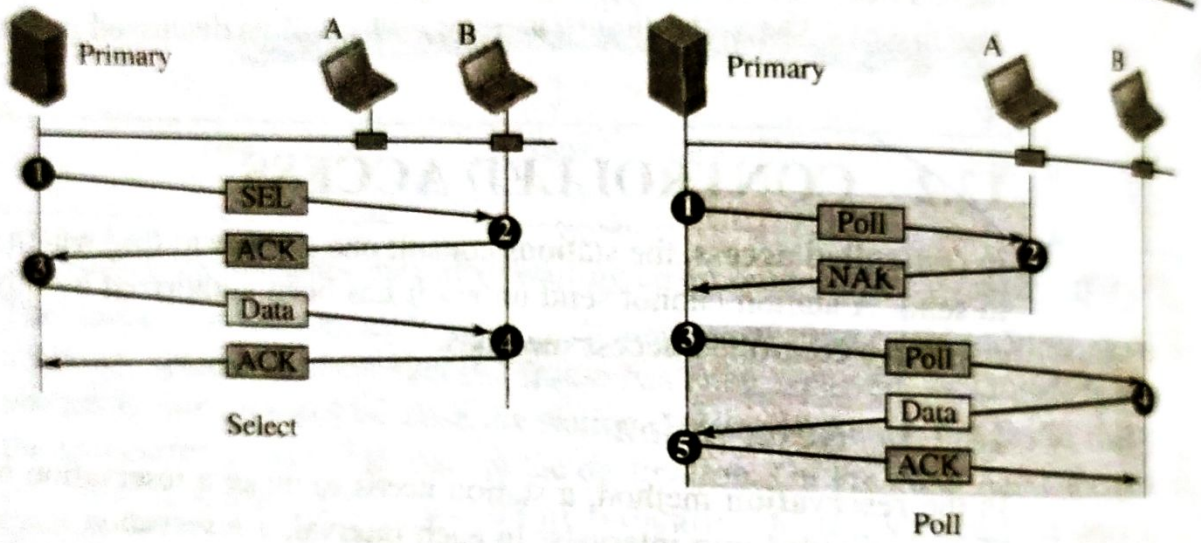
Disadvantages of WLAN :

(i) Licence free operation.
(ii) Low bandwidth.

5(d) 12.2.2 Polling (Controlled Access Method)

Polling works with topologies in which one device is designated as a ***primary station*** and the other devices are ***secondary stations***. All data exchanges must be made through the primary device even when the ultimate destination is a secondary device. The primary device controls the link; the secondary devices follow its instructions. It is up to the primary device to determine which device is allowed to use the channel at a given time. The primary device, therefore, is always the initiator of a session (see Figure 12.19). This method uses poll and select functions to prevent collisions. However, the drawback is if the primary station fails, the system goes down.

Figure 12.19 *Select and poll functions in polling-access method*



Select

The *select* function is used whenever the primary device has something to send. Remember that the primary controls the link. If the primary is neither sending nor receiving data, it knows the link is available. If it has something to send, the primary device sends it. What it does not know, however, is whether the target device is prepared to receive. So the primary must alert the secondary to the upcoming transmission and wait for an acknowledgment of the secondary's ready status. Before sending data, the primary creates and transmits a select (SEL) frame, one field of which includes the address of the intended secondary.

Poll

The *poll* function is used by the primary device to solicit transmissions from the secondary devices. When the primary is ready to receive data, it must ask (poll) each device in turn if it has anything to send. When the first secondary is approached, it responds either with a NAK frame if it has nothing to send or with data (in the form of a data frame) if it does. If the response is negative (a NAK frame), then the primary polls the next secondary in the same manner until it finds one with data to send. When the response is positive (a data frame), the primary reads the frame and returns an acknowledgment (ACK frame), verifying its receipt.