1. Discuss the importance (i.e. the need for) address resolution in TCP/IP operating over Ethernet.

**ANS**.

Importance of Address resolution in TCP/IP operating over Ethernet --

* In the system of networks IP address is assigned to a device when it is connected to the LAN/ WAN networks
* In this process there is no exchange of MAC address for each individual devices to authenticate and initiate the communication
* It is necessary to have the MAC address known for every device within the network
* In order to get destination MAC address helps to communicate with other devices, it helps to translate IP address to physical addresses
* It finds hardware address of a host from known IP address there are 3 ARP terms—
  + Reverse ARP
  + Proxy ARP
  + Inverse ARP
* It is a typical Network Layer to Data link layer mapping process to discover MAC address for given Internet Protocol Address
* In order to send data to destination IP address is necessary but not sufficient hence ARP is used and necessary.

1. An IPv4 datagram has 900 octets of data. It is to be transferred across a network that has an MTU of 210 octets. Determine the minimum number of fragments required. (For this problem, select the maximum allowable fragment size). For each fragment, identify the:

* Size of the data field
* Value of the MORE flag
* Value of the Fragment Offset field

**ANS**.

900 octects data + 20 header = 920 data total octets to be sent in

210 data can be sent at a time ---- i..e 210 – 20 = 190 /8

=184 octets of data can be sent at a time i.e. the fragments that can be sent at a single transmission request.

Total data to be sent –920 octets

MTU – 184 at a time

Data can be sent - 920/184 = 5 times

1st -> 184

2nd -> 368

3rd -> 552

4th -> 736

5th -> 920

1. Minimum no of fragments required – 5
2. Size of data field - MTU - 184
3. Value of More Flag –

Fragments 1,2,3,4 – 1 as more bit

Fragment 5 – 0 as more bit since it is last bit of the data fragment sequence

1. Fragment offset field -- 184/8 = 23