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Name: Ayesha Jahan

ID: 18101001

Roll: 01

Sec: A

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Answer to the Ques no-01

②

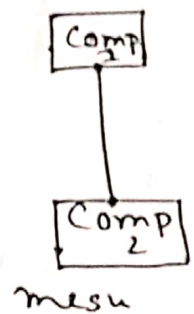
ID - 18101001

$$X = 1 + 1 = 2$$

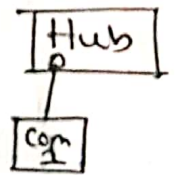
$$Y = 0 + 1 = 1$$

for mesh topology, here are 2 computer needs two node.

$$\begin{aligned} \text{So, total links} &= n(n-1)/2 \\ &= 2(2)/2 \\ &= 1 \end{aligned}$$



For star topology, here are one computer
So there are one nodes and one link



If I have to choose one of them I
choose mesh topology for more secure
network.

Because, In mesh topology all computer
is connected with other. So, if one co

Disable or lost, still i can access my data from other. ~~But~~, on the other hand, ~~in~~ star

topology all computer are depends on Hub.

If Hub can get error then all our data lost. So, i like to choose mesh topology

(b)

Here, i have a channel with 1000bps.

If i choose half duplex then both transmission can happen but one after another.

or, if i choose full duplex then my capacity will be 500bps for ~~hundred~~ send and 500 for receive.

So, i like to choose half duplex, to get ~~more~~ full capacity at a time.

Half duplex:

Advantage:

① Both device can send and receive with whole bandwidth

Disadvantage:

① No one can send and receive at a time.

Full Duplex:Advantages:

- ① No delay in communication. Send and receive at a time

Disadvantages:

- ② Bandwidth become half, no one can use full bandwidth at a time

Answer to the ques no-02

$$X = 12 \bmod 6$$

$$= 0$$

$$Y = (1+2) \bmod 6$$

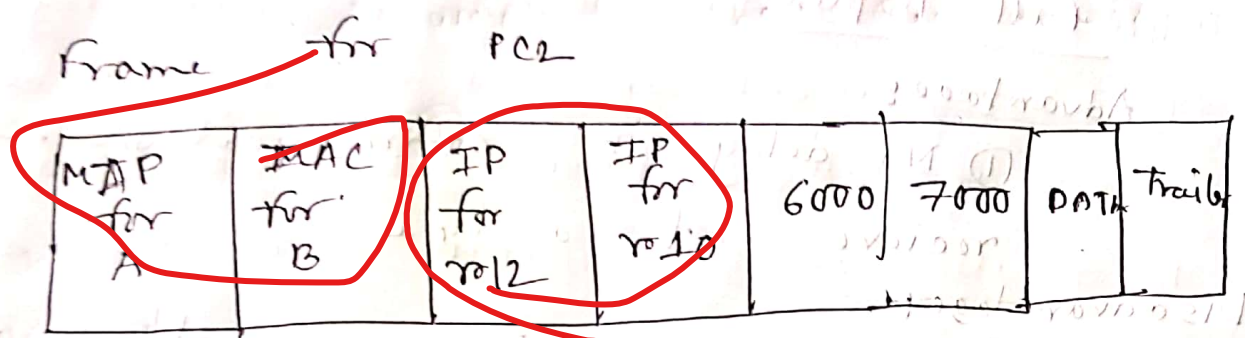
$$= 3 \bmod 6$$

$$= 3$$

PC1 Send a frame to PC2

frame for PC1

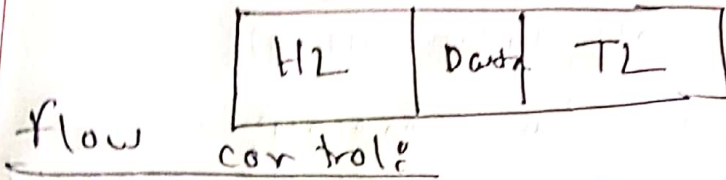
| | | | | | | | |
|-----------|-----------|------------|-------------|------|------|------|---------|
| MAC for A | MAC for B | IP for 100 | IP for 1002 | 6000 | 7000 | Data | Trailer |
|-----------|-----------|------------|-------------|------|------|------|---------|



⑥

like data layer Error control and flow control are also performed in Transport layer in End to end rather than on single link

In this case, the data are



If the rate at which the data are absorbed by the receiver is less than the rate at which data are produced to sender, data link layer impose a flow control mechanism to avoid it.

Error control: Data link layer add reliability to the physical layer by adding mechanism to detect, the retransmit damaged or lost frame. It also use a mechanism to detect it. By adding a trailer in the last it identify the error.

Answer to the Ques no-04

(A)

$$X = 2$$

$$Y = 1$$

SNR for the first channel is 10×10^3

$$= 10 \checkmark$$

bandwidth 2 MHz

$$\text{Bitrate} = 2 \times 2 \times \log_2 L$$

$$= 4$$

$$L = 2$$

from shanon formula,

$$C = B \log_2(1 + \text{SNR})$$

$$= 106 \log_2(1 + 10)$$

$$= 106 \log_2 11$$

$$= 366.699 \approx 3.62$$

$$\approx 4 \text{ Mbps} \quad 3 \text{ Mbps} \quad \times$$

4 Mbps

5 From Nyquist formula

~~$2 \times 4 \times 10^6 \times \log_2 2$~~ bps

Signal level, $L = 2$

(b)

bandwidth and throughput:

Throughput ~~bandwidth~~ is actual measure of how much data is successful from source to destination.

6 where bandwidth is theoretical measure of how much data could be transferred.

No. throughput can not be greater than bandwidth