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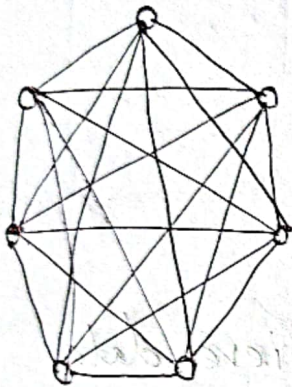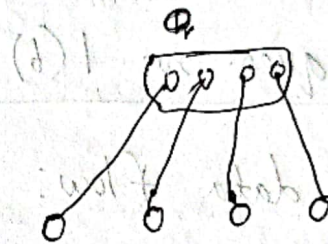
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Ans. to the ques. no. 1 (a)

$X = 6+1 = 7$

$Y = 3+1 = 4$

mesh topology

Star topoloy

number of links for mesh topology $= \dfrac{7(7-1)}{2} = 21$

number of links for star topology $= 4$

Two choose between these two topologies for a more secure networks, mesh topology will be preferred.

Reasons:

1. There is no traffie problems in mesh topology.

2. Fault can be easily identified in mesh topology and have isolation.

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3. Star topology has dependancy of the whole on one single point called hub.

Ans. to the ques. no. 1(b)

Half-duplex data flow:

Advantages:

1. Both devices can send and recieve data while whole bandwidth can be utilised as at a time only one sing signal transmits.

Disadvantages:

1. The other device cannot send data until it recieves the data which is already in transminion, this can cause delays to the communication.

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Full - duplex mode:

Advantages:

1. No delays in communication as both can send and recieve the data at the same time.

Disadvantages:

1. No proper bandwidth utilization at t as the same same line is used for sending and recieving data at the same time.

Ans. to the ques no. 2

(b)
In transport layer, error control is also performed like data link layer. The sending transport layer makes sure that the ~~entire~~ entire message arrives at the recieving transport layer without error (damage, loss or duplication). Error correction is usually achieved through retransmission.

Like the data link layer, the transport layer is responsible for flow control. However, flow control at this layer is performed end to end rather than across a single link.
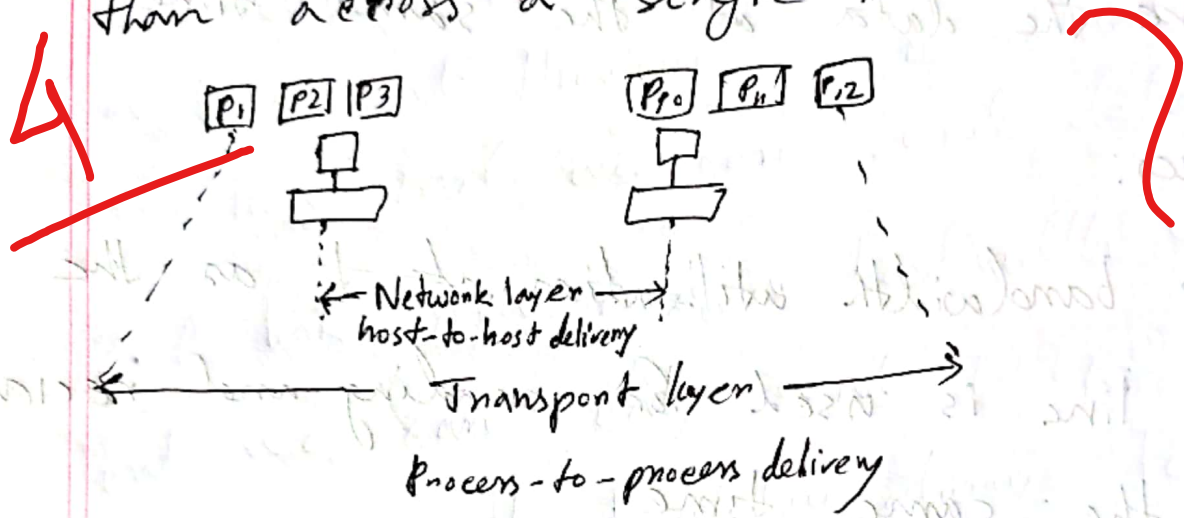
Ans- to the ques no. 4 (a)

Bandwidth, $B = \cancel{6+1} \times$ MHz

$\qquad = (6+1)$ MHz

$\qquad = 7$ MHz

Signal to noise ratio, $SNR = Y$

$\qquad = (3+1)$

$\qquad = 4$

~~Bit rate = 2 * bandwidth * $\log_2 L$~~

$C = B \log_2 (1 + SNR)$

$\quad = 7 \log_2 (1 + 4)$

2 $= 7 \log_2 5$

$= 16.2534 = 16.25 \ Mbps$

③ $14 = 2 \times 7 \times \log_2 L$

$\Rightarrow \log_2 L = 1$

$\Rightarrow L = 1$

Note: Calculator unavailability ?!!!
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Ans. to the ques. no. 4 (b)

Difference between bandwidth and throughput.

1. Bandwidth is a potential measurement of a link. But through is an actual measurement of how fast we can send data.

2. A link may have a bandwidth of B bps, but we can only send T bps through this link with T ~~auley~~ always less than B.

3. For example, we ~~may~~ may have a link with a bandwidth of 1 Mbps, but the devices connected to the end of link may handle only 200 kbps. This mean that we can't send more than 200 kbps through this link.

Ans. to the ques. no. 2

(a)

$X = (6)^2 \bmod 6 = 36 \bmod 6 = 0 \quad (Pc\ 0)$ ✓

$Y = (1+1) \bmod 6 = 7 \bmod 6 = 1, \quad (Pc\ 1)$

Sender MAC	Reciever MAC	Sender IP	Reciever IP	Pont no. of Sender Process	Pont no. of reciever Process	Data	Trailer
MAe of Pc0	MAC of R00	IP of Pc1	IP of R00	80:6000	80:6000		
MAe of R00	MAc of R12	IP of R02	IP of R12	80:6020	80:6030		
MAe of R10	MAe of Pc1	IP of R10	IP of Pc1	80:6040	80:20		

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