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Year: 3rd Year

Semester: 2nd semester

Course code: CSE 303

Course Title: Data communication

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Ans to the Ques No-01 (a)

My roll is 23, last digit = 3

Roll+1 = ~~2023+1~~ 3+1 = 4

Calculation the number of links for R

$n(n-1)/2$ here (n) is the number of devices

$= 4(4-1)/2$

$= 4 * 3 / 2$

$= 12/2$

$= 6$

3

In ~~R~~ we need 6 links

for ~~Y~~ here also have 4 device

for the star topology ~~B~~ a link will be equal of number of device = n

n = 4

Between two of this 3 thing mesh will be more secure network than star.. So I will prefer mesh topology. And why I will

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Choose mesh is given below

In star topology all devices are connected with the central hub or router. There will have n number of links in star topology but on the other hand Mesh topology all nodes are connected each other by a dedicated link And need the number of links are $n(n-1)/2$

Mesh topology is more complex than the star topology. Mesh can manage high amount of traffic because multiple devices can transmit data. A failure of one device does not cause a break in the network or transmission of data. Add additional devices does not disrupt data transmission.

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b) I will choose full duplex at a time.

Advantage:

Full duplex -

In this sender can send data and receive data at a time

half duplex. This ~~can~~ system are usually used to conserve bandwith sei since only a single communication channel is needed.

dis Advantage

Full duplex: Full-duplex ~~Ethernet does~~ have no proper bandwith utilization as the same line is used for sending and receiving data ~~at~~ the same time.

half duplex: In this we cannot send data from sender to receiver and receiver to send at a time

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Ans to the Ques No-02

$x = 3^2 \bmod 6$

$= 9 \bmod 6$

$= 3$

$y = 3 + 1 = 4$

So my pc is PC 3

friend's pc is PC 4

Sender Mac	Receiver Mac	Sender IP	Receiver IP	Port no of Sender	Port no of Receiver	Data	Trailer
D	E	~~IP of A~~ R30	~~IP of B~~ R32	6000	7000		
D	E	~~R22~~ R32	R22	6000	7000	Data	T2
D	E	R22	R21	6000	7000	Data	T2
D	E	R21	R11	6000	7000	Data	T2
D	E	R11	R12	6000	7000	Data	T2
D	E	R12	R02	6000	7000	Data	T2
D	E	R02	R01	6000	7000	Data	T2
D	E	R01	R51	6000	7000	Data	T2
D	E	R51	R52	6000	7000	Data	T2
D	E	R52	R42	6000	7000	Data	T2

D E 1242 1240 Group 7000 Roll - 52

Ans to the Ques No-02 (B)

① Error control and flow control happend in transport layer also happend in Data link layer.

The error control in the data link layer works at the packet or stream level, while the error control in the transport layer works at the message level. The data link layer is not concerned with ordering of packets while the transport layer is acknowledgement is sent for whole message. so it only provide error control at transport layer then there is no way to detect error at particular time.

Flow control in transport layer ensure the delivery of the message globally at the two points of connection over this protocol are logically connected, whereas in data link layer the concern is to deliver message locally. Two points of connection over this protocol are physically connected.

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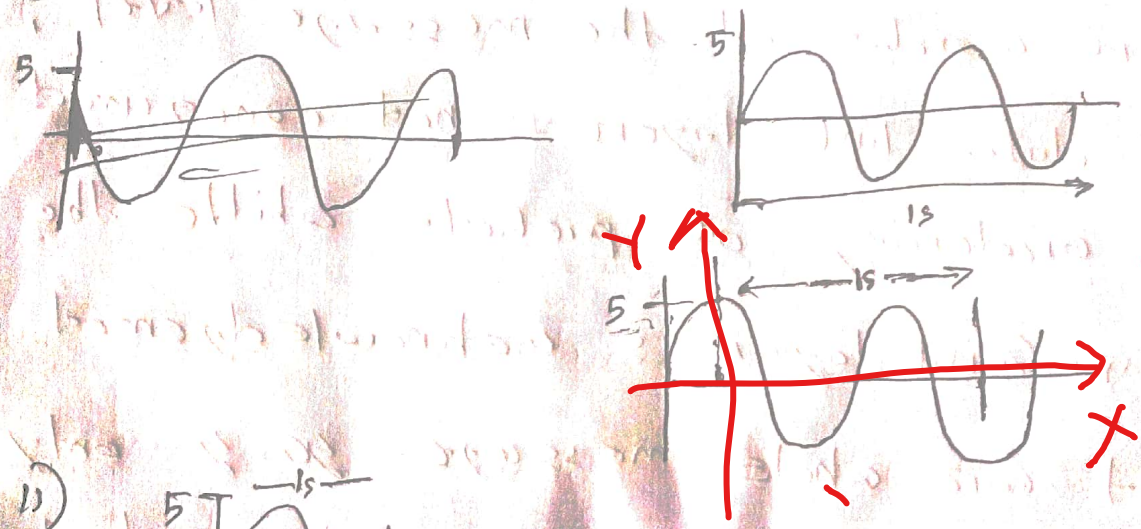
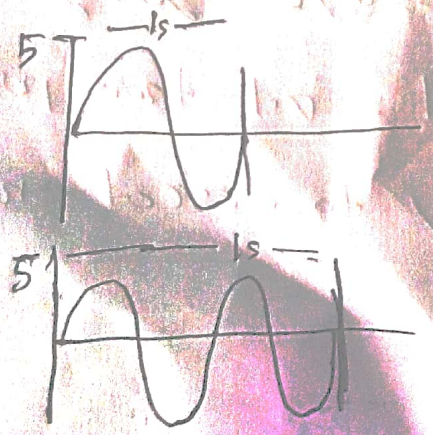
a (i)



(ii)



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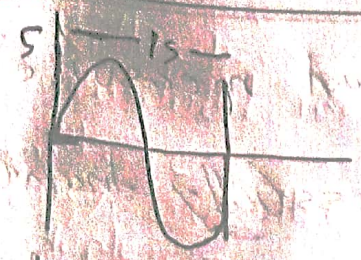
b.i)



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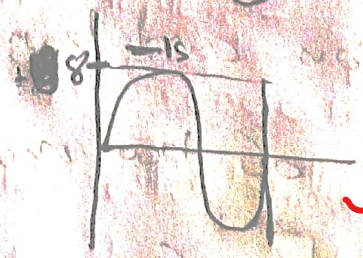

Ans to the Ques No. 04

a) $x = 3+1 = 4$

$y = 2+1 = 3$

bandwidth 4MHz

$SNR = 10 \times 3$

$= 30$

Bit rate $= 2 \times 4 \times 10^6 \times \log_2 L$

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

$= 4\times10^6 \log_2 (30+1)$

$= 4\times10^6 \log_2 31$

$= 3.73 \times 10^7$ mbps

$3.73\times10^7 = 2 \times 4\times10^6 \times \log_2 L$

$\log_2 L = \frac{3.73\times10^7}{2\times4\times10^6} = 0.6476$

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4) Throughput is a actual measure of how much data is successfully transferred from source to destination and bandwidth is a theoritical measure of how much data could be transferred from source to destination. Throughput measures speed while bandwidth is only indirectly related to speed

Throughput can only send as much as the bandwidth will allow

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