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SUB Code: CSE 308.

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Course Title: Data communication.

Ans to the ques no: 1 (a).

ID = 18101005.

$X = 5 + 1 = 6$.

$Y = 0 + 1 = 1$.

for mesh topology we need.

$X(X-1)/2$ links.

$\Rightarrow 6(6-1)/2$

$\Rightarrow 15$ links.

for star topology we have 1 computer.

so no of links = 1.

If I have to choose between these two topologies for a more secure network I will prefer "mesh topology"

P.T.O

because mesh topology has dedi, dedicated point to point network. There is no third link connected with it. so there will be no security issue and data corruption issue.

Though star topology also secure and point-to-point link. It has a central controller. First data pass to the destination through controller. It also can be said that both. topology is secure enough.

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P.T.O

Ans to the ques no: 1(b)

Half-duplex:

Advantage:

1. Channel capacity should not devided into two direction :

dis Advantage:

1. Data transmit and receive is not possible at same time. So it is time consuming.

Full duplex:

Advantage:

1. Data transmit and receive can possible at a same time.

Disadvantage:

2. Channel capacity divided in betweeen two direction. So data jam can be happen.

Ans to the ques no 1/(a).

bandwidth = 5+1 = 6 MHz

SNR = 0+1 = 1×10 = 10

bit rate = ?

level = ?

From the shannon formula we get

Capacity $c = bandwidth * \log_2 (1+SNR)$.

$$= 6×10^6 * \log_2 (1 + 10)$$

$$= 6×10^6 * 3.45.$$

$$= 20700000 \text{ bps}.$$

$$= 20.7 \text{ Mbps}.$$

It gives us the upper limit. we will use a lower value than it to a better performance.

$$\cancel{20.7} \cancel{+2} \text{ Mbps} = 2 * 6 MHz * \log_2 L.$$

$\Rightarrow$ P. T. O

$$12 \text{ Mbps} = 2 \times 6 \text{ MHz} \times \log_2 L.$$

$$\Rightarrow 1 = \log_2 L.$$

$$\Rightarrow L = 2.$$

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Ans to the ques no: 4 (b).

Bandwidth: A bandwidth of a composit signal is the difference between the highest and the lowest frequencies contained in that signa that means band width is the difference between two signals.

throughput: the Measurement of how fast we can actually send data through a network.

P.T.O

so, throughput cannot be greater than bandwidth. cause bandwidth already holds the max value.

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Ans to the ques no: 2(a)

$x = 5^n \bmod 6 = 1$.

$Y = 2 \bmod 6 = 2$

Sender	Receiver	Packet
PC1	PC0	PC1 MAC | PC0 MAC | PC1 IP | PC0 IP | 6000 | 7000 | Data | T2
PC0	PC5	PC0 MAC | PC5 MAC | PC1 IP | PC2 IP | 6000 | 7000 | Data
PC5	PC4	PC5 MAC | PC4 MAC | PC1 IP | PC2 IP | 6000 | 7000 | Data
PC4	PC3	PC4 MAC | PC3 MAC | PC1 IP | PC2 IP | 6000 | 7000 | Data

Ans to the ques no: 2(A)

Sender	Receiver	Data							
PC₁	r 10.	PC₁ MAC	r10 MAC	PC₁ IP	PC₂ IP	6000	7000	Data	T2
r 10 ✗	r 11	r10 MAC	r11 MAC	PC₁ IP	PC₂ IP	6000	7000	Data	T2
r 11	r 21	r11 MAC	r21 MAC	PC₁ IP	PC₂ IP	6000	7000	Data	T2
r 21 ✗	r 20	r21 MAC	r20 MAC	PC₁ IP	PC₂ IP	6000	7000	Data	T2
r 20	PC2 / r21	r20 MAC	PC₂ MAC	PC₁ IP	PC₂ IP	6000	7000	Data	T2

Ans to the ques no: 2(b)

Data link layer . control Error
and flow on single link means.
If control them end . sender
to receiver side. But transport

Layer control them port in. port.

That means data link do the control them hop to hop, and transport layer control them port to port.