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Answer to the Question No. 1 (a)

My ID is 18101044

$$X = 4 + 1 = 5$$

Link need for mesh topology = ~~$\frac{5(5-1)}{2}$~~

$$\begin{aligned} &= (5 \times 4) / 2 \\ &= 20 / 2 \\ &= 10 \end{aligned}$$

Link need for star topology = Y

$$= 5$$

Mesh topology is more secure network between mesh topology and star topology.

In mesh topology message travels along a dedicated line. Every device has a dedicated point to

to-point link to every other device. When every message travels along a dedicated line, only the intended recipient sees it. Physical boundaries prevent other users from gaining access to messages.

In case term of security, the mesh topology is more ~~so~~ secure than star topology.

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PAULINE CHIE

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1.(b)

Advantage of half duplex ;

1. ~~Take one-time use~~ The total capacity can use either sender or receiver. That's why the communication become faster.

Disadvantage of half duplex :

1. Both transmit and receive possible, but not at the same time.

Advantage of full duplex :

1. transmit and receive simultaneously.
2. The full bandwidth is available in both direction.

Disadvantage of full duplex:

1) The capacity ~~rest~~ of the channel must be divided between the two directions.

Answer to the Question No (2b)

Both data link layer and transport layer performed error control and flow control.

Flow Control:

If the rate at which the data are absorbed by the receiver is less than the rate at which data are produced in the sender. The data link layer imposes a flow control mechanism to avoid overwhelming the receiver.

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Error control:

The data link layer adds reliability to the physical layer by adding mechanisms to detect and retransmit damaged or lost frames.

Error control is normally achieved through the trailer added to the end of the frame.

Transport layer:

Loss Flow control at this layer is performed end to end ~~across~~ rather than across a single link.

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Error control at this layer, is performed process to process rather than across a single link. The sending transport layer makes sure that entire message arrives at the receiving part.

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Answer to the Question No 4(a)

My Id is 18101049.

$$X = 9 + 1 = 5$$

$$\text{Y} = 9 + 1 = 5$$

Here,

$$B = 5 \text{ MHz}$$

$$\text{SNR} = 10^4 = 40$$

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

$$= 5 \times 10^6 \log_2 (1 + 40)$$

$$= 5 \times 10^6 \log_2 41$$

$$= 5 \times 10^6 \frac{\log_{10} 41}{\log_{10} 2}$$

= 26.79 Mbps.

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Shanon formula gives us upper limit 26.78 Mbps.

For better performance we choose something lower than 26.78 Mbps.

$$\therefore \text{Bit rate} = 16 \text{ Mbps.}$$

$$16 = 2 \times 5 \log_2 L$$

$$16 = 10 \log_2 L$$

$$\Rightarrow 10 \log_2 L = 16$$

$$\Rightarrow \log_2 L = 1.6$$

$$\Rightarrow L = 2^{1.6}$$

$$= 3$$

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Answer to the Question no. 9(b)

Bandwidth

1. Bandwidth is the max amount of data that can travel through a link.

2. It is always measured as physical layer property

3. A data rate measured in bits per second.

4. Bandwidth does not depend on latency

Throughput

1. Throughput is the actual amount of data that can be transferred.

2. It can be measured at any layer of model

3. The data may be delivered over a physical or logical link

4. It depends on latency

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b. Theoretical Performance

To Real World Performance.

Ans 2(a)

