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## Ans: to the Q NO: (1)

a) Here my ID is 1B101029

$\therefore x = 9+1 = 10$

$y = 2+1 = 3$

Here x denotes mesh topology. So one room has 10 computers and connected with mesh topology.

y denotes star topology. So another room has 3 computers and connected with star topology.

For x one 10 computers has,

$$\frac{10(10-1)}{2} \text{ links}$$

$$= \frac{90}{2}$$

$$= 45 \text{ links}$$

And A node has,

$(10-1)$ ports.

$= 9$ ports.

(2)

For another star topology a 3 computer has 3 links. Here every computer ~~has~~ connected with a single hub.

Between mesh and star topology I prefer mesh topology. because, In mesh topology its easy to fault identification and isolation. Here we didn't face any traffic problem. This topology is very robust and secure.

But another topology star, ~~is dependent~~ the whole network dependent ~~on~~ to a one single point. (hub). If any problem occur in hub then we disconnected to all the connection. Not well secure.

That's why between this two topology I prefer mesh topology.

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(3)

## Ans: to the Q: NO: (1)

b) Advantage of half-duplex:

1| Whole bandwidth can be utilize at a time.

Disadvantage of half-duplex:

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

Advantage of full-duplex:

1| Sender and receiver can transmit simultaniously.

Disadvantage of full-duplex:

2| Bandwidth must be divided between two direction.

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(v)

## Ans: to the Q NO: (2)

a)

Here, my id is 18101029

$x = (9)^y \bmod 6 \quad = 3$

$y = 2(3+1) \bmod 6 \quad = 4$

| Sender Mac | Receiver mac | Sender Ip | Receiver Ip | Port Sender Process | Port Receiver process | Data | Trailer |
|---|---|---|---|---|---|---|---|
| Mac of D | mac of R30 | Ip of D | Ip of E | 6000 | 7000 | Data | Trailer |
| mac of D | mac of R30 | Ip of D | Ip of E | 6000 | 7000 | Data | Trailer |
| mac of R31 | mac of R41 | Ip of D | Ip of E | 6000 | 7000 | Data | trailer |
| mac of R31 | mac of R41 | Ip of D | Ip of E | 6000 | 7000 | Data | Trailer |
| mac of 40 | mac of E | Ip of D | Ip of E | 6000 | 7000 | Data | Trailer |
| mac of 40 | mac of E | Ip of D | Ip of E | 6000 | 7000 | Data | Trailer |

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(n)

2)
b)

Like data link layer error control and flow control are also performed in transport layer in end to end-to-end rather than on single link. Here, error control at this layer is performed process to process-to-process rather than across a single link. The sending transport layer makes sure that the entire message arrives at the receiving transport layer without error. Also flow control transport layer is responsible for flow control across a single link.

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(B)

# Ans: to the Q NO: (4)

(a) Here my id is 18101029.

$x = 9+1 = 10$

$y = 2+1 = 3$

So, Here bandwidth = 10 MHz

SNR = 10 * 3

= 30

~~$C = 10\times10^6(1+30) =$~~

~~$C = 10\times10^6(1+3$~~

$C = 10\times10^6 \log_2(1+30)$

$= 10\times10^6 \log_2 5$ [taking rilling value]

~~$= 4.9\times10^7$ Mbps bps.~~

= 50 Mbps

(7)

$$50\,\text{mbps} = 2 \times 10\,\text{MHz} \times \log_2 L$$

$$50\,\text{Mbps} = 20\,\text{MHz} \times \log_2 L$$

$$\log_2 L = \frac{50\,\text{Mbps}}{20\,\text{MHz}}$$

$$\log_2 L = 2.5$$

$$\log_2 L = \log_2 2^1 \quad \text{[taking floor value]}$$

$$L = 2^1$$

(a)

4]

b)

· Bandwidth means the total network the network provides but the throughput is the limit which is actually a user used, bandwidth is greater than troughput. Bandwidth provides the totall network but throughput means which are actually used in the entire bandwidth.

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