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Course Code: CSE 303

ID: 18101027

Course Title: Data Communications

Sec: A

Sem: 3.1.

Ans. to the q. no - 1

Roll: 18101027

$$X = 7 + 1 = 8$$

$$Y = 2 + 1 = 3$$

2

(1)b

Advantages for half duplex data flow:

1. In half duplex data flow ~~both~~ both devices can send and receive data.

whole bandwidth can be utilised as at a time only one signal transmits.

Disadvantages for half duplex data flow:

1. In half duplex data flow mode the other device can't send data until it receives the data which is already in transmission, this can cause delays to the communications.

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Advantages and Disadvantages of full duplex data flow given below:

Advantages:

1) In full duplex data flow mode no delays in communication as both can send and receive data simultaneously.

Disadvantages:

1) In full duplex data flow mode no proper bandwidth utilization as the same line is used for sending and receiving data at the same time.

⇒ If I have to choose to communicate with friend using only ~~half~~ half duplex or full duplex, I'll choose

4

~~Ans: 16. The given 22~~

I choose half duplex because the given bandwidth is very low, 1000bps. In half duplex whole bandwidth can be utilised but in full duplex proper bandwidth utilization can't be done so in low bandwidth it'll not be a good decision to choose full duplex for one to one communication.

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Ans. to the q. no-1

(a)

$$ID = 18101027$$

$$x = 7 + 1 = 8$$

$$y = 2 + 1 = 3$$

For mesh topology I need $= \frac{8(8-1)}{2}$
 $= 28$ Links

6 For star topology I need $= n$ links
 $= 3$ links. ✓

If I were to choose between mesh and star for security purpose. I'll choose

star topology. In star topology each device has a dedicated point to point link only to a central controller or hub. So, usually it one computer on the network.



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1(a) statement

fails, the rest of the network continues to function normally. It is easy to add another computer to the network.

so, I choose star topology network.

Ans. to the q.no - 4 (b)

The difference between bandwidth and throughput given below:

2
1. The throughput of a channel is a measure of ~~a~~ amount of data actually moves through the channel but bandwidth is the maximum ~~a~~ amount of data that can travel through a channel.

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Throughput is greater than bandwidth
because :

Bandwidth provides with a theoretical measure of the maximum number of packets that can be transferred and throughput tells the number of packets that are actually being successfully transferred. As a result, ~~there~~ throughput is ~~more~~ ~~is~~ greater ~~to~~ than bandwidth as a ~~re~~ measure of network performance.

Q 4(a)

$$ID = 18101027$$

$$X = 7 + 1 = 8$$

$$Y = 2 + 1 = 3$$

$$\therefore \text{Bandwidth} = 8 \text{ MHz}$$

$$SNR = 10 \times Y = 10 \times 3 = 30$$

$$\begin{aligned}\therefore \text{Capacity} &= 8 \text{ MHz} \times \log_2(30 + 1) \\ &= 8 \text{ MHz} \times (3.67) \\ &= 28.8 \text{ Mbps}\end{aligned}$$

Appropriate bit rate is 28.8 Mbps.

$$\text{Now bitrate} = 2 \times \text{bandwidth} \times \log_2 L$$

$$\Rightarrow 28 = 2 \times 8 \times \log_2 L$$

$$\Rightarrow \log_2 L = \frac{28}{16} = 1.75$$

$$\Rightarrow L = 2^{1.75}$$

$$\Rightarrow L = 6.13$$

\therefore Signal Level is 6.13.

Ans. to the q. no- 2

(a)

$$ID = 18101027$$

$$x = 7^2 \bmod 6 = 49 \bmod 6 = 1$$

$$y = (1+1) \bmod 6 = 2 \bmod 6 = 2$$

So I'll be in PC1 and my friend will be in ~~PC1~~ PC2.

From PC1 to PC2:

Frame:

MAE of B	MAE of C	IP of B	IP of C	6000	7000	Data	Trailer
✓	✓	✓	✓	✓	✓		

MAC of R11	MAC of R21	IP of B	IP of C	6000	7000	DATA	Trailer
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MAC of R20	MAC of C	IP of B	IP of C	6000	7000	DATA	Trailer
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✓
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