Mid term Exam

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Subject : Data Communications
ID: 18101008

Date : 25-8-20
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Course Code: CSE 303
Sec: A
Dept: CSE
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Year: 3rd
semester: 1st

Ans To The Q NO: (1)

a

My ID: 18101008

$\therefore x = 8+1 = 9$

$y = 0+1 = 1$

For Mesh Topology:

if n = nodes then the theory is, $\frac{n(n-1)}{2}$

here, $n = 9$

$\therefore$ links $= \frac{9(9-1)}{2}$

$= \frac{72}{2}$

$= 36$

For mesh topology 36 links will be needed

for star topology:

There is only 1 computer so there will be needing only 1 link connected to hub.

For more secured network, I would prefer star topology rather than Mesh topology.

~~in topology~~
~~We know, mesh, is connected to~~

We know in mesh topology, nodes are connected to each other. So if one node is attacked then other nodes will not remain intact. On the other hand, in star topology the nodes are seperately connected to a hub. So if one node is attacked then other nodes will remain intact because they are not connected with each other.

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BBS

That's why I'll choose Star over Mesh topology.

(b)

Half Duplex:

Advantage:

① It is easy to implement

Disadvantage:

① The speed of this transmission slowers and it cannot flow data simultaneously.

Full Deplex:

Advantage:

① Data flow is both way. It can receive send data simultaneously.

Disadvantage:

① It takes more bandwidth and it is more costly.

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6	64	10
	60	
	4	

$X = 8^2 \bmod 6 = 64 \bmod 6 = 4$

$Y = (4+1) \bmod 6 = 5$

∴ I will be in PC4. Freind will be in PC5.

So, PC4 in point E.
PC5 is in point F.

for E to r40

MAC of E	MAC of r40	IP of E	IP of F	6000	7000	Data	T

for r40 to r42

Mac of r40	Mac of r42	IP of ~~r40~~ E	IP of ~~r42~~ F	600	700	Data	T

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r42 to r52

Mac of r42	Mac of r52	Ip of E	Ip of F	6000	7000	Data	T

r52 to r50

Mac of r52	Mac of r50	Ip of E	Ip of F	6000	7000	data	T

r50 to F

Mac of r50	Mac of F	Ip of E	Ip of F	6000	7000	data	T

So the six points are E, r40, r42, r52, r50, F.

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b

Transport layer provides services to application layer and takes service from network layer. It implements flow control & Error control after receiving formatted data from upper layers. So if there any problems in the node's it can be detected because it searches in the nodes.

On the other hand DLL cannot detect problems in the nodes, it only can detect problem between the nodes because it provides Error control and flow control to see if the frames are damaged.

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a

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$X = 8 + 1 = 9$

$Y = 0 + 1 = 1$

Given,

$B = 9$ MHz

$SNR = 10 \times 1 = 10$

we know,

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

$$= 9 \times \log_2(11)$$

$$= 31.134 \text{ Mbps}$$

Again by Nyquist formula,

$$\text{bitrate} = 2 \times B \times \log_2(L)$$

$$\Rightarrow 31.134 = 2 \times 9 \times \log_2(L)$$

$$\therefore \lg(L) = 1.72 \quad \therefore L = 3.29 \text{ levels}$$

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if we round up then level will be 2 or 4.

For 2 level bit rate = 18 Mbps

For 4 " bit rate = 36 Mbps.

(b)

Bandwidth is the difference between highest and lowest frequency. It is measured as bit per second.

Throughput ~~is the~~ measures how many packets arrive successfully at the destination.

Throughput cannot be greater than bandwidth. It provides the information that how fast the net speed is. The actual number of packets being transferred.

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On the other hand, bandwidth is the theoretical measurement of the maximum number of packets that can be transferred.

So ~~bandw~~ throughput cannot be greater than bandwidth.

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