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Answer to the Question : 01

(a)

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So $X = 3 + 1 = 4$

and $Y = 1 + 1 = 2$

for mesh topology,

we need $\{x(x-1)/2\}$ cable link

$= \{4(4-1)/2\}$

$= 6$ cable link

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For star topology,

we need $y = 2$ cable link

According to the security level I prefer Mesh topology most. Why?

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(b)

For communicate with my friend I choose full duplex data flow.

Full duplex mode, both stations can tranmit and recive simultaneously. The capacity is devided betweeen signals travelling in both direction

The big advantage of full duplex is data can be sent and received at the same time.

On the other hand the disadvantage of half duplex is, it can recive and transmit data, but not at the same time.

The most advantage of half duplex is both device can send and recive data. Whole bandwidth can be utilised as at a time only one signal transmits.

On the other hand. in full duplex the bandwidth is divided so it becomes slow.

Answer to the Question - 02 (a)

$X = 3^2 \bmod 6 = 3$ my pc - is pc3

$Y = 4 \bmod 6 = 4$ my friend - PC4

Mac of A	Mac of B	IP of A	IP of B	6000	7000	data

(h)

Both data Link layer and Transport layer performed error control and flow control.

Data link layer control this flow and error control by node to node or hop to hop. It works in it's own network.

on the other hand transport layer works at sender to reciver. It work at the whole network cheacking

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Mainly the checking occurs at data link layer most of the time. So transport layer can't get any error.

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Answer to the Question no-04

(a)

Here, X = 3 + 1 = 4

Y = 1 + 1 = 2

bandwidth = 4 MHz

SNR = 10 X 2

= 20

First, we use the shannon formula to find our upper limit.

$C = B \log_2(1 + SNR)$

$= 4 \times 10^6 \log 2(1 + 20)$

$= 17\,569\,269.69$

$= 17.569$ Mbps

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Then useing the Nyquist formula to find the number of signal levels.

$17.569 = 2 \times 4 \times \log_2 L$

$\Rightarrow 2.196 = \log_2 L$

$= \log_e 2$

Scanned with CamScanner

(b)

Throughput is an actual measure of How much data is successfully transferred from source to destination, and bandwidth is a theoretical measure of how much data could be transferred from source to destination.

Throughput measures speed while bandwidth is only indirectly related to speed.

No throughput can't greater than bandwidth because it's works with actual measure, so occurs some loss. But bandwidth is a theoretical measure of bandwidth so it's high.

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$\Rightarrow \log_2 L = \log_2 2$

$\Rightarrow \log_2 L = 2.196$

$\Rightarrow \log_2 L = 2^{2.196}$

$\Rightarrow L = 2.196$

Repeat!