Mid-Semester Exam Spring-2020

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16101122

Ans to the Q. No. 1 (a)

My ID is 16101122.

$X = 2 + 1 = 3$

$Y = 2 + 1 = 3$

⇒ In mesh topology:

we need Links ⇒ $N(N-1)/2$

⇒ $3(3-1)/2$

⇒ $3.2/2$

⇒ $6/2$

⇒ 3

we need 3 Links in mesh topology.

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⇒ In star topology doesn't allow direct communication between devices, a divice must have to communicate through hub. we need 1 hub and 3 links.

(2) 16/01/22

Difference between star and mesh topology:

Star	Mesh
1. In star topology the nodes are connected to the central hub or router.	1. In mesh, the nodes are connected to each other via dedicated link.
2. The cost of star topology is less	2. It is expensive.
3. The complexity of star is quite simple	3. The complexity of mesh is complex.
4. In star topology, the information is travel from central hub to all the nods	4. In mesh, the information is travel from nods to nods
5) Star topology is very good extensible.	5) It is poor extensible.
6) twisted pair cable is used for connection	6) twisted pair coaxial cable and optical fiber cable are used for connection
7) Star topology is used in Lan as setup is easy	7) Mesh topology is used in WAN.

So I think star topology is more secure than mesh topology.

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Ans to the S. No. 04 (A):

Here

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$\therefore x = 2+1 = 3$

and $y = 2+1 = 3$

$SNR = 10 \times 3 = 30$

Band with = 3 MHz.

Now, we use shenon formala for finding the bitrate.

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

$$= 3 \times 10^6 \times \log_2 (1+30)$$

$$= 3 \times 10^6 \times \log_2 31$$

$$= 3 \times 10^6 \times 4.95$$

$$= 14850000 \text{ bps.}$$

$$= 14.85 \text{ Mbps.}$$

(5) 16/8/22

Now we use Nyanist formula for finding the singnal levels

Bitrate = 2 * bandwith * $\log_2 L$

$\Rightarrow 14.85 = 2 * 3 * \log_2 L$

$\Rightarrow 2.475 = \log_2 L$

$\Rightarrow L = 2^{2.475}$

$\therefore L = 5.56$

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So, the appopriate bit rate is 14.85 Mbps and 5.56 single levels.

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Ans to the Q. No. 4 (b)

⇒ Difference between bandwidth and throughput

Key	Bandwidth	Throughput
Definition	Data capacity of a channel which can be transferred in specific period of time	Actual measure of data transferred over a specific period of time
Measurement unit	Bits	Bits per sec
Objective	To transfer data	To communicate
Layer	physical Layer of osi model	Any Layer of osi model
Dependancy	No Dependency	Dependent on latency
Impact	No impacted by physical destructions	Highly impact by external interference
Analogy	Speed of water coming out of tap in particular time frame	Actual water flown out of tap in particular time fra

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~~No, bandwidth is greater than throughput.~~

Yes, throughput can be greater than Bandwidth as it helps to measure how fast we can actually send data and it depends on latency.