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CSE 330

Quiz 2

Fall 2022

Total Marks 15

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1. **[CO2]** Suppose, XYZ Telecom company has a bandwidth of 4.5 kHz (0.3 to 4.8 kHz) assigned for voice calls. If the signal-to-noise ratio is 4025. What is the theoretical highest bit rate of the channel? How many levels are required to send the signal? [5]

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2. **[CO2]** Write the difference between bandwidth and throughput. If the distance between the sender and receiver is higher then the transmission delay becomes higher as well. Yes or No? Explain your answer. [2]

The difference between bandwidth and throughput i — ? X

0 X

Yes, if the dastance between the sender and receiver is higher then the transmission delay becomes higher a well. Because if we increase the distance the transmission delay will increase And if we decrease the distance between sended and reciver the transmission delay will be reduced.

3. **[CO2]** Suppose an end device A wants to send a frame containing a black and white image to another end device B. There are a total of 4 routers(R1,R2,R3,R4) in between them. The image being sent is a 1080*1920-pixel image. Every pixel is represented with 1 bit. The processing time(p) of each router in given below:

I. R1: p = 1μs
II. R2: p = 1.5μs
III. R3: p = 2μs
IV. R4: p = 1μs

The image is being sent through a link of bandwidth 7 MBps and device B is 8500 Km away from device A. The signal passes through the link at a speed of 2.5×10^8 m/s. Considering there is no queuing time, calculate the total delay for this transmission. [5]

Image is 1080 * 1920 pixel

= 2073600

= 2073600 bit

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4. **[CO2]** A non-periodic composite signal contains frequencies from 5 to 40 KHz. The peak amplitude is 10 V for the lowest and the highest signals and is 30 V for the 20-KHz signal. Assuming that the amplitudes change gradually from the minimum to the maximum and then maximum to the minimum, draw the frequency spectrum. [3]

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