Tutorial 4

Q.1 In a token ring network the transmission speed is 10^7 bps and the propagation speed is 200 meters/micro second. The 1-bit delay in this network is equivalent to how much cable size?

Q.2 The loss in a cable is usually defined in decibels per kilometer (dB/km). If the signal at the beginning of a cable with -0.3 dB/km has a power of 2 mW, what is the power of the signal at 5 km?

Q.3 A digitized voice channel is made by digitizing a 4-kHz bandwidth analog voice signal. We need to sample the signal at twice the highest frequency (two samples per hertz). We assume that each sample requires 8 bits. What is the required bit rate?

Q.4 Consider a noiseless channel transmitting 265 kbps with a bandwidth of 20 kHz. How many signal levels are needed?

Q.5 Consider a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with two signal levels. Calculate the maximum bit rate.

Q.6 If the bandwidth of the channel is 5 Kbps, how long does it take to send a frame of 100,000 bits out of this device?

Q.7 How many bits can fit on a link with a 2 ms delay if the bandwidth of the link is 1 Mbps?