Tutorial 3

Question 1

A computer monitor has a screen resolution of 1920 x 1200 pixels. Calculate the number of bytes for one frame if each pixel can display 16,777,216 colors. Calculate the bit rate if the monitor has the refresh rate of 59 Hz.

Question 2

An optical disc has the capacity of 700 Mbytes. How many minutes of stereo CD audio can be stored on a single optical disc?

Question 3

An analog transmission system has the source, the destination, and a number of repeaters. Each transmission segment adds noise to the signal. Assume that each repeater recovers the original signal without distortion but that the noise accumulates. At the first repeater, SNR = 40 dB. What is the SNR after 9 repeater links?

Question 4

A speech signal has a bandwidth of 8 KHz.

(a) If the speech signal is digitized and transmitted over a 64 Kbps modem. What is the SNR of the received speech signal?

(b) What modem speed is needed if we require an SNR of 40 dB?