KOLEJ UNIVERSITI POLY-TECH MARA KUALA LUMPUR

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DIPLOMA IN COMPUTER SCIENCE (CC101)

TNW2033: Data Communications Concept

TUTORIAL 4

CHAPTER 4 : SIGNALS

1. Describe the three characteristics of a sine wave.
2. Give two examples of:
   a. analog information
   b. digital information
3. Contrast a periodic signal with an aperiodic signal.
4. Draw two sine waves on the same time-domain plot. The characteristics of each signal are given below:
   Signal A : amplitude 20, frequency 8, phase 0
   Signal B : amplitude 10, frequency 4, phase 90
5. What is the bandwidth of a signal that can be decomposed into four sine waves with frequencies at 0 Hz, 20 Hz, 50 Hz and 200 Hz? All maximum amplitudes are the same. Draw the frequency spectrum.
6. A composite signal contains frequencies from 10 KHz to 30 KHz. The amplitude is zero for the lowest and the highest signals and 30 volts for the 20 KHz signal. Assuming that the amplitudes change gradually from the minimum to the maximum, draw the frequency spectrum.
7. A periodic composite signal with a bandwidth of 2000 Hz is composed of two sine waves. The first one has a frequency of 100 Hz with a maximum amplitude of 20 volts; the second one has a maximum amplitude of 5 volts. Draw the frequency spectrum.