

King Fahd University of Petroleum and Minerals  
College of Computer Sciences and Engineering  
Department of Computer Engineering

**COE 341 – Data & Computer Communications (T081)**

**Programming Assignment # 01 (due date: Monday 01/12/2008 during class period)**

**\*\*\* Submit both the program code, in *softcopy*, and the plots, in *hardcopy*. \*\*\***

**Part # 1 (20 points):** Using MATLAB, plot the half-wave rectified cosine signal listed in table A.1 of Appendix A (page 838) of the text book. Assume that the signal period  $T = 1$  ms and the peak amplitude  $A = 1$  V. Plot the signal from  $t = -2$  ms to  $t = +2$  ms.

**Part # 2 (80 points):**

- i. Using MATLAB, plot up to the first *three* frequency components (i.e. up to  $n = 5$ ) of the equivalent Fourier series representation of the half-wave rectified cosine signal considered in Part (1). Use the same assumptions of Part (1) for the plot.
- ii. Using MATLAB, plot up to the first *seventeen* frequency components (i.e. up to  $n = 33$ ) of the equivalent Fourier series representation of the half-wave rectified cosine signal considered in Part (1). Use the same assumptions of Part (1) for the plot.