KFUPM - COMPUTER ENGINEERING DEPARTMENT

COE-341 – Data and Computer Communication
Quiz 02 - March 8th, 2010   Take home quiz
Due on Wed March 10th, 2010 (class time)

Student Name:
Student Number:

---

1) (15 points) Consider the PRIODIC signal $s(t)$ shown in Fig. 1:

a) (1 points) Specify the type of signal $s(t)$ in terms of being analog or discrete/digital? Why?

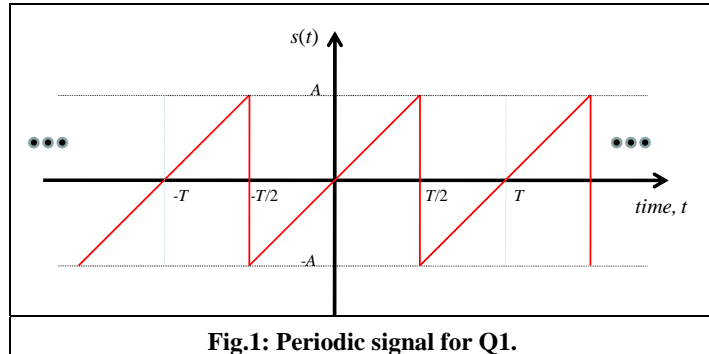b) (2 points) Compute the fundamental frequency for $s(t)$?

c) (2 points) Compute the energy for $s(t)$, Es?

Fig.1: Periodic signal for Q1.

d) (4 points) Compute the power for the signal $s(t)$, P_s?

e) (5 points) What is the minimum frequency (fmin) contained in the signal?

f) (1 points) What is the maximum frequency (fmax) contained in the signal?

Assume: $T = 2$ sec, and $A = 2$ volt.

2) (10 points) On the subject of Fourier series expansion and sinusoids:

a) (4 points) Explain in words or using mathematical expression what Fourier series expansion is?

b) (2 points) Is the expansion applicable to any s(t)? Specify the requirements on s(t)?

c) (4 points) Consider $s(t) = 2 \times \cos(10t + 5)$. Determine the amplitude, phase, frequency in radian/sec, frequency in Hz, and the period for s(t).