Problem Set #6
Problems Due: 11 March 2008

Problems #1-6
Do the following problems from Haykin’s Book

Problems 3.3, 3.5, 3.8, 3.10, 3.17 and 3.18

Problem #7
There is another PAM technique which is based on gating the signal, s(t), by multiplying the signal, s(t), by a periodic gating function, p_{gate}(t) –See next page.

a. Find the spectrum of the gated signal, s_{gate} (t).
b. Draw the signal, s_{gate} (t), in the time domain.
c. Can we recover s(t) exactly (except for a constant)? Explain.
d. What is the condition on the sampling frequency, f_s, in order to recover, s(t), at the receiver?
Gated PAM

\[ s_{\text{gate}}(t) = s(t) \, p_{\text{gate}}(t) \]

Diagram:
- \( s(t) \) is the input signal.
- \( p_{\text{gate}}(t) \) is the gate function.
- \( s_{\text{gate}}(t) \) is the gated signal.
- LPF filters the gated signal.
- The output is \( k \, s(t) \).

Timeline:
- \( \tau, T, 2T, t \) are time intervals.
- \( s(t) \) is a waveform.
- \( p_{\text{gate}}(t) \) is a periodic pulse.