PROBLEM:

Circle the correct answer to each of these short answer questions (3 pts. each):

1. A signal $x(t)$ is defined by: $x(t) = \sum_{k=-10}^{10} k e^{j8\pi kt}$. The Nyquist Rate for sampling $x(t)$ is

   (a) 160 Hz

   (b) 80 Hz

   (c) 40 Hz

   (d) 160π Hz

   (e) 320π Hz

2. Determine the period (T) of the signal $x(t)$ defined by: $x(t) = \sum_{k=-10}^{10} k e^{j8\pi kt}$.

   (a) $T = 0.125$ sec.

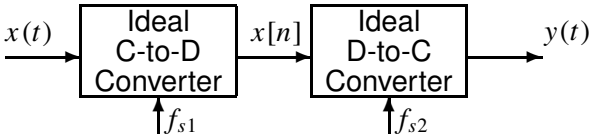
   (b) $T = 4$ sec.

   (c) $T = 0.25$ sec.

   (d) $T = 80\pi$ sec.

   (e) $x(t)$ is *not* periodic

3. A signal $x(t) = 4\cos(100\pi t)$ is sampled at $f_{s1} = 75$ Hz and then reconstructed at a different sampling rate of $f_{s2} = 150$ Hz.



   The output of the ideal D-to-C converter is:

   (a) $y(t) = 4\cos(50\pi t)$

   (b) $y(t) = 4\cos(100\pi t)$

   (c) $y(t) = 4\cos(150\pi t)$

   (d) $y(t) = 4\cos(200\pi t)$

4. A rotating disk with one spot is spinning *clockwise* at the rate of 9 revolutions per second. If the disk is illuminated with a strobe light that flashes once every 0.1 seconds, determine the movement of the spot that you will see.

   (a) The spot appears to *stand still.*

   (b) The spot appears to rotate *counter-clockwise* at a rate of 9 revolutions per second.

   (c) The spot appears to rotate *clockwise* at a rate of 9 revolutions per second.

   (d) The spot appears to rotate *counter-clockwise* at a rate of 1 revolution per second.

   (e) The spot appears to rotate *clockwise* at a rate of 1 revolution per second.