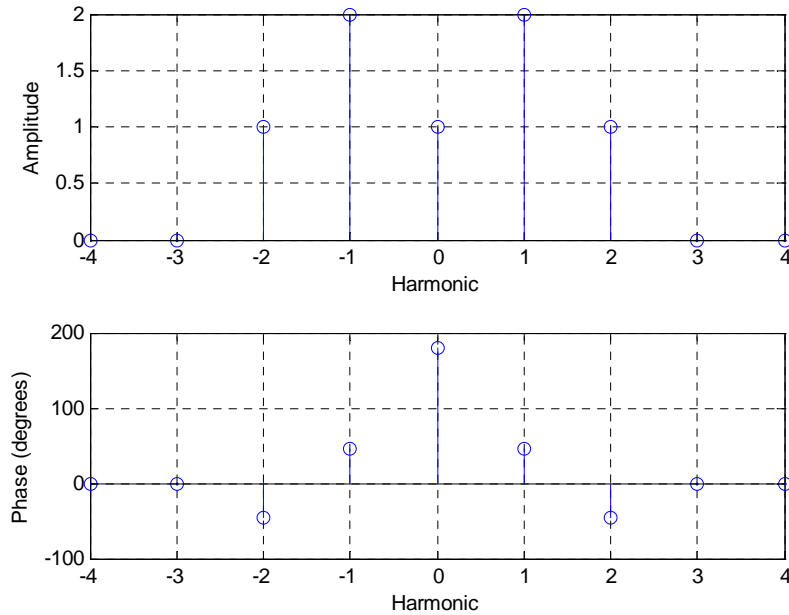


Name _____ CM _____

ECE-300, Quiz #7

Problems 1-3 refer to the following plot (all angles are multiples of 45 degrees)



1) Is this a valid spectrum plot for a real valued function $x(t)$?

a) Yes b) No

2) Assuming the magnitude portion of the spectrum is correct, what is the average power in $x(t)$?

a) 4 b) 7 c) 11 d) 12

3) Assuming the plot is a valid spectrum plot for a real valued function $x(t)$, the average value of $x(t)$ is

a) 1 b) 2 c) $\frac{7}{4}$ d) -1

Problems 4-6 refer to the following Fourier series representation of a periodic signal

$$x(t) = 2 + \sum_{k=-\infty}^{k=\infty} \frac{2}{2 + jk} e^{\frac{jkt}{2}}$$

4) If $x(t)$ is the input to a system with transfer function

$$H(\omega) = \begin{cases} 2 & |\omega| < 0.4 \\ 0 & \text{else} \end{cases}$$

the output $y(t)$ in steady state will be

- a) 0 b) 3 c) 6 d) $1.79 \cos(\pi t - 26.6^\circ)$ e) $6 + 3.58 \cos(\pi t - 26.6^\circ)$

5) If $x(t)$ is the input to a system with transfer function

$$H(\omega) = \begin{cases} 2 & |\omega| > 0.4 \\ 0 & \text{else} \end{cases}$$

the output $y(t)$ in steady state will be

- a) $2x(t)$ b) $2x(t) - 3$ c) $2x(t) - 6$ d) none of these

6) If $x(t)$ is the input to a system with transfer function

$$H(\omega) = \begin{cases} 0 & 0.4 < |\omega| < 0.6 \\ 2 & \text{else} \end{cases}$$

the output $y(t)$ in steady state will be

- a) $1.79 \cos(0.5t - 26.6^\circ)$ b) $3.58 \cos(0.5t - 26.6^\circ)$
c) $2x(t) - 1.79 \cos(0.5t - 26.6^\circ)$ d) $2x(t) - 3.58 \cos(0.5t - 26.6^\circ)$