

Name \_\_\_\_\_ CM \_\_\_\_\_

### Quiz 9

(no calculators allowed, you may use the transform tables)

1) If  $x(t) = 2\delta(t-3)$ , then  $X(\omega)$  is

- a)  $2u(t-3)$    b)  $2u(\omega-3)$    c)  $2e^{j3\omega}$    d)  $2e^{-j3\omega}$    e) none of these

2) If  $X(\omega) = \frac{j\omega}{2+j\omega}$ , then  $x(t)$  is

- a)  $te^{-2t}u(t)$    b)  $-2e^{-2t}u(t)$    c)  $-2e^{-2t}u(t) + \delta(t)$    d)  $-2e^{-2t}\delta(t)$    e) none of these

3) If  $x(t) = 3e^{-2t^2}$ , then  $X(\omega)$  is

- a)  $3\sqrt{\frac{\pi}{2}}e^{-\omega^2/2}$    b)  $3\sqrt{2\pi}e^{-\omega^2/8}$    c)  $3\sqrt{\frac{\pi}{2}}e^{-\omega^2/4}$    d) none of these

4) If  $X(\omega) = \text{sinc}\left(\frac{\omega}{3}\right)$ , then  $x(t)$  is

- a)  $\frac{2\pi}{3}\text{rect}\left(\frac{3t}{2\pi}\right)$    b)  $\frac{3}{2\pi}\text{rect}\left(\frac{3t}{2\pi}\right)$    c)  $\text{rect}\left(\frac{3t}{2\pi}\right)$    d)  $\frac{3}{2\pi}\text{rect}\left(\frac{2\pi t}{3}\right)$    e) none of these

5) If  $x(t) = \text{sinc}^2\left(\frac{3t-9}{2}\right)$ , then  $X(\omega)$  is

- a)  $\frac{2}{3}e^{-j\omega 3}\Lambda\left(\frac{\omega}{3\pi}\right)$    b)  $\frac{2}{3}e^{-j\omega 9/2}\Lambda\left(\frac{\omega}{3\pi}\right)$    c)  $\frac{2}{3}e^{-j\omega 9}\Lambda\left(\frac{\omega}{3\pi}\right)$    d) none of these

6) If  $X(\omega) = \text{sinc}\left(\frac{\omega T}{\pi}\right)$ , the first nulls (zero points) are at

- a)  $\omega = \pm 1$    b)  $\omega = \pm \frac{\pi}{T}$    c)  $\omega = 0$    d)  $\omega = \pm \frac{T}{\pi}$    e) none of these

7) If  $x(t) = A \cos(2t)$ ,  $X(\omega)$  will be nonzero

- a) for all  $\omega$    b) for all  $\omega = 2k$ ,  $k$  an integer   c) for  $\omega = 2$  only   d) for  $\omega = \pm 2$

8) If we have the transfer function

$$H(s) = \frac{1}{(s+2)(s+20)}$$

the bandwidth of the system is

- a) 2 rad/sec   b) 2 Hz   c) 20 rad/sec   d) 20 Hz   e) none of these