Name_____ CM_____

Quiz 2
(no calculators)

1) The integral $\int_{-t+2}^{\infty} \delta(\lambda-5)d\lambda$ is equal to

a) $u(t-5)$ b) $u(-t+2)$ c) 0 d) $u(t+3)$ e) $u(t-3)$ f) none of these

2) The integral $\int_{-\infty}^{t+3} \delta(\lambda+2)d\lambda$ is equal to

a) $u(t+2)$ b) $u(t+3)$ c) 0 d) $u(t+5)$ e) $u(t-5)$ f) none of these

3) The integral $\int_{-\infty}^{t} e^{-\lambda}\delta(\lambda-2)d\lambda$ is equal to

a) $e^{-2}u(t-2)$ b) $e^{-2}u(t)$ c) $e^{-t}u(t)$ d) $e^{-t}u(t-2)$ e) $e^{2}u(t-2)$ f) none of these

4) The integral $\int_{2}^{t-1} \delta(\lambda-1)d\lambda$ is equal to

a) 0 b) $-u(1-t)$ c) $-u(2-t)$ d) $-u(3-t)$ e) $u(t-3)$ f) none of these

5) The function $x(t)=\cos(t)+3e^{j3t}$ is

a) not periodic
b) periodic with period 2π
c) periodic with period 3π
d) periodic with period 2

6) The function $x(t) = \cos(3\pi t + 45^o) + j\sin(\pi t)$ is

a) not periodic
b) periodic with period 2π
c) periodic with period 2
d) periodic with period 1

7) The function $x(t) = 2\cos(t) + \cos(\sqrt{2}t + 30^o)$ is

a) not periodic
b) periodic with period 1
c) periodic with period 2
d) periodic with period 2π

8) Assume $x(t) = 2 + \cos(t)$ is the input to an LTI system with transfer function $H(s) = \frac{2}{s+1}$. The **steady state output** will be

a) $y(t) = 2\cos(2t)\frac{2}{1+j}$ b) $y(t) = 4 + \frac{4}{\sqrt{2}}\cos(2t)$ c) $y(t) = 4 + 4\cos(2t)$

d) $y(t) = 4 + 4\cos(2t - 45^o)$ e) $y(t) = \frac{4}{\sqrt{2}}\cos(2t - 45^o)$ f) none of these

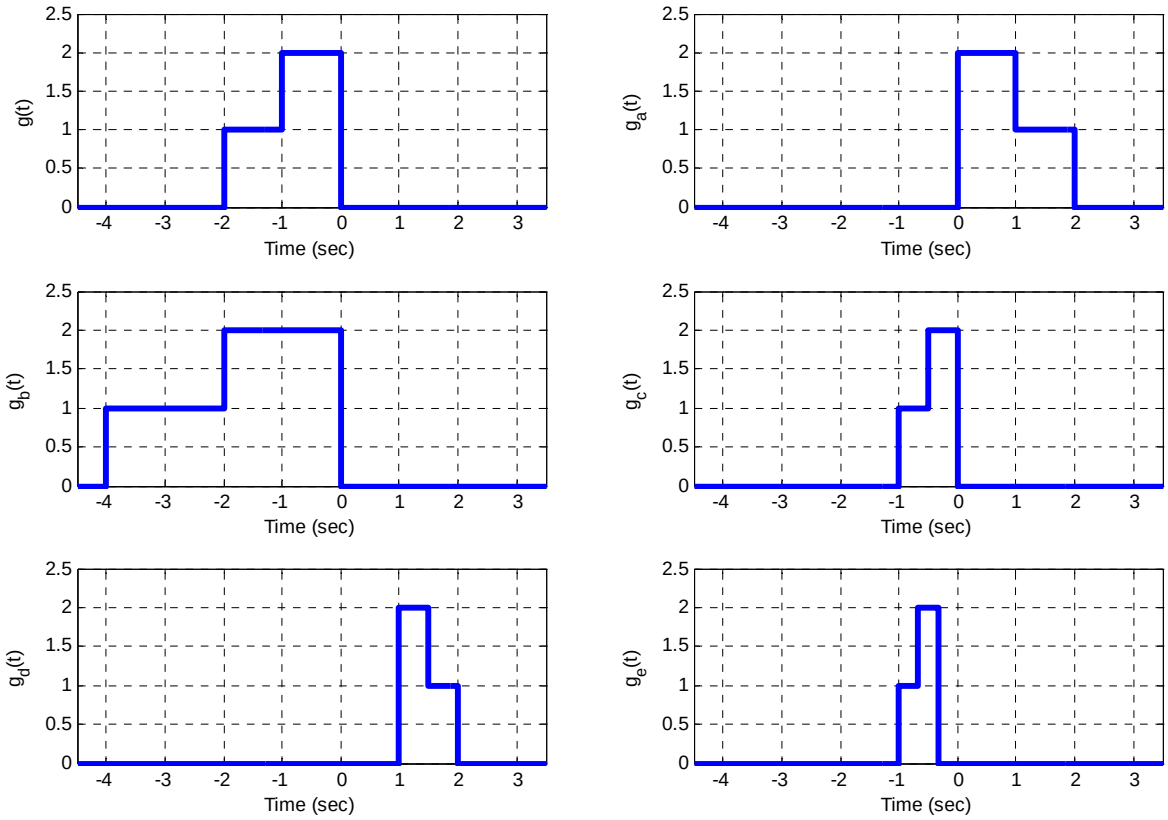
9) The **bandwidth** of the LTI system with transfer function $H(s) = \frac{10}{2s+3}$ is

a) 3 rad/sec b) 3 Hz c) 2 rad/sec d) 0.5 Hz e) 1.5 rad/sec f) 1.5 Hz

10) If we made the variable substitution $\sigma = \frac{\lambda}{2}$ in the integral $\int_0^4 e^{\lambda} x\left(\frac{\lambda}{2}\right) d\lambda$, the new integral is

a) $2\int_0^2 e^{2\sigma} x(\sigma) d\sigma$ b) $\frac{1}{2}\int_0^2 e^{\frac{\sigma}{2}} x(\sigma) d\sigma$ c) $2\int_0^4 e^{2\sigma} x(\sigma) d\sigma$ d) $\frac{1}{2}\int_0^4 e^{\frac{\sigma}{2}} x(\sigma) d\sigma$ f) none of these

In the figure below, $g(t)$ is the original signal (in the upper left corner)



11) Which signal represents $g(1+3t)$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$

12) Which signal represents $g\left(\frac{t}{2}\right)$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$

13) Which signal represents $g(2t)$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$

14) Which signal represents $g(2(1-t))$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$

15) Which signal represents $g(-t)$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$

16) Which signal represents a purely **compressed** $g(t)$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$

17) Which signal represents a purely **expanded** $g(t)$? $g_a(t)$ $g_b(t)$ $g_c(t)$ $g_d(t)$ $g_e(t)$