

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

### ECE-205 Quiz 5

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)  $e^2u(t-2)$    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 integral  $h(t) = \int_{-\infty}^{t+1} e^{-(t-\lambda)} \delta(\lambda + 3) d\lambda$  can be simplified as

- a)  $e^{-(t+3)}u(t)$    b)  $e^{-(t+3)}u(t+1)$    c)  $e^{-(t+3)}u(t+3)$    d)  $e^{-(t+3)}u(t+4)$

6) The integral  $h(t) = \int_{-\infty}^t e^{-(t-\lambda)} \delta(\lambda-1) d\lambda$  can be simplified as

- a)  $e^{-(t-1)} u(t)$    b)  $e^{-(t-1)} u(t-1)$    c)  $e^{-(t-1)} u(t-3)$    d)  $e^{-(t-1)} u(t-4)$

7) The **impulse response** for the LTI system  $y(t) = \int_{-\infty}^{t+1} e^{-(t-\lambda)} x(\lambda-3) d\lambda$  is

- a)  $h(t) = e^{-(t-3)} u(t)$    b)  $h(t) = e^{-(t-3)} u(t+1)$    c)  $h(t) = e^{-(t-3)} u(t-3)$   
d)  $h(t) = e^{-(t-3)} u(t-2)$    e)  $h(t) = e^{-(t-3)} u(t-1)$    f) none of these

8) The **impulse response** for the LTI system  $y(t) = x(t-1) + \int_{-\infty}^{t-2} e^{-(t-\lambda)} x(\lambda-3) d\lambda$  is

- a)  $h(t) = \delta(t-1) + e^{-(t-3)} u(t)$    b)  $h(t) = u(t-1) + e^{-(t-3)} u(t)$   
c)  $h(t) = \delta(t-1) + e^{-(t-3)} u(t-1)$    d)  $h(t) = u(t-1) + e^{-(t-3)} u(t+1)$   
e)  $h(t) = \delta(t-1) + e^{-(t-3)} u(t-3)$    f) none of these

9) The **impulse response** for the LTI system  $\dot{y}(t) - y(t) = x(t-1)$  is

- a)  $h(t) = e^{(t-1)} u(t-1)$    b)  $h(t) = e^{-(t-1)} u(t-1)$    c)  $h(t) = e^{-(t-1)} u(t)$   
d)  $h(t) = e^{(t-1)} u(t)$    e) none of these

10) Simplify the following as much as possible  $x(t) = e^{t-1} \delta(t-2)$

11) Simplify the following integral as much as possible  $y(t) = \int_{-\infty}^{\infty} \delta(t-\lambda) \delta(\lambda-3) d\lambda$

12) Simplify the following as much as possible  $y(t) = \frac{1}{2} [x(t+1) - x(t-1)] \delta(t-3)$