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) $e^{2}u(t-2)$ 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 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 $y(t) = \frac{1}{2}[x(t+1) - x(t-1)]\delta(t-3)$

13) An LTI system has input, impulse response, and output as shown below. Determine numerical values for the parameters *a-l.* Note that parameters *a-g* correspond to *times*, and *h-l* correspond to *amplitudes.*

Note that the output graph is only an approximate sketch of the output. Do not try to read values from this sketch.