

ECE-300, Quiz #1

1) The function $x(t) = e^{j\frac{t}{4}} + e^{j\frac{t}{2}}$ is

- a) not periodic
- b) periodic with fundamental period π second
- c) periodic with fundamental period 2π seconds
- d) periodic with fundamental period 8π seconds

2) The function $x(t) = \cos(t) + \sin(2\pi t)$ is

- a) not periodic
- b) periodic with fundamental period 1 second
- c) periodic with fundamental period π seconds
- d) periodic with fundamental period 2π seconds

3) The function $x(t) = \sin\left(\frac{\pi}{2}t\right)\delta(t-1) + t$ can be simplified as

- a) $x(t) = 2$
- b) $x(t) = 1 + t$
- c) $x(t) = \delta(t-1) + t$
- d) $x(t) = \delta(t-1) + 1$

4) The integral $\int_0^{10} \delta(\lambda-1)\delta(\lambda-2)d\lambda$ can be simplified as

- a) 0
- b) 1
- c) none of these

5) The integral $\int_{-1}^5 t\delta(\lambda-2)d\lambda$ can be simplified as

- a) 2
- b) t
- c) $2\delta(t-2)$
- d) $t\delta(t-2)$

6) The integral $\int_{-1}^2 \delta(t-3)dt$ can be simplified as

- a) 1
- b) 0
- c) 3
- d) $\delta(t-3)$

7) The integral $\int_{-\infty}^{\infty} u(t+1)u(t-2)e^{-t}dt$ can be simplified as

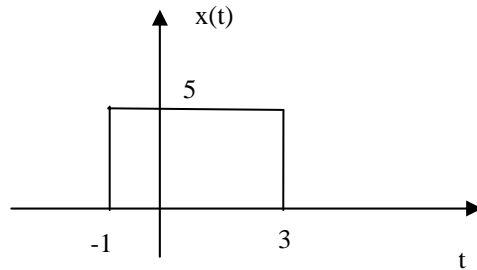
- a) $\int_{-1}^{\infty} e^{-t}dt$
- b) $\int_2^{\infty} e^{-t}dt$
- c) $\int_{-1}^2 e^{-t}dt$
- d) none of these

8) The integral $\int_{-\infty}^{\infty} u(-1-\lambda)e^{-|\lambda|}d\lambda$ can be simplified as

- a) $\int_{-\infty}^{-1} e^{-|\lambda|}d\lambda$ b) $\int_{-1}^{\infty} e^{-|\lambda|}d\lambda$ c) $\int_1^{\infty} e^{-|\lambda|}d\lambda$ d) none of these

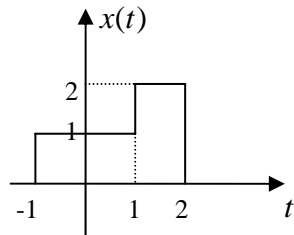
9) The function $x(t)$ below can best be represented by the function

- a) $x(t) = 5\Pi\left(\frac{t}{2}\right)$ b) $x(t) = 5\Pi\left(\frac{t-1}{2}\right)$
 c) $x(t) = 5\Pi\left(\frac{t}{4}\right)$ d) $x(t) = 5\Pi\left(\frac{t-1}{4}\right)$



10) The function $x(t)$ below can best be modeled by the function

- a) $x(t) = u(t+1) + u(t-1) - u(t-2)$ b) $x(t) = u(t+1) + 2u(t-1) - 2u(t-2)$
 c) $x(t) = u(t+1) + u(t-1) - 2u(t-2)$ d) $x(t) = u(t+1) + 2u(t-1) - 3u(t-2)$



11) The **average power** in the signal $x(t) = ce^{j\omega t}$ is

- a) 0 b) $\frac{|c|}{2}$ c) $|c|^2$ d) $\frac{|c|^2}{2}$

12) The **average power** in the signal $x(t) = A \cos(\omega t + \theta)$ is

- a) $\frac{A}{2}$ b) A c) A^2 d) $\frac{A^2}{2}$

13) The signal $x(t) = A\cos(\omega t)[u(t) - u(t-10)]$ is

a) an energy signal b) a power signal c) neither an energy or power signal

14) The signal $x(t) = 2\cos(2t) + j2\sin(2t)$ is

a) an energy signal b) a power signal c) neither

15) The signal $x(t) = 2u(t) - u(t-1) - 2u(t-2)$ is

a) an energy signal b) a power signal c) neither

16) The signal $x(t) = e^t u(t)$ is

a) an energy signal b) a power signal c) neither