



Department of Electrical and Electronic Engineering
Level-3, Term-I
Mid Term Examination, Spring-2023
Course Code: EEE 301
Course Title: Continuous Signals and Linear Systems

Notes:

Time: 1 Hour

a. Each question carries 30 marks.

Full Marks: 60

b. Figure on the right of each question indicate marks for respective question.

Answer any two questions including ques. No. 2

1. a. What is odd signal and even signal? (05)
b. Determine whether $x(t)$ is periodic or not. If periodic, find out its fundamental period. (10)

$$x(t) = \sin 13t$$

- c. For $x(t)$ given in Figure-1(c), plot $x(3t-6)$ and find out the expression of $x(3t-6)$. (15)

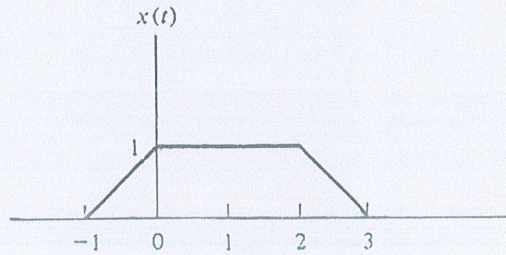


Figure-1(c)

2. a. Sketch the signal: $x(t) = u(t) + 5u(t-1) - 2u(t-2)$. (05)
b. “ $y(t) = e^{x(t)}$ is a linear system”-Yes/No? Justify your answer. (15)
c. Find out the power of the signal $x(t)$ of Figure-2(c). (10)

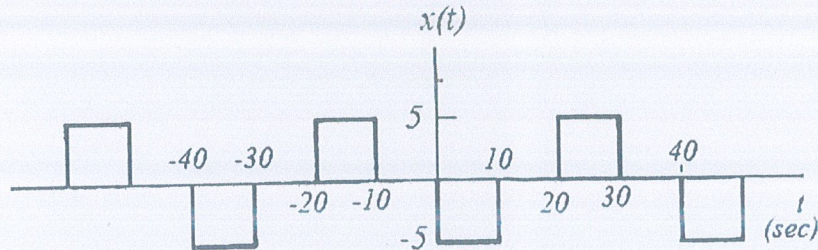


Figure-2(c)

3. a. If $x(t)$ and $y(t)$ denote the system input and output, respectively, find out whether the system, $y(t)=x(t)\cos x(t)$ is static or dynamic, causal or non-causal and time-invariant or variant. (15)

b. Evaluate the following integrals: (10)

(i) $\int_{-2}^4 (t + t^2) \delta(t - 3) dt$

(ii) $\int_0^3 e^{t-2} \delta(2t - 4) dt$

c. What is step function and impulse function? (05)