Dr Hari Singh

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

B.Tech - IV Semester (ECE)

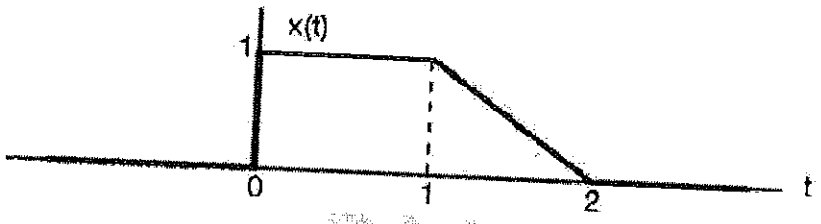
COURSE CODE: 18B11EC412 MAX. MARKS: 15

COURSE NAME: Fundamentals of Signals & Systems

COURSE CREDITS: 04 MAX. TIME: 1 Hour

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated against each question in square brackets.*

Q1. **a)** For the signal $x(t)$ illustrated in figure, Sketch and label $x\left(-\frac{3}{2}t+1\right)$ **[1] [CO1]**



b) Calculate Power (P_x) and Energy (E_x) for each of the following signals: **[2]**

i. $x(t) = e^{-2t}u(t)$

ii. $x[n] = \cos\left[\frac{\pi}{4}n\right] + \sin\left[\frac{\pi}{3}n\right]$

c) Determine whether or not each of the following signals is periodic. If the signal is periodic, determine its fundamental period: **[2]**

i. $x(t) = 1 + 2\cos(\pi t) + 3\sin\left(\frac{2\pi}{3}t\right) + 4\cos\left(\frac{\pi}{2}t + \frac{\pi}{4}\right)$

ii. $x[n] = \sin[\pi^2 n]$