JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

B.Tech-III Semester (ECE)

COURSE CODE(CREDITS): 18B11EC412 MAX. MARKS: 15

COURSE NAME: FUNDAMENTALS OF SIGNALS AND SYSTEMS

COURSE INSTRUCTORS: Dr Rajiv Kumar MAX. TIME: 1 Hour

Note: ***(a)****All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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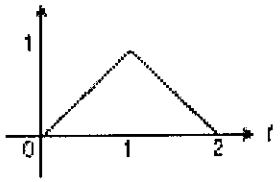
Qu.1: a) Differentiate between continuous time and discrete time signals. Explain with example uniformly sampled discrete signals. [2, CO-1]

b) Give the mathematical formulation of unit step signals corresponding to both signals for continuous and discrete time signals. [1, CO-1]

Qu. 2: a) What do you mean by the folding of a signal $x(t)$? Explain with an example [2, CO-1]

b) Draw $x(2t)$ and $x(0.5t)$ if $x(t)$ is given as below [1, CO-1]



Qu. 3: Draw even and odd part of a unit step signal. Also, prove that even part of a generalized signal $x(t)$ is $\frac{x(t)+x(-t)}{2}$ [3, CO-1]

Qu. 4: Following two systems are defined: (i) $y(t)=\sin x(t)$ (ii) $y(n)=nx(n)$ Prove that which one is time variant or time invariant [3, CO-2]

Qu. 5: a) Define a convolution relationship between input and output signals.

b) Using convolution property, compute the output. Given: $x(n)=h(n)=\alpha^n u(n)$ [3, CO-2]