

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -I EXAMINATION- 2024

B.Tech-III Semester (ECE)

COURSE CODE(CREDITS): 23B11EC311 (04)

MAX. MARKS: 15

COURSE NAME: FUNDAMENTALS OF SIGNALS & SYSTEMS

COURSE INSTRUCTORS: Dr Rajiv Kumar

MAX. TIME: 1 Hour

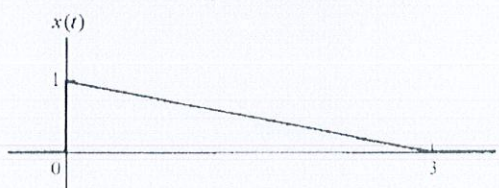
Note: (a) All questions are compulsory.

(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

Q-1:(a) What do you mean by the compression and stretching of a signal? Explain with giving example of each. [CO-1, 2]

(b) Sketch $x(t+2)$ and $x(2t+2)$; for the signal $x(t)$ drawn below:



[CO-1, 3]

Q-2: (a) What do you mean by the even and odd signal? Derive the following relationship for the odd part of signal, $Od(x(t)) = \frac{x(t) - x(-t)}{2}$ [CO-1, 3]

(b) Define unit step and unit impulse signal for continuous time signal and discrete time signal. Give the sketch of each signal. [CO-1, 3]

Q-3: (a) You are given following system defined by the relationship given below:

$$y(n) = \sum_{k=-\infty}^n x(k)$$

With the help of this, explain the invertible system. Also, identify, inverse system and identity system. [CO-1, 2]

(b) Check and justify, whether the following is representing a stable or unstable system.

Given, output of system $y(t) = e^t$ and input of the system is $x(t) = u(t) - u(t-1)$ [CO-1, 2]