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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- February-2019

B.Tech [CSE/IT], IV Semester

COURSE CODE: 10B11EC301

COURSE NAME: Signals and Systems

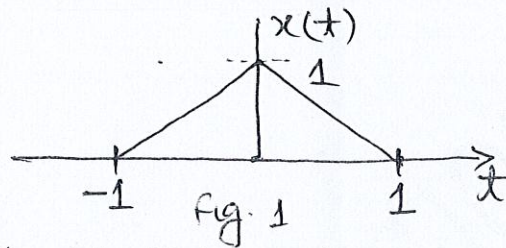COURSE CREDITS: 04

MAX. MARKS: 15

MAX. TIME: One Hour

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1 **(a)** For the signal $x(t)$ shown in Fig.1, Sketch and label the following signals (i) $x(2t + 1)$ (ii) $x(2 - t)$ **[03]** **CO1**

Fig. 1

(b) Write the relationship between unit step and unit impulse functions?   **[02]**

Q.2 A system is defined as: **[05]** **CO1**

$$y[n] = x[n - 4] + x[4 + n]$$

Check whether the systems is (i) Memory less (ii) Stable (iii) Causal (iv) Time-invariant (v) Linear

Q.3 **(a)** Using graphical method, determine the response of LTI system whose impulse response $h[n] = \{1, \underset{\uparrow}{4}\, 3, 2\}$ and input signal $x[n] = \{1, 3, 2, 1\}$.   **[03]** **CO2**

(b) Find the convolution integral of the following

$$x(t) = u(t), \text{ and } h(t) = e^{-t}u(t)$$

[02]