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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- OCT- 2017

B.Tech. III Semester

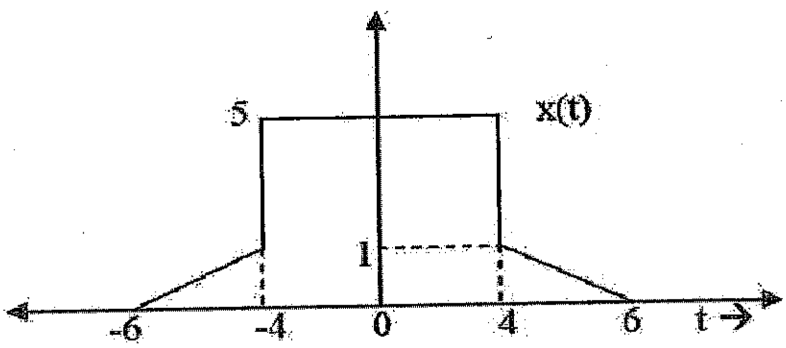
COURSE CODE: 10B11EC301 MAX. MARKS: 15

COURSE NAME: Signals and Systems

COURSE CREDITS: 4 MAX. TIME: One Hour

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

Q1. Sketch and label the signal $x(2t+3)$ for the continuous time signal $x(t)$ shown below:



(5)

Q2. (a) Check whether the discrete time signal $x[n] = 3e^{j(n+1)}$ is periodic or non-periodic. If periodic, then find its fundamental period. (3)

(b) Determine the total energy and average power of the signal $x(t) = e^{-j(2t+\frac{\pi}{4})}$. (2)

Q3. (a) Compute the convolution of the following signals:

$x(t) = u(t-3) - u(t-5)$

$h(t) = e^{-3t}u(t)$ (2)

(b) Determine the unit step response of the system defined by the following difference equation:

$y[n] = ay[n-1] + x[n]$

where a is a constant. (3)