JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- October-2018

B.Tech [ECE], III Semester

COURSE CODE: 10B11EC301   MAX. MARKS: 25
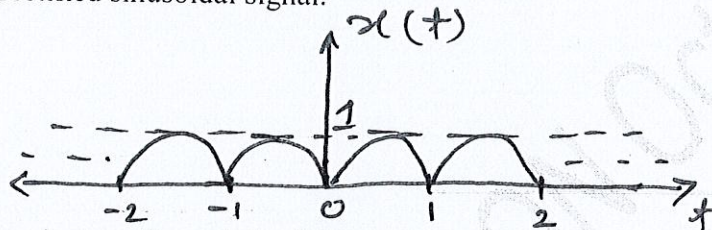
COURSE NAME: Signals and Systems

COURSE CREDITS: 04   MAX. TIME: 1.5 Hour

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

Q.1 Determine the exponential Fourier series representation for the following [05] CO3
full wave rectified sinusoidal signal.

Q.2 Find the Fourier transform of the following: CO3
(i) $x(t) = \sin\omega_0 t$ [2]
(ii) $x(t) = \cos\omega_0 t$ [2]
(iii)   plot the spectrum of both (i) and (ii)   [1]

Q.3 Find the Fourier transform of the following using properties: CO3
(i) $x(t) = \frac{1}{t}$ [2]
(ii) $x(t) = e^{-3t}u(t)$ [1]
(iii) $x(t) = \cos\omega_0 t\, u(t)$ [2]

Q.4 Consider a causal LTI system with frequency response $H(jw) = \frac{1}{(jw+3)}$, [05] CO3
and output $y(t) = e^{-3t}u(t) - e^{-4t}u(t)$ for an input $x(t)$. Determine the $x(t)$.

Q.5 Define the following Terms: [05] CO1
(i) Natural Response (ii) Forced Response (iii) Total Response
(iv) Convolution (v) Correlation