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TEST -1 EXAMINATION- September-2018

B.Tech [ECE], III Semester

COURSE CODE: 10B11EC301

MAX. MARKS: 15

COURSE NAME: Signals and Systems

COURSE CREDITS: 04

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) Sketch the first derivative of the following [02] CO1

(i) $x(t) = u(t) - u(t - 2)$ (ii) $x(t) = \text{sgn}(t) = \begin{cases} 1, & t > 0 \\ -1, & t < 0 \end{cases}$

(b) Define the unit step function and impulse function for continuous time signals. [01]

Q.2 (a) Find the response of a system, for which the impulse response of a system and input signal are $h[n] = \{1, 5, 9, 11\}$ & $x[n] = \{-2, -7, 9\}$ respectively (Use graphical method) [02] CO2

(b) Find the convolution integral of the following [02]
 $x(t) = u(t)$, and $h(t) = 4u(t)$

Q.3 If the output of the system $y[n] = x[(n/2)^2]$ then check whether it is [04] CO1
(i) Memory less (ii) Stable (iii) Causal (iv) Time-invariant

Q.4 (a) Define the following signal with examples: (i) energy and power signals (ii) even and odd signals (iii) periodic and non-periodic signal (iv) deterministic and random signals. [02] CO1

(b) Explain the signal operations in brief with examples. [02]