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**Question Paper Code : 70087**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Third Semester

Electronics and Communication Engineering

EC 3354 — SIGNALS AND SYSTEMS

(Common to: Computer and Communication Engineering/Electronics and Telecommunication Engineering/Medical Electronics)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State whether the following system  $y(t) = 2t \times (t)$  is time variant or not.
2. Differentiate between causal and non-causal systems.
3. Define Fourier transform.
4. If  $X(s) = \frac{2}{(s+3)}$ . Find the Laplace transform of  $\frac{dx(t)}{dt}$ .
5. Determine the impulse response  $h(t)$  of the following system  $y(t) = x(t - t_0)$ . Assume zero initial conditions.
6. Perform Convolution of the causal signal  $x_1(t) = 2u(t)$ ,  $x_2(t) = u(t)$  using Laplace transform.
7. Compare Fourier transform of discrete and continuous time signals.
8. State the Linearity property of Z transform.
9. What is a recursive system?
10. In an LTI System the impulse response,  $h(n) = C^n$  for  $n \leq 0$ . Determine the range of values of C, for which the system is stable.

