[EEC-201]
B.Tech. DEGREE Examination
Electronics & Communication Engineering
III SEMESTER

SIGNSALS AND SYSTEMS
(Effective from the admitted batch 2015–16)

Time: 3 Hours Max.Marks: 60

Instructions: Each Unit carries 12 marks.
Answer all units choosing one question from each unit.
All parts of the unit must be answered in one place only.
Figures in the right hand margin indicate marks allotted.

UNIT-I

1. a) Explain about the characteristic properties of Impulse signal 6
   b) Compare continuous-time and discrete-time systems 6

   OR

2. a) With diagrams, explain about the unit impulse and unit-step functions 6
   b) Find the average power of the signal, \( g_p(t) = A \cos(2\pi f, t) \) 6

UNIT-II

3. a) Discuss in detail about the Discrete time LTI systems 6
   b) Explain about LTI systems 6

   OR

4. a) List out and explain the properties of convolution sum 6
   b) Explain about singularity functions 6

UNIT-III

5. a) Find the Fourier transform of the signal \( g(t) = k_{\text{rect}} \left[ \frac{t}{T_0} \right] \) 6
   b) Find the Fourier transform of the Normalized Gaussian pulse \( g(t) = e^{-\pi t^2} \) 6
OR

6. a) Explain about the Response of LTI systems to complex exponentials  6
    b) What do you understand by convergence of Fourier series  6

UNIT-IV

7. a) With example, explain about the Discrete-time Fourier Transform  6
    b) Explain about the representation of a periodic signals  6

OR

8. a) List out and explain about any three properties of discrete time Fourier series  6
    b) Explain about the Fourier transform for periodic signals  6

UNIT-V

9. a) Find the Laplace transform of \( g(t) = e^{-at} u(t) \) and is ROC  6
    b) Explain about any two properties of Laplace transform  6

OR

10. a) Explain about region of convergence for the z-transform  6
    b) Compare the unilateral Laplace and Z-transforms  6