R16

SET - 1

II B. Tech I Semester Supplementary Examinations, March - 2021
SIGNALS & SYSTEMS
(Com to ECE, EIE and ECC)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
~~~~~~

PART –A

1. a) Any function f(t) can be expressed as a sum of its components along mutually Orthogonal functions. Write the condition on the function   (2M)

   b) Define Fourier Transform. Write short notes on Dirichlet's conditions.   (3M)

   c) What is the condition of LTI system to be stable?   (2M)

   d) Define Hilbert transform?   (2M)

   e) State the time scaling property of Laplace transform   (3M)

   f) How is Z-transform obtained from Laplace transform?   (2M)

PART -B

2. a) Explain about orthogonal signal space and evaluate mean square error   (7M)

   b) Determine whether the following system are time invariant or not   (7M)
   (i) $y(t) = tx(t)$ ii) $y(n) = \sin(x(n))$

3. a) Write the Dirichlet's conditions to obtain Fourier series representation of any Signal. Find the trigonometric Fourier series for half wave rectified sine wave.   (7M)

   b) Find the power and rms value of signal x(t)=$20cos2\pi t$.   (7M)

4. a) Explain the differences between various sampling techniques   (7M)

   b) What is zero order hold? Obtain the transfer function for zero order hold.   (7M)

5. a) Obtain conditions for the distortion less transmission through a system.   (7M)

   b) Explain briefly detection of periodic signals in the presence of noise by correlation.   (7M)

6. a) Find the Laplace transform of the following signal and its ROC.   (7M)
   $$x(t) = e^{-5t}[u(t) - u(t - 5)]$$
   b) When a function x(t) is said to be Laplace transformable?   (7M)

7. a) What are the methods by which inverse z-transform can be found out?   (7M)

   b) State and prove initial value and final value properties of z- transform.   (7M)