Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025 **Time:** 1.00pm to 04.00pm

School: SOE	**Program:** B.Tech	
Course Code : EEE2026	**Course Name :** Signals and Systems	
Semester: MK	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**
Marks	**32**	**22**	**24**	**22**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1	Recall the concept of z transform?	2 Marks	L1	CO4
2	List Properties of Time Scaling.	2 Marks	L1	CO1
3	Recall the concept of non periodic signals	2 Marks	L1	CO1
4	What sequence is followed for time based operation on signals	2 Marks	L1	CO1
5	Recall the concept of Laplace transform	2 Marks	L1	CO3
6	Define Energy signals	2 Marks	L1	CO1
7	Define Power signals	2 Marks	L1	CO1
8	Relate Ramp and unit step signal	2 Marks	L1	CO1
9	List any two dirichlet conditions	2 Marks	L1	CO2
10	Recall the concept of Final value theoram.	2 Marks	L1	CO3

Part B

Answer the Questions **Total 80 Marks.**

11.	a.	Explain the concept of hidden symmetry in Fourier series with an example.	10 Marks	L2	CO2
	b.	Apply the property of fourier transform and compute the fourier transform of Signum signals and digit 1.	10 Marks	L3	CO2

or

12.	a.	A manufacturer has designed an inverter for integrating solar system to grid. The output waveform of an inverter circuit is a square wave of peak amplitude A. The rising edge from negetive peak to positive peak is at the origin and falling edge from positive peak to negetive peak is at half time period. Summarize about the harmonics that would be present in this signal along with the formulas of fourier coefficients.	10 Marks	L2	CO2
	b.	Relate energy and power signal concept to Fourier transform. Explain with an example.	10 Marks	L2	CO2

13.	a.	Model electric circuit for explanation of the concept of exponential one sided signals. Provide 2 examples	10 Marks	L2	CO1
	b.	The flux waveform in a transformer core is trapezoidal in nature whose equation is given by 2r(t)-2r(t-2)-2r(t-4)+2r(t-6)+2r(t-8). Show the rough diagram of the waveform.	10 Marks	L2	CO1

or

14.	**a.**	Model an electric circuit for explanation of the concept of time advance and time delay operations.	10 Marks	L1	CO1
	b.	Identify rectangular signal falls under the category of energy, power or NENP signal and compute the energy and power of any rectangular signal of your choice.	10 Marks	L1	CO1

15.	a.	Interpret the convolution of x(t)=u(t+2)-u(t-2) and h(t)=u(t+2)-u(t-2) by using properties of convolution.	10 Marks	L2	CO3
	b.	Explain the concept of Fourier series and its role in representing continuous-time periodic signals	10 Marks	L2	CO3

Or

16.	a.	Summarize any 5 properties of convolution.	10 Marks	L2	CO3
	b.	A DC voltage of 5 Volts was applied to an electrical circuit using a Battery comprising a Resistor, capacitor and a switch. All the elements are connected in series The value of Resistor is 1000 Ohms and capacitance is 3 micro-farads.The switched was initially open but at t=0 the switch has been closed and a transient response was observed. The battery was charging the capacitor to a steady state value. The voltage source in series with the switch gives rise to a type of Signal. After drawing the source signal, explain what will happen to the source signal if the switch is closed at t=to instead of t=0 with the help of conceptual explanations. comment on the laplace transform.	10 Marks	L2	CO3
17.	a.	A Transfer function X(s)=N(s)/D(s) has a zero at -3 and 2 poles at 3 and -2. Solve for intial value and final value using laplace transform	10 Marks	L3	CO4
	b.	Apply the concept of z transform to Laplace transforms with the help of two examples.	10 Marks	L3	CO4

Or

18.	a.	Solve for the Z-Transform of the discrete-time signal x(n) = {1,2,3,4,… } for n≥0 and also comment on the R.O.C.	10 Marks	L3	CO4
	b.	Explain the relation between Laplace transform and Z transform by drawing the s plane and z plane for 2 example cases.	10 Marks	L2	CO4

******* BEST WISHES *******