Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 09-10-2025 **Time:** 11.45am to 01.15pm

School: SOE	**Program:** B.Tech (ECE)	
Course Code : ECE2020	**Course Name:** Signals and Systems	
Semester: III	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**18**	**20**	**12**	**-**	**-**

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. **5Q x 2M=10M**

1	Brief about the classification of signals	**2 Marks**	**L1**	**CO1**
2	Find the even and odd components of the signal $x(t) = e^{-2t}\,Cos(t)$	**2 Marks**	**L1**	**CO1**
3	Given $x[n] = \underset{\wedge}{[2, 4, 6, 8, 10]}$ sketch x[n] and x[-n]	**2 Marks**	**L1**	**CO1**
4	If x(t) = u(t), find whether x(t) is power signal or energy signal	**2 Marks**	**L1**	**CO1**
5	What is Dirichlet's condition and what is the application of the same in Fourier series.	**2 Marks**	**L1**	**CO3**

Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	Describe whether the following signals are periodic or not. If it is periodic, compute its fundamental period. $X(t) = e^{-j3\pi t}$	**10 Marks**	**L2**	**CO 1**

		$X(t) = je^{j6t}$ $X(t) = \sin(\pi t)\, u(t)$ $x(t) = \sin 12\pi t$			
		Or			
7.	**a.**	Find whether the given signal is energy signal or power signal, calculate power or energy depending on the type of signal 1) $x(t) = e^{-at}[u(t) - u(t-7)]$ 2) $x(t) = e^{-at}.u(t)$	**10 Marks**	**L2**	**CO 1**
8.	**a.** **b.**	If x[n]=[6, 4, 2, 1, 2, 4, 6]draw x[3n+2]use graphical method ^ List the properties of systems	**5 Marks** **5Marks**	**L2**	**CO 2**
		Or			
9.	**a.**	Convolute the two continuous -time signals given below $x1(t) = e^{-st\,u(t)}$ $x2(t) = u(t+2)$	**10 Marks**	**L2**	**CO 2**
10.	**a.**	Find the response of the given DT LTI system whose input signal and impulse response is given by $X[n]=[3,2,1,0,1,2,3] \wedge h[n]=[0,1,2,3]$ ^ ^ Using graphical method.	**10 Marks**	**L3**	**CO 2**
		Or			
11.	**a.**	Find the response of the given DT LTI system whose input signal and impulse response is given by $X[n]=[-2,-1,0,1,2] \wedge h[n]=[1,1,1]$ ^ ^ Using impulse function method.	**10 Marks**	**L3**	**CO 2**
12.	**a.**	Find the exponential Fourier series coefficients of the continuous time periodic signals whose angular frequency is W_0 a) $x(t) = 1+\cos W_0 t$ b) $X(t) = \sin W_0 t + \cos 2W_0 t$	**10 Marks**	**L3**	**CO 3**
		Or			
13.	**a.**	Find the exponential Fourier Series Coefficients of x(t) given $x(t) = 3\sin(2W_0 t + \pi/3 ¿ + \cos ¿_0 t + \pi/4)$	**10 Marks**	**L3**	**CO 3**