SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai
Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &
Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)
COIMBATORE-641 035, TAMIL NADU

Reg. No: | | | | | | | | | | | | |

B.E/B.Tech- Internal Assessment – I
Academic Year 2024-2025 (ODD Semester)
Third Semester
Electronics and Communication Engineering
23ECT202 – Signals and Systems

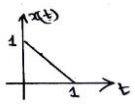
B

Time: $1^{1/2}$ Hours **Maximum Marks: 50**

Answer All Questions
PART - A (5 x 2 = 10 Marks)

		CO	Blooms
1.	Compare Energy and Power Signal.	CO1	**UND**
2.	Build the signal u[n]-u[n-1] = δ[n]	CO1	**APP**
3.	Outline the mathematical and graphical representation of continuous time and discrete time unit step function.	CO1	**UND**
4.	Define Fourier Series and list its types.	CO2	**REM**
5.	Find the Fourier transform of $x(t) = e^{-at}\, u(t)$	CO2	**REM**

PART – B (2*13=26 Marks) & (1*14=14 Marks)

				CO	Blooms
6.	(a)	(i) Examine whether the signal is periodic or Aperiodic if it is periodic find the fundamental period. **x(t) = 2Cost+3Cost/3** (ii) Analyze energy and power of the given signal. **$x(n) = (1/2)^n\, u(n)$**	7 6	CO1	**ANA**
		(OR)			
	(b)	(i) Examine transformation of Independent variable of a signal. (ii) Inspect even and odd components of the signal: **x(n) = {1,0,-1,2, 3}**	7 6	CO1	**UND**
7.	(a)	State and prove any five properties of Fourier Transform.	13	CO2	**APP**
		(OR)			
	(b)	(i) Solve Fourier transform of $x(t) = \text{Sin}(2\pi f_c t)$ (ii) Identify Fourier transform of $x(t) = A\cos(2\pi f_c t)\, u(t)$	7 6	CO2	**APP**
8.	(a)	Analyze the properties of the system. **(i) $y(t) = x(t^2)$** **(ii) y(n) = x(n) +nx(n+1)**	14	CO1	**ANA**
		(OR)			
	(b)	(i) Examine the even and odd components of the signal:  (ii) To analyze and optimize the system, you need to work with various standard signals like the unit step, impulse, ramp, Exponential and sinusoidal signals, which are often used to model system behaviors and response characteristics.	7 7	CO1	**ANA**

Bloom's Taxonomy:
REM – Remember **UND** – Understand **APP**– Apply **ANA**– Analyze **EVA -** Evaluate **CRT -** Create