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

A

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

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

		CO	Blooms
1.	Define signal and list the classification of the signal.	CO1	**REM**
2.	Build the signal x[n] = u[n]-u[n-3]	CO1	**UND**
3.	Outline the mathematical and graphical representation of continuous time and discrete time unit ramp function.	CO1	**REM**
4.	Define Dirichlet's Conditions of Fourier Series.	CO2	**APP**
5.	Find the Fourier transform of unit step function.	CO2	**ANA**

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. **$x(n)=\cos(n\pi/2)-\sin(n\pi/8)+3\cos(n\pi/4)$** (ii) Inspect energy and power of the given signal. **$x(t) = Cost$**	7 6	CO1	**ANA**
		(OR)			
	(b)	(i) Examine standard signals with appropriate equations and waveforms. (ii) Analyze even and odd components of the signal: **x(n) = {3,2,1,4, 5}**	7 6	CO1	**ANA**
7.	(a)	State and prove any five properties of Fourier Transform.	13	CO2	**APP**
		(OR)			
	(b)	(i) Solve Fourier transform of $x(t) = \cos(2\pi f_c t)$ (ii) Identify Fourier transform of $x(t) = A \sin(2\pi f_c t)\, u(t)$	7 6	CO2	**APP**
8.	(a)	Analyze the properties of the system. **(i) y(t) = Sin x(t)** **(ii) y(n) = x(n) u(n)**	14	CO1	**ANA**
		(OR)			
	(b)	(i) Simplify the even and odd components of the signal **x(t) = cost + sint + cos(t)sin(t)** (ii) How do different transformations of the independent variable (time) in a signal such as time-scaling, time-shifting and time-reversal affect the underlying signal's energy, frequency content and practical applications in advanced systems like control systems?	7 7	CO1	**ANA**

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