Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B.Tech.			
Re-Mid Semester Examination (Autumn, 2023)			
Branch	**: ECE**	**Semester**	**: III**
Title of the Course	**: Signals and Systems**	**Course Code**	**: ECBB 204**

Time: 1 Hour 30 Minutes **Maximum Marks: 25**

Note: *All questions are compulsory.*

COURSE OUTCOMES

CO1 Understand mathematical description and representation of continuous and discrete-time signals and systems.

CO2 Develop input-output relationships for linear shift-invariant systems and understand the convolution operator for continuous and discrete-time systems.

CO3 Understand and resolve the signals in the frequency domain using Fourier series and Fourier transforms. Understand the limitations of the Fourier transform, and the need for the Laplace transform and develop the ability to analyze the system in s- domain.

CO4 Apply the Fourier representation properties and Laplace properties to solve problems.

Q. NO	QUESTION	Mark	CO	BL
1	Differentiate between analog, digital, discrete and continuous time signal	6	1	5
2	Determine the value of the average power of the odd part of signal x(t). $x(t) = 3\cos(\frac{\pi t}{10}) + 3\sin(\frac{t}{10})$.	4	1	2
3	Let input to an LTI system is $x(t) = t$ for $0 \leq t \leq 2$, and its impulse response $h(t) = 2$ for $-2 \leq t \leq 2$. Determine output y(t) of the LTI system for all t.	5	2	3
4	1. $x(t) = u(t)-u(t-2)$. Calculate $4x(2t-3)$ and draw it. 2. Define unit impulse function $\delta(t)$.	5	1	3
5	Determine the exponential Fourier series coefficients of the signal f(t) shown in Fig. 2, which repeats after time T.	5	3	2

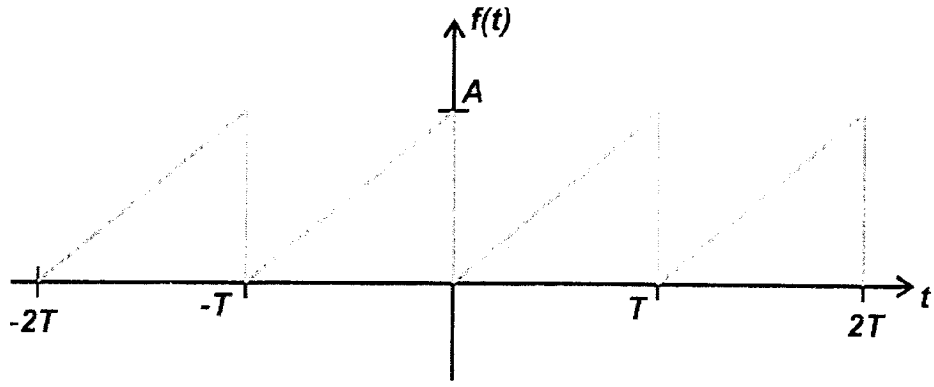

Fig.2
Note: Assume T=1 and A=1.