CLASS: BTECH   SEMESTER : IV
BRANCH: ECE   SESSION : SP2023

SUBJECT: EC253N ANALOG COMMUNICATION

TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

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			CO	BL
Q.1(a)	State and prove the frequency shifting property of Fourier transform.	[2]	I	II
Q.1(b)	Apply convolution theorem to evaluate the Fourier transform of the convolution of rect (t/2) and u (t) at ω= π/2.	[3]	I	III
Q.2(a)	Explain the distortion less transmission and write the conditions to achieve it.	[2]	I	II
Q.2(b)	Evaluate the Fourier Series and plot the spectrum of the periodic signal shown below.	[3]	I	V
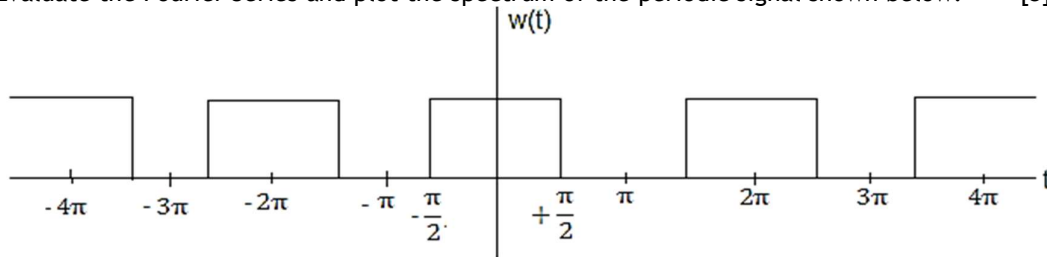
			CO	BL
Q.3(a)	Evaluate $\int_{-\infty}^{\infty} Sinc(t)dt$ using appropriate Fourier transform property.	[2]	I	V
Q.3(b)	Differentiate between single balanced modulator and double balanced modulator and explain any one of the balanced modulators for the generation of DSB-SC signal.	[3]	II	II
Q.4(a)	A 400-watt carrier is modulated to a depth of 75%. Find the total power in the AM waves. Assume the modulating signal to be sinusoidal signal.	[2]	II	I
Q.4(b)	Is the square law be used for both, generation, and detection of AM wave? Defend your answer with proper mathematical explanation.	[3]	II	V
Q.5(a)	Draw and discuss the block diagram of frequency-division multiplexing (FDM) system	[2]	II	I
Q.5(b)	Explain the superheterodyne receiver with the help of block diagram.	[3]	II	II

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