BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2024)

CLASS: **BTECH** **SEMESTER : V**
BRANCH: **EEE** **SESSION : MO/2024**

SUBJECT: EE417 FUNDAMENTALS OF COMMUNICATION SYSTEM

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**

			CO	BL
Q.1(a)	Find the Fourier Transform of Unit Impulse Response and the Fourier transform of a DC signal with amplitude of 5 volt between $-\infty \leq t \leq \infty$.	[2]	2	Understand
Q.1(b)	Find the Fourier Series representation of a Periodic Pulse Train with the Amplitude 1 volt and duty cycle of 50%.	[3]	3	Apply
Q.2(a)	State and Prove the Duality property of the Fourier Transform.	[2]	2	Understand
Q.2(b)	Derive the Fourier Transform of an Unit Step Function.	[3]	3	Apply
Q.3(a)	Explain Amplitude Modulation with the equation and the Demodulation process (only mathematical expression with discussion, no design required).	[2]	2	Apply
Q.3(b)	Explain the principle of matched filter to detect a Rectangular Pulse with the help of Correlation process.	[3]	3	Create
Q.4(a)	Explain Balanced Modulator with necessary equations and diagram to generate DSBSC signal.	[2]	1	Understand
Q.4(b)	Explain Filter method and Phase Shift method to generate SSBSC signal with necessary diagram. Compare merits and demerits of those methods.	[3]	3	Analyse
Q.5(a)	Explain the principle of Envelope Detector for AM Signal.	[2]	2	Understand
Q.5(b)	Explain the problem of Quadrature NULL effect and Phase Shift Error in the Super heterodyne Receiver.	[3]	3	Evaluate

:::::25/09/2024 M:::::