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

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

SUBJECT: EC321 INTRODUCTION TO 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)	What is meant by modulation and explain the benefits of modulation.	[2]	1	1
Q.1(b)	What is the principle of Amplitude modulation? Derive expression for the AM wave and draw its spectrum.	[3]	1	2
Q.2(a)	Explain the function of each block of communication system.	[2]	1	1
Q.2(b)	An AM transmitter radiates 9kW of power when the carrier is un-modulated and 10.125kW of power when the carrier is sinusoidal modulated. Find the modulation index & Percentage modulation. Now if another sine wave corresponding to 40% modulation is transmitted Simultaneously. Calculate total radiated power.	[3]	1	2
Q.3(a)	Explain envelope detector with suitable diagram.	[2]	1	2
Q.3(b)	Explain generation of SSB signal with the help of Phase shift method.	[3]	1	3
Q.4(a)	Compare NBFM & WBFM with suitable data.	[2]	2	1
Q.4(b)	Derive the expression for single - tone frequency modulation with necessary waveforms.	[3]	2	2
Q.5(a)	The total power content of AM signal is 1kW. Determine the power being transmitted at the carrier frequency and each of the sidebands when the modulation is 100%.	[2]	1	3
Q.5(b)	Explain the working principle of Super-heterodyne receiver with suitable block diagram.	[3]	2	2

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