

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

**CLASS: BTECH
BRANCH: CSE/EEE**

**SEMESTER : V
SESSION : MO/2025**

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
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Q.1(a)	Draw an envelope detector used for demodulation of AM and explain its operation. A 10 KW carrier wave is amplitude modulated at 80 percent depth of modulation by a sinusoidal modulating signal. Calculate the side band power and total power.	[2]	1	3
Q.1(b)	What is the need for modulation? Derive the expression for amplitude modulation and mention its merits and demerits.	[3]	1	1
Q.2(a)	Explain with suitable diagrams the generation of AM using square law method.	[2]	1	2
Q.2(b)	Explain the generation of SSB signal using phase discriminator.	[3]	1	2
Q.3 (a)	Compare NBFM and WBFM with suitable data.	[2]	2	1
Q.3(b)	Explain with neat diagram the generation of FM using direct method.	[3]	2	2
Q.4(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.4(b)	Explain frequency division multiplexing with suitable diagram.	[3]	1	1
Q.5(a)	A carrier frequency is frequency modulated with a sinusoidal signal of 2 KHz resulting in a maximum frequency deviation of 5 KHz. Find the approximate band width of the modulated signal.	[2]	2	3
Q.5(b)	Describe the working of superheterodyne receiver with the help of block diagram.	[3]	2	2

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