

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

**CLASS: B.TECH.
BRANCH: ECE**

**SEMESTER: Vth
SESSION: MO/2022**

SUBJECT: EC301R ANALOG COMMUNICATION

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
 2. Candidates attempt for all 25 marks.
 3. Before attempting the question paper, be sure that you have got the correct question paper.
 4. The missing data, if any, may be assumed suitably.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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			CO	BL
Q1 (a)	Discuss the Fourier Series expansion for periodic signals & the Dirichlet's conditions.	[2]	CO1	BL1
Q1 (b)	State two convolution properties of Fourier Transform and prove the multiplication theorem.	[3]	CO1	BL1
Q2 (a)	Find the Fourier Transform of damped sinusoid $g(t) = \exp(-t) \sin(2\pi f_c t) u(t)$	[2]	CO1	BL3
Q2 (b)	Explain general expression for distortionless transmission. Also write the two conditions to achieve distortionless transmission?	[3]	CO1	BL2
Q3 (a)	Discuss single tone AM With necessary expressions, suitable waveforms, and its spectrum.	[2]	CO2	BL2
Q3 (b)	Compare DSB-SC and SSB-SC in terms of their advantage, disadvantage, and applications. Explain Frequency discrimination method of AM SSB-SC generation.	[3]	CO2	BL4
Q4 (a)	Use diagram to explain the concept of Frequency Division Multiplexing.	[2]	CO2	BL2
Q4 (b)	With the help of circuit diagram explain the operation of square-law modulator & demodulator for AM.	[3]	CO2	BL2
Q5 (a)	A given AM broadcast station transmits a total power of 5kW when the carrier is modulated by sinusoidal signal with a modulation index of 0.7071. Determine Carrier power and Transmission Efficiency.	[2]	CO2	BL3
Q5 (b)	Apply the concept of heterodyning to explain the Super-heterodyne AM receiver and explain function of each block.	[3]	CO2	BL3

::: 26/09/2022 :::M