

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

**CLASS: BTECH
BRANCH: ECE**

**SEMESTER : V
SESSION : MO/2022**

SUBJECT: EC301R ANALOG COMMUNICATION

TIME: 3:00 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Differentiate time domain and frequency domain representation of signals.	[2]	CO1 BL2
Q.1(b)	Illustrate Dirac Delta Function and discuss its various properties.	[3]	CO1 BL2
Q.1(c)	Compute the Fourier transform of periodic train of rectangular pulses of amplitude A, duration T and period T_0 and sketch its amplitude and phase spectrum.	[5]	CO1 BL4
Q.2(a)	Compare different AM systems.	[2]	CO2 BL2
Q.2(b)	Explain briefly about super heterodyne receiver and mention its advantages over TRF receiver.	[3]	CO2 BL2
Q.2(c)	Explain coherent detector for DSB-SC detection and discuss quadrature null effect of coherent detector. In DSB-SC, suppression of carrier saves transmitter power results in receiver complexity - Justify this statement.	[5]	CO2 BL4
Q.3(a)	Compute the bandwidth requirement for the transmission of FM signal having a frequency deviation 75KHz and an audio bandwidth of 10KHz.	[2]	CO3 BL3
Q.3(b)	Discuss the working of TDM system with help of neat block diagram.	[3]	CO3 BL2
Q.3(c)	Derive the expression to show that PLL is used to demodulate the FM signal.	[5]	CO3 BL5
Q.4(a)	Write the problem related to under sampling of signal and how it is taken care?	[2]	CO4 BL3
Q.4(b)	How sampling is performed discuss its various types.	[3]	CO4 BL2
Q.4(c)	Draw the circuit for PPM modulator and demodulator and explain their operation in detail?	[5]	CO4 BL2
Q.5(a)	At a room temperature of 300K, calculate the thermal noise generated by resistor of 20 K Ω when the bandwidth is 10 KHz.	[2]	CO5 BL3
Q.5(b)	Define noise and classify it as per its source of generation.	[3]	CO5 BL1
Q.5(c)	Derive the expression for figure of merit of DSB-SC system for small noise case.	[5]	CO5 BL4

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