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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations June-2024
ANALOG COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Explain the function of each block of communication system.	CO1	L2	6M
	b	With the help of circuit diagram explain the operation of square-law diode modulator & demodulator for AM.	CO1	L2	6M

OR

2	a	Draw the frequency spectrum of DSB-SC modulation with necessary mathematical expressions.	CO1	L6	6M
	b	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.	CO1	L3	6M

UNIT-II

3	a	Explain the functionality of each block of phase shift discriminator.	CO2	L2	6M
	b	A single-tone FM is represented by the voltage equation as: v (t) = 12cos (6×106t + 5sin 1250t) Determine the following: (i) Carrier frequency (ii) Modulating frequency (iii) Modulation index (iv) What power will this FM wave dissipate in 10Ω resistors?	CO2	L4	6M

OR

4	a	Explain the generation of FM using direct method.	CO2	L2	6M
	b	A 20 MHz carrier is frequency modulated by a sinusoidal signal such that the peak frequency deviation is 100 kHz. Determine the modulation index and the approximate bandwidth of the FM signal if the frequency of the modulating signal is: (i) 1 kHz (ii) 15 kHz	CO2	L2	6M

UNIT-III

5	a	What is meant by narrow band noise and explain time domain representation of narrow-band noise.	CO3	L1	6M
	b	Describe thermal noise and shot noise.	CO3	L3	6M

OR

6	a	Calculate the noise figure for an SSB-SC system.	CO3	L3	6M
	b	Calculate thermal noise power available from any resistor at room temperature 290K for a bandwidth of 2MHz and also calculate noise voltage at 100Ω resistor.	CO3	L2	6M

UNIT-IV

7	a	State and prove sampling theorem.	CO4	L1	6M
	b	Explain the generation of PAM with mathematical analysis.	CO4	L2	6M

OR

8	a	With block diagram explain the generation of PWM signals.	CO4	L2	6M
	b	What are the differences between PAM,PWM and PPM?	CO4	L4	6M

UNIT-V

9	a	Explain about Frequency Division Multiplexing	CO5	L2	6M
	b	Compare TDM and FDM techniques.	CO5	L4	6M

OR

10	a	Explain Entropy, Information rate, Channel capacity theorem, Mutual information.	CO5	L5	6M
	b	Write a short note on channel capacity of a Discrete memory less channel.	CO5	L2	6M

***** END *****