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Reg. No: ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B. Tech II Year I Semester Supplementary Examinations November-2022
ANALOG COMMUNICATIONS
(Electronics & Communication Engineering)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1	a	With a neat diagram and relevant equations, explain the generation of AM wave using Switching modulator.	L2	6M
	b	Define demodulation. List different types of AM demodulators.	L1	6M

OR

2	a	Derive the expression for total transmitted power of AM wave.	L3	6M
	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.	L3	6M

UNIT-II

3	a	Explain coherent detection of DSB-SC wave with a neat block diagram and relevant equations.	L2	6M
	b	Illustrate the effect of phase error on the output of coherent detector and calculate the percentage of power saving for a DSB-SC signal for the percent modulation of 100% and 50%.	L3	6M

OR

4	a	Explain the principle of coherent detection of SSB-SC modulated wave with a neat block diagram.	L2	6M
	b	Define quadrature null effect. Calculate the percentage power saving for SSB signal if AM wave is modulated for a depth of 100%.	L3	6M

UNIT-III

5	a	Explain the generation of FM using direct method.	L2	6M
	b	What are the differences between narrow band FM &wide band FM?	L1	6M

OR

6	a	Explain and draw the block diagram of FM transmitter.	L2	6M
	b	A single-tone FM is represented by the voltage equation as: $(t)=12\cos(6\times10^6 t +5\sin 1250t)$. Determine the following: (i) Carrier frequency (ii) Modulating frequency (iii) Modulation index (iv) What power will this FM wave dissipate in 10Ω resistors?	L3	6M

UNIT-IV

7	a	Draw the block diagram of Super-heterodyne AM receiver and explain function of each block.	L2	6M
	b	What are the advantages & disadvantages of super heterodyning?	L1	6M

OR

8	a	Derive the expression for output SNR of DSB-SC system.	L3	6M
	b	Calculate the input signal to noise ratio for an amplifier with an output signal to noise ratio of 16 dB and a noise figure of 5.4 dB.	L3	6M

UNIT-V

9	a	Briefly discuss about the frequency division multiplexing.	L2	6M
	b	Differentiate between TDM & FDM.	L2	6M

OR

10	a	Describe how a PPM signal can be generated and detected from PWM signal.	L2	6M
	b	What are the advantages and disadvantages of PPM?	L1	6M

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