R15

Code No: R15A0409

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, April 2023

Analog Communications

(ECE)

Roll No										

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

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PART-A (25 Marks)

1).	a	What is the need for modulation?	**[2M]**
	b	Define Frequency division Multiplexing.	**[3M]**
	c	What are the applications of SSB?	**[2M]**
	d	Draw the frequency domain representation of VSB .	**[3M]**
	e	If the frequency deviation of FM is 75KHz, message signal frequency is 5kHz what is the bandwidth of FM?	**[2M]**
	f	Define Pre-emphasis and de-emphasis	**[3M]**
	g	What is Noise bandwidth?	**[2M]**
	h	Compare Noise performance of AM, DSBSC and SSB .	**[3M]**
	i	How to convert PWM signal into a PPM?	**[2M]**
	j	What is the significance of AGC?	**[3M]**

PART-B (50 MARKS)

SECTION-I

2	a)	Define Amplitude Modulation. Derive Single tone AM Equation. Draw the relevant waveforms in time domain and frequency domain.	**[6M]**
	b)	When the modulation percentage is 75, AM transmitter produces 10KW. How much of this is carrier power? What would be the percentage power if the carrier and one of the sidebands were suppressed before transmission took place?	**[4M]**

OR

3	a)	Explain the generation of DSBSC using Balanced modulator.	**[5M]**
	b)	Describe the working of AM transmitter with the help of block diagram.	**[5M]**

SECTION-II

4		Describe the generation of SSB using Phase discrimination method and also explain the detection process.	**[10M]**

OR

5		Explain the generation of VSB signal and Envelope detection of a VSB Wave plus Carrier.	**[10M]**

SECTION-III

6	a)	Explain the generation of indirect FM generation (Armstrong method).	**[6M]**
	b)	If the frequency deviation of FM is 75KHz, message signal frequency is 5kHz.What is the bandwidth of FM?	**[4M]**
		OR	
7		Explain detection of FM using PLL with the help of block diagram and necessary equations.	**[10M]**

SECTION-IV

8		Describe the performance of AM system in presence of noise and derive the expression for figure of Merit.	**[10M]**
		OR	
9		Define Figure of Merit. Derive the expression of figure of merit DSBSC system	**[10M]**

SECTION-V

10	a)	Explain the function of FM Super heterodyne receiver with the help of block diagram.	**[6M]**
	b)	What are the various receiver characteristics?	**[4M]**
		OR	
11		Explain the modulation and demodulation of PWM signals.	**[10M]**

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