Code No.: EC402PC	R20	H.T.No.			8	R					

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Supply) - December- 2025
ANALOG AND DIGITAL COMMUNICATIONS
(ECE)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1.	a)	Define modulation index of an AM signal.	[2M]
	b)	A Radio transmitter radiates 10 KW and carrier power is 8.5 KW. Calculate modulation index.	[2M]
	c)	Differentiate phase modulation and frequency modulation.	[2M]
	d)	Define frequency deviation in FM?	[2M]
	e)	Draw the block diagram of TRF receiver.	[2M]
	f)	What is receiver and give the classification of transmitters?	[2M]
	g)	Distinguish between PAM and PWM.	[2M]
	h)	What are the Advantages of pulse code modulation?	[2M]
	i)	Consider a binary sequence 011010. Draw the QPSK modulated waveform.	[2M]
	j)	What is meant by differential phase shift keying?	[2M]

PART-B **(50 Marks)**

2.	Explain the working principle of nonlinear DSB-SC modulator with neat block diagram.	[10M]
	OR	
3.	Draw the circuit diagram of Ring modulator and explain about it.	[10M]
4.	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.	[10M]
	OR	
5.	Formulate the equation for FM wave. Define modulation index, maximum deviation and band width of a FM signal.	[10M]
6.	Explain the operation of superheterodyne receiver with the block diagram and mention its advantages and disadvantages.	[10M]
	OR	
7.	What is the significance of AGC circuit? Differentiate between simple and delayed AGC.	[10M]
8.	Write a short note on the following. (i) PWM vs PPM (ii) Pulse Modulation vs Carrier Modulation.	[10M]
	OR	
9.	Draw the circuit of PPM demodulator and explain the operation.	[10M]
10.	Give the comparison of power and bandwidth requirements for various digital modulation schemes.	[10M]
	OR	
11.	Explain the generation and detection of BPSK..	[10M]

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