

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**  
**III B. Tech I Semester REGULAR Examinations, NOVEMBER 2025**  
**COMMUNICATION SYSTEMS**  
**(DEPARTMENT OF EEE)**

**Time: 3 Hours****Max.Marks:70****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 20 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks

**PART – A****(20 Marks)**

1.	a)	List the application areas for different bands in E.M. spectrum.	[2]
	b)	Find Fourier Transform of $x(t)=1$ .	[2]
	c)	Explain aliasing effect .	[2]
	d)	List the different demodulation techniques in Amplitude Modulation.	[2]
	e)	State the frequency of AM broadcasting.	[2]
	f)	List the advantages of frequency modulation.	[2]
	g)	Explain the SNR.	[2]
	h)	Discuss about Thermal Noise.	[2]
	i)	Explain quantization concept.	[2]
	j)	Discuss the applications of PCM.	[2]

**PART – B****(50 Marks)**

		Unit-I	[5]
2.	a)	Illustrate about Signal transmission through systems.	[5]
	b)	Explain the working of an envelope detector.	
		OR	
3.	a)	Discuss about the operation of correlation with an example	[5]
	b)	Draw the circuit diagram for balanced ring modulator and explain its operation Indicating all the waveforms and spectrums.	[5]
		Unit-II	
4.	a)	Discuss about DSB-SC Modulation.	[5]
	b)	Compare various AM modulation techniques.	[5]
		OR	
5	a)	Derive an expression for the spectrum of FM wave with sinusoidal modulation.	[5]
	b)	Consider a single-tone conventional AM signal with a total power of 1 kW. What is the power in each of the sideband frequency components if the modulation depth is 70%.	[5]
		Unit-III	
6	a)	Discuss about Wide band Angle modulation signals.	[5]
	b)	With a neat block diagram explain the Armstrong method of FM generation.	[5]
		OR	
7	a)	Distinguish about FM transmitters and FM Receivers.	[5]
	b)	Derive an expression for the S/N ratio for a FM System.	[5]
		Unit-IV	
8.	a)	Describe the Noise performance in frequency Modulation systems.	[5]
	b)	Explain the noise performance of SSB-SC receiver and prove its S/N ratio is unity.	[5]
		OR	

9.	a)	A message signal $m(t) = 5\cos(2\pi f_m t)$ is frequency modulated with a carrier wave $c(t) = 10\cos(2\pi f_c t)$ . Find the modulation index and the bandwidth of the FM wave.	[5]
	b)	Define Noise. Explain about various noises, which will effect communication process.	[5]
		Unit-V	
10.	a)	Explain the prominence of Delta modulation.	[5]
	b)	Describe the synchronization procedure for PAM, PWM and PPM signals.	[5]
		OR	
11.	a)	Discuss about the working principle of Pulse position Modulation.	[5]
	b)	Explain the methods for demodulation of PAM signals.	[5]

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