

Reg. No.: 21BEC1851

Name :



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act 1956)

Continuous Assessment Test I – May 2023

Programme	: B.Tech (ECE)	Semester	: FIS 2022-23
Course	: Analog Communication Systems	Code	: BECE304L
		Class Nbr	: CH2022232500278
Faculty	: Dr. Chandramauleshwar Roy	Slot	: C1+TC1
Time	: 90 Minutes	Max. Marks	: 50

Answer ALL the questions

Q. No.	Sub. Sec.	Questions	Marks
1.	a	What are the Components involved in an Analog Communication System? Explain the significance of each component in detail. (5 Marks)	10
	b	How is the message signal transmitted over long distance? Explain the process involved along with its necessity. (5 Marks)	
2.		Derive the mathematical expression for Amplitude Modulation (AM) and also explain BW involved and power consumed in transmitting the AM wave.	10
3.		A carrier wave of frequency 10 MHz and peak value 10V is amplitude modulated by a 5- kHz sine wave of amplitude 6V. Determine (i) modulation factor. (2 Marks) (ii) Sideband frequencies. (2 Marks) (iii) Amplitude of sideband components. (2 Marks) (iv) Draw the frequency spectrum. (4 Marks)	10
4.		Elaborate and discuss on a modulation technique to transmit double side bands using the Ring Modulator and also discuss on a detection method to retrieve the message signal.	10
5.		A message signal $m(t) = \cos 2000\pi t + 2\cos 4000\pi t$ modulates the carrier $c(t) = 100\cos 2\pi f_c t$ where $f_c = 1$ MHz to produce the DSB signal. (i). Determine the expression for the upper sideband (USB) signal. (3 Marks) (ii). Determine and sketch the spectrum of the USB signal. (3 Marks) (iii). Calculate the total power and side band power. (4 Marks)	10

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