VIT
Vellore Institute of Technology

Slot: G1+TG1

School of Computer Science Engineering and Information Systems
Fall Semester 2023-2024
Continuous Assessment Test – I

Programme Name & Branch B. Tech - IT
Course Name & code: Principles of Communication Systems & BITE203L
Class Number (s): VL2023240102604/ VL2023240102606/ VL2023240102610
Faculty Name (s): Jerart Julus L, Senthilkumar T, Karthikeyan D
Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s): **Answer all the questions**

Q.No.	Question	Max Marks
1.	One input to an AM modulator is an 800 khz carrier with a peak amplitude of 30v. The second input is a 14kHz modulating signal whose amplitude is sufficient to produce a 16v change in the amplitude of the envelope. Determine the following:	10
	a) Upper and Lower frequencies	
	b) Modulation coefficient and percent modulation	
	c) Maximum and minimum amplitudes of envelope	
	d) Draw the output envelope.	
	e) Draw the output frequency spectrum	
2.	Derive an expression for a signal, which has a modulation index greater than one, Amplitude remains constant, and the frequency of the carrier signal is varied with respect to the modulating signal.	10
3.	a) With the help of mathematical expressions, show that a sinusoidally modulated, suppressed carrier type AM signal passed through a squaring circuit has a capability of recovering the modulating signal after passing the output of squaring circuit through low pass filter circuits.	06
	b) If a modulated wave with an average voltage of 20v changes in amplitude 5v, determine the minimum and maximum envelope amplitudes, the modulation co-efficient and percent modulation.	04
4.	a) An angle modulated wave for frequency modulation is represented by $20 \cos(7.28 \times 10^6 t + 10 \sin 7.283 \times 10^6 t)$. Determine	05
	i. The carrier frequency in radians/sec.	
	ii. The modulating frequency in radians/sec.	