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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Electronics and Instrumentation Engineering **Duration: 3 hrs.**
Course Code: 19EI5PCCST **Max Marks: 100**
Course: Communication Systems **Date: 21.02.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

1	a)	List any six properties of Hilbert Transforms.	**06**
	b)	Discuss the detection of DSB-SC wave using coherent method.	**06**
	c)	With neat diagram and waveform explain the generation of AM wave using switching modulator.	**08**

OR

2	a)	Describe the Costas receiver system for reconstruction of DSB-SC wave.	**08**
	b)	Explain Quadrature carrier multiplexing and demultiplexing technique.	**08**
	c)	Consider message signal $m(t)= 20 \cos (2\pi t)$ volts and carrier wave $c(t)= 50 \cos(100\pi t)$ volts. i) Give the time domain expression for the resulting conventional AM wave for 75 % modulation. ii) Find the power developed across load of 100 Ω due to AM Wave	**04**

UNIT - II

3	a)	An angle modulated signal is defined by $s(t)=10 \cos (2\pi*10^6t+0.2 \sin 2000\pi t)$ volts. Find the following i) The power in the modulated signal. ii) Frequency deviation Δf iii) Phase deviation ΔΘ iv) Approximate transmission bandwidth	**08**
	b)	List the difference between frequency modulation and phase modulation.	**04**
	c)	Illustrate FM generation using direct method and frequency stabilization.	**08**

UNIT - III

4	a)	Discuss noise in AM receiver and derive an expression for figure of merit (FOM) $\gamma = \mu^2 / \mu^2+2$.	**10**
	b)	Discuss pre-emphasis and de-emphasis in FM systems.	**10**

UNIT - IV

5	a)	With neat diagram explain Pulse Code Modulation (PCM) and Delta Modulation (DM) system.	**12**
	b)	Compare ideal, natural and flat top sampling techniques in digital communication system.	**08**

UNIT - V

6	a)	Discuss with neat block diagram the working of DPSK Transmitter and Receiver.	**10**
	b)	Illustrate briefly on Line codes and TDMA.	**10**

OR

7	a)	Describe the working of QPSK Transmitter and Receiver with relevant equation and wave form.	**10**
	b)	Explain briefly on FDMA and CDMA Technologies.	**10**

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