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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 & Telecommunication Engineering **Duration: 3 hrs.**

Course Code: 19ET5PCACM **Max Marks: 100**

Course: Analog Communication **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.

UNIT - I

1	a)	What is PDF? explain the properties of PDF with proof?	**10**
	b)	A random Variable has a Variance σ^2 and mean m, the random variable Y is related to X by Y=aX+b . where a and b are constants. Find out mean and variance of Y.	**10**

OR

2	a)	Discuss briefly the difference between Thermal Noise and Shot Noise.	**04**
	b)	Analyze various sources of noise that affect communication system.	**06**
	c)	A satellite receiving system consists of a low noise amplifier (LNA) that has a gain of 47dB and a Noise temperature of 120^0k. A cable with a loss of 6.5dB and the main receiver with a noise factor of 7dB. calculate the equivalent noise temperature of the overall system referred to the input for the following system connection i. LNA at the input followed by the cable connecting to the main receiver. ii. the input direct to the cable which then connected to the LNA. This in turn is connected to the main receiver.	**10**

UNIT - II

3	a)	Explain the operation of Ring Modulator with necessary sketches and waveforms.	**08**
	b)	A standard AM transmission sinusoidal modulated to a depth of 40% , produce sideband frequencies of 6.824 and 6.854MHz. The amplitude of each sideband frequency is 50V. Determine the amplitude and frequency of the carrier.	**04**
	c)	What do you understand by coherent detection? Explain the detection of DSBSC waves by this method.	**08**

OR

4	a)	Describe the generation of SSB using i. filter method ii. Phase discrimination method.	**12**
	b)	Determine Pre-envelop, complex envelop and natural envelop for the signal $g(t) = Arect\left(\frac{t}{T}\right)\cos(2\pi f_c t)$.	**08**

UNIT - III

5	a)	Explain the VSB wave with its related equations in time domain and frequency domain.	**10**
	b)	Write a short note on FDM.	**06**
	c)	Explain how VSB wave can be demodulated using envelop detector.	**04**

UNIT - IV

6	a)	Explain with neat diagram and related equations the operation of PLL?	**10**
	b)	Explain the generation of FM waves by using Indirect Method.	**10**

UNIT -V

7	a)	Explain with a block diagram, the working of a super heterodyne receiver	**07**
	b)	Describe the expression for Figure of merit of DSB-SC receiver.	**08**
	c)	Describe threshold effect in AM receiver with relevant equations	**05**

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