MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

MITE

Invent Solutions

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
Accredited by NAAC with A+ Grade & ISO 9001:2015 Certified Institution

Model Question Paper

Fifth Semester BE Degree Examination

Communication Systems

Time: 3 Hours(180 Minutes)   **Max. Marks: 100**

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.
3. In case missing data, suitable data to be assumed.

		Module -1	M	L	C
Q1	a.	Explain the elements of communication systems	10	L2	CO1
	b.	Explain Amplitude Modulation. A carrier wave with an RMS voltage of 2V and a frequency of 1.5MHz is modulated by a sine wave with a frequency of 500Hz and amplitude of 1V RMS. Derive the equation for it.	10	L3	CO3
		OR			
Q2	a.	Explain the process of Frequency modulation.	10	L2	CO1
	b.	Explain Phase modulation. A phase modulator has a sensitivity of k_p=3 rad/V. Calculate the amount of frequency deviation which will be produced with a sine wave input of 2V peak at a frequency of 1KHz.	10	L3	CO3
		Module- 2			
Q3	a.	Explain Shot Noise and Compute the shot noise component of current present on a direct current of 1mA flowing across a semiconductor junction, given that the effective noise bandwidth is 1MHz.	10	L3	CO4
	b.	Explain Signal to Noise ratio. Calculate the equivalent noise resistance for an amplifier of 300Ω and the equivalent shot noise current is 5µA.The amplifier is fed from a 150Ω,10µV rms sinusoidal signal source. Compute the individual noise voltages at the input and the input signal to noise ratio in decibels. The noise bandwidth being 10MHz.	10	L3	CO4
		OR			
Q4	a.	Describe noise factor. Calculate the output signal to noise ratio when the input signal to noise ratio is 35dB.Assume that noise figure of amplifier is 7dB.	10	L3	CO4
	b.	Explain the process of Measuring Noise Temperature and noise Factor. In the measurement of noise temperature, an avalanche diode source is used, the ENR being 14dB. The measured (power factor) Y factor is 9dB. Calculate the equivalent noise temperature of the amplifier under test.	10	L3	CO4
		Module – 3			
Q5	a.	Explain the process of transmitting Digitized Analog signal by MODEM.	10	L2	CO1
	b.	Describe the process of pulse code modulation with neat signal waveforms.	10	L2	CO1
		OR			
Q6	a.	Describe the Process of Frequency shift keying with necessary block diagrams and waveforms.	10	L2	CO1
	b.	Explain the process of Phase shift keying with necessary block diagrams and waveforms.	10	L2	CO1

		Module – 4			
Q7	a.	Describe the Time Division multiplexing technique with necessary diagrams.	10	**L2**	CO2
	b.	Discuss about the types of attenuation in freespace.	10	**L2**	CO2
		OR			
Q8	a.	Explain the process of Ionospheric propagation.	10	**L2**	CO2
	b.	Explain Line of Sight propagation with necessary diagrams.	10	**L2**	CO2
		Module – 5			
Q9	a.	Describe the constructional features of optical fiber cable and optical communication system.	10	**L2**	CO1
	b.	Explain the construction and operation of PIN diode Photo detector.	10	**L2**	CO1
		OR			
Q10	a.	Explain the use of optical fibers in different Network Topologies.	10	**L2**	CO1
	b.	Describe about the Cable TV System and how optical fibers are employed for high speed internet cable TV system.	10	**L2**	CO1

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