K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

April – May 2023
(B.Tech) Program: Electronics and Telecommunication_Scheme I/II:_I
Examination: SY Semester: IV
Course Code: 1UEXC404 and Course Name: Principles of Communication Engineering

Date of Exam: 01-06-23 Duration: 2.5 Hours Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Define phase modulation.	2	CO3	U
ii)	What is modulation?	2	CO2	U
iii)	FM noise triangle.	2	CO3	R
iv)	Define sensitivity in radio receiver	2	CO4	U
v)	State sampling theorem	2	CO5	U
vi)	What is multiplexing? State its types	2	CO6	U
vii)	Define signal to noise ratio.	2	CO1	U
viii)	Modulation index for AM should be less than one. Justify/Contradict.	2	CO2	Ap
Q.2	**Solve any four questions out of six.**	**16**		
i)	Explain filter method of SSB generation system	4	CO2	U
ii)	Draw a neat block diagram of a superheterodyne receiver and explain the function of each block with waveforms.	4	CO4	U
iii)	Explain PWM modulation and demodulation techniques	4	CO5	U
iv)	Explain the operation of Foster Seeley discriminator with the help of circuit diagram and phasor diagram.	4	CO3	U

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v)	Describe noise in detail	4	CO1	U
vi)	Compare TDM and FDM	4	CO6	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Explain analog communication system	8	CO1	U
ii)	Explain AM receiver characteristics	8	CO4	U
iii)	Explain DM modulation and demodulation techniques	8	CO5	U
Q.4	**Solve any two questions out of three.**	**16**		
i)	A modulating Signal $20\sin(2\pi\times1000t)$ is used to modulate a carrier signal $80\sin(2\pi\times10000t)$ **Determine** 1. Modulation index(MI) & % MI 2. The transmitted power 3. Draw frequency spectrum of modulated signal 4. BW	8	CO2	Ap
ii)	Explain balanced slope FM detector in detail	8	CO3	U
iii)	Explain FDM hierarchy for telephone line	8	CO6	Ap

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