

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

April – May 2024		
(B.Tech) Program: Electronics and Telecommunication_Scheme I/II: <u>IIB</u>		
Examination: SY Semester: IV		
Course Code: EXC404 and Course Name: Principles of Communication Engineering		
Date of Exam: 01/08/24	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)	State Simplex and Duplex system with example?	2	CO1	U
ii)	Draw waveforms for AM (envelope) and its spectrum?	2	CO2	U
iii)	Write formulae to calculate bandwidth of narrowband and wideband FM signal.	2	CO3	U
iv)	Explain Mixer or frequency changer?	2	CO4	U
v)	Draw waveform for natural and Flat top sampling wrt modulating signal.	2	CO5	U
vi)	Draw TDM signal for two different input signals?	2	CO6	U
vii)	At a room temperature of 290K, calculate the thermal noise power generated by resistors of 50Ω and the bandwidth is 1MHz	2	CO1	Ap
viii)	A transmitter transmits 5 KW of power without modulation and 6KW after modulation. What is the modulation index?	2	CO4	Ap
Q.2	Solve any four questions out of six.	16		
i)	State advantages, disadvantages and applications of SSBSC modulation	4	CO2	Ap
ii)	Define FDM with advantages and disadvantages?	4	CO6	U
iii)	Explain generation and detection of natural sampling?	4	CO5	U
iv)	Differentiate between narrowband and wideband FM.	4	CO3	

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v)	Define Sensitivity, selectivity, fidelity and image frequency in radio receivers.	4	CO4	
vi)	Define Modulation, need of Modulation and advantages of Modulation.	4	CO1	
Q.3	Solve any two questions out of three.	16		
i)	Classify Noise and Explain the various types of noises affecting communication	8	CO1	U
ii)	Draw a neat block diagram of an AM radio receiver and explain the function of each block with waveforms.	8	CO4	U
iii)	Compare PAM and PPM	8	CO5	U
Q.4	Solve any two questions out of three.	16		
i)	Explain generation of DSBSC using Balanced modulator with the help of block diagram, waveform and mathematical expression.	8	CO2	Ap
ii)	Compare FM and PM.	8	CO3	Ap
iii)	Explain PCM techniques modulation and demodulation in detail.	8	CO6	Ap
