K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam
November – December 2022

(B.Tech/~~M.Tech~~.) Program: Electronics and Telecommunication

Examination: SY Semester: IV

Course Code: **1UEXC404** and Course Name: **Principles of Communication Engineering**

Duration: 03 Hours   Max. Marks: 60

Instructions:

(1) All questions are compulsory.

(2) Draw neat diagrams wherever applicable.

(3) Assume suitable data, if necessary.

Q No.	Questions	Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight.**	**12**	-	-
i)	Write elements of basic communication system	2	CO1	U
ii)	State sampling theorem. List some sampling techniques.	2	CO5	R
iii)	What is double spotting and how can it be reduced?	2	CO4	R
iv)	What do you mean by angle modulation? state the types of angle modulation	2	CO2	R
v)	Describe TDM and state types	2	CO1	U
vi)	Define the term DSBSC and SSB	2	CO2	R
vii)	Why is AGC required in radio receivers?	2	CO4	R
viii)	What are the causes of fold over distortion or aliasing? How can it be prevented or removed?	2	CO5	R
Q.2	**Solve any four questions out of six.**	**16**		
i)	Write short note on pre-emphasis and de-emphasis.	4	CO2	U
ii)	Explain the various types of internal noises affecting	4	CO1	U

	communication				
iii)	Explain TDM	4	CO6	U	
iv)	A superheterodyne radio receiver with an IF of 455 KHZ is turned to 1000 KHZ. Find: (i) Image frequency (ii) Local oscillator frequency	4	CO3	Ap	
V)	Explain delta modulation technique	4	CO5	U	
Vi)	If a FM wave is represented by the equation $V = 10 * sin(8 * 10^8 t + 4 sin(1000t))$. Determine 1. Carrier frequency 2. Modulating frequency. 3. MI 4. Maximum Deviation 5. Bandwidth	4	CO3	Ap	
Q.3	**Solve any two questions out of three.**	**16**			
i)	Explain filter method to generate SSB signal	8	CO2	U	
ii)	Draw a neat block diagram of an AM receiver and explain the function of each block with waveforms.	8	CO4	U	
iii)	Explain generation and detection of PPM signal from PWM	8	CO5	U	
Q.4	**Solve any two questions out of three.**	**16**			
i)	Draw a block diagram of PCM technique and explain the functioning of each block.	8	CO2	U	
ii)	Explain FDM transmitter and receiver system	8	CO6	U	
iii)	Derive equation for total transmitted power, total sideband power and single side band power for AM wave and draw freq. spectrum for DSBFC.	8	CO2	U	