

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

May-June 2025	
B. Tech Program Scheme III	
Regular Examination: SY Semester: IV	
Course Code: EXC 402 and Course Name: Analog and Digital Communication Engineering	Max. Marks: 60
Date of Exam: 21/05/2025	Duration: 02.5 Hours

Instructions:				
(1) All questions are compulsory.				
(2) Draw neat diagrams wherever applicable.				
(3) Assume suitable data, if necessary.				
Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Explain practical diode detector with the help of diagram		1	2
b)	Differentiate between narrowband and wideband FM.		2	2
c)	What is signal multiplexing? Explain its types in detail.		3	1
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain Eye diagram and ISI		4	2
b)	Calculate the baud rate if the modulation is 16-ary QASK and bit rate is 100kbps		5	3
c)	What is Systematic codeword and Non – Systematic codeword?		6	1
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	With suitable diagram, explain the working of FM modulator		1	2
b)	Explain ADM modulation and demodulation techniques		2	2
c)	Define Sensitivity, selectivity, fidelity and image frequency in radio receivers.		3	2
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Compare line codes Polar RZ, Polar NRZ, Manchester and AMI		4	2
b)	Explain PSK in detail and For a given bit stream of 011010011 plot the waveform of ASK, FSK, BPSK, QPSK.		5	3
c)	The parity check matrix of particular (7,4) Linear block code is given by $H = [1\ 1\ 1\ 0\ 1\ 0\ 0; 1\ 1\ 0\ 1\ 0\ 1\ 0; 1\ 0\ 1\ 1\ 0\ 0\ 1]$ i) Find generator matrix (G). ii) List all code vectors. iii) What is the minimum distance between the code vectors? iv) How many errors can be detected? How many errors can be corrected?		6	3
