MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

FIFTH SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION
DECEMBER 2021-JANUARY 2022
SUBJECT: ANALOG AND DIGITAL COMMUNICATION (ECE - 3151)
Part B

TIME: 75 Minutes **MAX. MARKS: 20**

Instructions to candidates
- Answer **ALL** questions.
- Missing data may be suitably assumed.

Q. No.	Questions	
1A.	With neat and labelled diagram describe the duobinary signaling scheme. Also, explain the error propagation problem in duobinary signaling and comment on how it is resolved by using a precoded duobinary scheme (provide the necessary diagrams and equations).	5
1B.	The binary data sequence 1 1 0 1 0 0 1 is applied to the input of a duobinary system with a precoder. Construct the duobinary coder output (determine all the sequences) and corresponding receiver output (assuming there is no channel noise).	3
1C.	Justify why "PCM system is considered rugged against "interference"	2
2A.	Describe modulator and coherent demodulator for BFSK system. Derive the expression for probability of error.	5
2B.	Determine the information content of a message that consists of a digital word 9 digits long, in which each digit may take any one of five possible levels. The probability of sending any five levels is assumed to be equal, and the level in any digit does not depend on the values taken by previous digits.	3
2C.	A discrete message source "S" emits two independent symbols X and Y with probabilities 0.65 and 0.35 respectively. Calculate the efficiency of the source and its redundancy.	2