



VII SEMESTER B.TECH. (INFORMATION TECHNOLOGY | COMPUTER AND COMMUNICATION TECHNOLOGY)

MAKEUP EXAMINATIONS, FEBRUARY 2022
SUBJECT: PATTERN RECOGNITION [ICT 4053]

REVISED CREDIT SYSTEM (DATE)

TIME: 75 MINS

MAX. MARKS: 20

Instructions to candidates

- Answer **ALL** questions.
- Missing data, if any, may be suitably assumed.

Q. No.	Questions	Marks
1A.	How can one interpret the covariance matrix to decide the discriminant functions on normal density multivariate data?	5
1B.	Demonstrate single linkage algorithm to cluster the following data into two clusters., (7.1, 4.2), (-1.4,-4.3), (4.5,0), (6.3, 1.6), (4.2, 1.9), (1.4,-3.2),(2.4,-4),(2.5, -6.1), (8.4,3.7),(4.1,-2.2)	3
1C.	Suppose that a fruit packing plant wants to automate the process of sorting incoming fruits on a conveyor belt according to types. As a pilot project it is decided to try to separate apple from oranges using optical sensing. Discuss the design cycle involved in this process.	2
2A.	What is Hidden Markov Model? Distinguish the central issues in HMM.	5
2B.	Compare the Kernel Density Estimation method with K Nearest Neighbour estimation method with an example for each.	3
2C.	What is a conjugate prior? Illustrate the need to use a conjugate prior?	2