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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST - 1 EXAMINATION, February 2020

B.Tech VIth Semester (BI)

Course Code: 10B11BI612
Course Name: Machine Learning for Bioinformatics
Course Credits: 04

MAX. MARKS: 15

MAX. TIME: 1 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question.

Q1. How do you classify ML algorithms? What are various domains of Bioinformatics where ML based applications have been developed? **[2]** **[CO1, CO2]**

Q2. **a)** For given actual outputs and predicted outputs of a classifier, compute: **[3]** **[CO1]**

(i) Confusion Matrix, **(ii)** Accuracy and **(iii)** F1 Score

Actual Output	Apple	Orange	Guava	Guava	Apple	Orange	Guava	Orange	Apple	Orange
Predicted Output	Guava	Apple	Orange	Guava	Orange	Guava	Apple	Orange	Apple	Apple

b) What is the significance of ROC curve? **[1]**

c) Write the steps of KNN algorithm and what are the advantages and disadvantages of KNN? **[2]**

Q3. Generate a Markov Chain for three entities where all possible transitions are possible. Generate a transition matrix for those conditions also. Assume the probabilities by your own for all possible conditions of transition. **[3]** **[CO1, CO2]**

Q4. Correlate following through a schematic representation D-I-K flow, AI and ML. **[1]** **[CO1, CO2]**

Q5. Draw a Decision Tree for given data set: **[3]** **[CO1, CO4]**

Color	**Type**	**Doors**	**Class**
Red	SUV	2	+
Blue	Minivan	4	-
Green	Car	4	-
Red	Minivan	2	-
Green	Car	2	+