TM242391U

Reg. No :.....

Name :.....

MASTER'S DEGREE (C.S.S) EXAMINATION, MARCH 2024

2023 ADMISSIONS REGULAR

SEMESTER II - CORE COURSE Applied Statistics and Data Analytics

ST2C10TM - Machine Learning

Time : 3 Hours **Maximum Weight : 30**

Part A

I. Answer any Eight questions. Each question carries 1 weight **(8x1=8)**

1. Elaborate on PAC.
2. Define Machine Learning.
3. State Baye's Theorm.
4. Sketch the relationship between AI, ML and Neural Networks.
5. List out the steps to avoid Overfitting.
6. How to choose the number of clusters in K-Means algorithm.
7. Define Random Forest.
8. Recall Kernel function.
9. Relate Regression and Classification.
10. Describe how data is stored in column oriented data structures.

Part B

II. Answer any Six questions. Each question carries 2 weight **(6x2=12)**

11. Discuss any two Supervised Learning Algorithms.
12. Sketch the applications of Supervised Machine Learning Algorithms.
13. Discuss the concept of Association Rules.
14. Explain the significance of Maximum Likelihood Estimation.
15. Describe the working principle of Random Forest method.
16. Discuss different Partitioning Methods in clustering.
17. List out the phases of Data Analytics Life Cycle.
18. Discuss the concept of Datawarehouse.

Part C

III. Answer any Two questions. Each question carries 5 weight **(2x5=10)**

19. Compare and Contrast VC Dimension and PAC Learning.
20. Find the value of decision class for the given Combination (Red, Sports, Imp) from the given training data using Bayesian Classification.

Car No	Color	Type	Origin	Stolen
1	Red	Sports	Dom	Yes
2	Red	Sports	Dom	No
3	Red	Sports	Dom	Yes
4	Yellow	Sports	Dom	No
5	Yellow	Sports	Imp	Yes

6	Red	Sports	Imp	No
7	Yellow	SUV	Imp	No
8	Yellow	SUV	Imp	Yes
9	Yellow	SUV	Dom	No
10	Red	SUV	Imp	Yes

21. Cluster the following points into 3 clusters (k=3) USING K Means algorithm.

A1 (2,10)
A2 (2,7)
A3 (8,4)
A4 (6,8)
A5 (7,5)

22. Using K-Nearest Neighbors algorithm find the target class of new data <57 kg, 170 cm>. Assume value of k=3

WEIGHT	HEIGHT	CLASS
51	167	Underweight
62	182	Normal
69	176	Normal
64	173	Normal
65	172	Normal
56	174	Underweight
58	169	Normal
57	173	Normal
55	170	Normal