

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – DATA SCIENCE

FIRST SEMESTER – NOVEMBER 2022

PDS1MC05 – MACHINE LEARNING

Date: 02-12-2022

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A

Answer ALL the Questions

1.	Answer the following	(5 x 1 = 5)	
a)	ML algorithms build a mathematical model based on sample data, known as _____.	K1	CO1
b)	Which regression fits a nonlinear relationship between the value of x and the corresponding conditional mean of y?	K1	CO1
c)	Choose whether true or false: <i>Decision tree can be used for clustering.</i>	K1	CO1
d)	A point which has more than Minpts within epsilon in DBSCAN algorithm is known as. <ul style="list-style-type: none"> • Boundary Point • Core Point • Noisy Point • All the above 	K1	CO1
e)	What are the two-step process followed in Apriori algorithm?	K1	CO1
2.	Answer the following	(5 x 1 = 5)	
a)	_____ mainly deals with finding a structure or pattern in a collection of uncategorized data.	K2	CO1
b)	Which regression is used to deal with over fitting problem?	K2	CO1
c)	Choose whether true or false: <i>Is Logistic regression mainly used for Regression?</i>	K2	CO1
d)	Recommendation system which works on the principle of anything which is in trend is known as _____. <ul style="list-style-type: none"> • Content – Based Filtering • Popularity – Based Filtering • Collaborative Filtering • Item – Based Filtering 	K2	CO1
e)	Which algorithm is used for address the exploration-exploitation dilemma in the multi-armed bandit problem?	K2	CO1

SECTION B

Answer any Three of the following in 500 words

(3 x 10 = 30)

3.	Illustrate the concepts of Designing a Learning System in detail.	K3	CO2
4.	Write the Features, Advantages and Limitations of Polynomial Regression.	K3	CO2
5.	Illustrate the concept of Logistic Regression in detail with neat illustration.	K3	CO2
6.	Write the concept of Density Based Clustering in detail with neat illustration.	K3	CO2
7.	Explain the concept of Apriori algorithm in detail.	K3	CO2

SECTION C

Answer any TWO of the following in 500 words

(2 x 12.5 = 25)

8.	Explain the concept of Ridge Regression and list out its advantages.	K4	CO3
9.	Discuss the concept of Random Forest Regression in detail with an example.	K4	CO3
10.	Describe the concept of Collaborative Filtering in detail.	K4	CO3

11. Explain the perception on Reinforcement Learning in detail with an example. K4 CO3

SECTION D

Answer any ONE of the following in 1000 words (1 x 15 = 15)

12. (a) Write any Five Applications of Machine Learning in detail. K5 CO4

(b) Explain the Advanced Ensemble Learning techniques in detail.

13. (a) How the classification models can be evaluated? Explain in detail. K5 CO4

(b) Summarize the concept of K-Means Clustering with an example.

SECTION E

Answer any ONE of the following in 1000 words (1 x 20 = 20)

14. (a) Explain the perception on Simple and Multiple Linear Regression in detail. K6 CO5

(b) Describe the concept of Decision Tree Classification in detail.

15. (a) Explain the various Feature Selection Methods in Dimensionality Reduction Methods. K6 CO5

(b) Find all frequent item sets with minimum support = 2 and confidence = 60% and generate strong association rules for the given transaction data using Eclat algorithm.

TID	List of Item_IDs
T1	I1, I2, I5
T2	I2, I4
T3	I2, I3
T4	I1, I2, I4
T5	I1, I3
T6	I2, I3
T7	I1, I3
T8	I1, I2, I3, I5
T9	I1, I2, I3

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