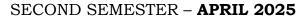
LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034



Date: 02-05-2025

M.Sc. DEGREE EXAMINATION - DATA SCIENCE





Max.: 100 Marks

PDS2MC07 - MACHINE LEARNING

Dept. No.

Tin	ne: 01:00 PM - 04:00 PM			
	CECTION	V1 (CO1)		
SECTION A – K1 (CO1)				
	Answer ALL the questions		$(5 \times 1 = 5)$	
1	MCQ: Choose the best answer:			
a)	Regression methods and Classification methods come under			
	(i) Unsupervised Learning	(ii) Supervised Learning		
	(iii) Supervised and Unsupervised Learning	(iv) None of these		
b)	A Linear Regression equation shall involve	number of independent variables.		
	(i) 1	(ii) 2		
	(iii) 3	(iv) n, where n is a positive integer		
c)	SVM kernel trick is used when the data points an	re		
	(i) linearly separable	(ii) not linearly separable		
	(iii) close to one another	(iv) None of these		
d)	Clustering algorithms			
	(i) determine compact representation of data	(ii) identify distinct groups of data		
	(iii) determine the association rules	(iv) predict the values of features		
e)	Lift for the association rule $X \rightarrow Y$ is used to indicate the of association between X and Y.			
	(i) prevalence	(ii) intensity		
	(iii) confidence	(iv) None of these		
	SECTION A	A – K2 (CO1)		
	Answer ALL the questions		$(5 \times 1 = 5)$	
2	Define each term.			
a)	Independent variable			
b)	Polynomial Regression			
c)	Confusion Matrix			
d)	Principal Components			
e)	Association Rule			

	SECTION B – K3 (CO2)	
	Answer any THREE of the following	$(3 \times 10 = 30)$
3	Briefly discuss any four tools for Machine Learning.	
4	What is meant by Multiple Regression method? Give a programming example.	
5	Illustrate margin, support vectors and kernel trick in the context of SVM method.	
6	Discuss the collaborative Filtering method. Give an example.	
7	Briefly explain the terms Agent, Actions, State, Reward, and Policy.	
	SECTION C – K4 (CO3)	
	Answer any TWO of the following	$(2 \times 12.5 = 25)$
8	Differentiate between Overfitting and Underfitting problems.	
9	Discuss the Bagging and Boosting methods.	
10	Illustrate K-Means Clustering method with an example.	
11	Explain FP-Growth algorithm with an example.	
	SECTION D – K5 (CO4)	
	Answer any ONE of the following	$(1 \times 15 = 15)$
12	Discuss Decision Tree Classification and Decision Tree Regression with examples.	
13	How can we use Bellman's equation to obtain optimum plan in a maze problem?	
	SECTION E – K6 (CO5)	
	Answer any ONE of the following	$(1 \times 20 = 20)$
14	(a) What is meant by Unsupervised Learning approach? Give an example.	(10 marks)
	(b) Compare Ridge Regression and Lasso Regression methods.	(10 marks)
15	(a) Discuss Logistic Regression Classification method with a programming example.	(10 marks)
	(b)Explain Principal Component Analysis method with an example.	(10 marks)
