	0 6 FEB 2023			
•	Reg. No.			
	Question Paper Code 11687			
	B.E. / B.Tech DEGREE EXAMINATIONS, NOV/DEC 2022			
	Third Semester			
	Artificial Intelligence and Data Science			
2	20AIPC302 - FUNDAMENTAL OF MACHINE LEARNING TECHNIQU	ES		
(Regulations 2020) Duration: 3 Hours Max. Marks: 100				
Dura	PART - A ($10 \times 2 = 20$ Marks)	5. 100		
	Answer ALL Questions			
		Marks, K-Level,CO		
1.	Compare supervised and unsupervised learning.	2,K2,CO1		
2.	List any four issues in machine learning.	2,K1,CO1		
3.	Define categorical data with examples.	2,K1,CO2		
4.	How do you evaluate the performance of the constructed model?	2,K2,CO2		
5.	Mention the goal of feature subset selection.	2,K1,CO3		
6.	What is Decision Tree? Choose and justify your answer.	2,K2,CO3		
	a) Flow-Chart			
	b) Structure in which internal node represents test on an attribute, each branch represents outcome of test and each leaf node represents			
	class label			
	c) Flow-Chart & Structure in which internal node represents test on an			
	attribute, each branch represents outcome of test and each leaf node			
	represents class label d) None of the mentioned			
7.	Compare linear and logistic regression.	2,K2,CO4		
8.	What is lasso regression? Why do we need it?	2,K1,CO4		
9.	Explain the importance of clustering in influencing the data in the	2,K2,CO5		
	mathematics of an ML algorithm.	2,K1,CO6		
10.	Define ensemble learning.	2,111,000		
	PART - B (5 × 13 = 65 Marks)			
	Answer ALL Questions			
		6,K1,COI		
11.	a) (i) Mention the different categories of machine learning algorithms			
•	with appropriate examples for each learning type.(ii) Explain the usage of machine learning techniques in banking and	7,K2,CO1		
	finance applications.			
	OR			
K1	- Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create	11687		
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	b)	Explain the role of machine learning in healthcare and insurance applications.	13,K2,CO1
12.	a)	 Elaborate the following models with necessary examples a) Descriptive model. b) Predictive model. c) Prescriptive model. 	13,K2,CO2
	b)	(i) Discuss about quality of data and its remediation.	6,K2,CO2
		(ii) Give brief account on methods to improve the performance of the model.	7,K2,CO2
13.	a)	How can you perform classification with support vector machine algorithm? Explain the decision boundary construction with an example.	13,K2,CO3
	b)	OR What is feature engineering? Elaborate on feature construction and feature extraction.	13,K2,CO3
14.	a)	(i) Derive the mathematical model for simple linear regression.	6,K3,CO4
		(ii) Give brief account on ridge regression. OR	7,K2,CO4
	b)	(i) Explain the process of maximum likelihood estimation.	7,K2,CO4
		(ii) Elaborate on multiple linear regression.	6,K2,CO4
15.	a)	(i) Explain K-medoid clustering method with an example.	7,K2,CO5
		(ii) Write shorts notes on representation learning. OR	6,K2,CO5
	b)	Explain association rule learning with Apriori algorithm.	13,K2,CO6
		PART - C (1 × 15 = 15 Marks)	

16. a) Describe about hierarchical clustering method with an example. 15,K3,CO5

OR

b) Write and explain the K-Nearest neighbor classification algorithm with ^{15,K3,CO3} an example.

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create 2

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