

SRM Institute of Science and Technology

School of Computing

DEPARTMENT OF DATA SCIENCE AND BUSINESS SYSTEMS

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2024-25 (ODD)

Test: CLAT-2 [Unit 3 and 4]

Course Code & Title: 21CSE426T & Financial Machine Learning

Year & Sem: III Year & VI Sem

Date: Oct 9, 2024

Duration: 55 Minutes

Max. Marks: 30

Answer all / 15 * 2 = 30 Marks]

Q No	Question	BL	CO	PO	Marks
1.	<p>(a) You are asked to build a classification model to detect fraudulent credit card transactions. Describe how you would preprocess the data, select the model, and improve its performance using cross-validation and grid search. Include a Python code snippet for implementing one of the models you would use.</p> <p style="text-align: center;">OR</p> <p>(b) In a scenario where you are predicting loan defaults, how would you handle missing values and imbalanced classes in the dataset? Explain the steps in detail and provide the relevant Python code for feature selection and classification.</p>	3	3	2	15
2.	<p>(a) Explain how you would use k-means clustering to categorize a set of stocks into similar groups based on their returns and volatility. Describe the process of identifying the optimal number of clusters using both the elbow method and silhouette score and include relevant Python code.</p> <p style="text-align: center;">OR</p> <p>(b) Given a dataset of customers for a retail company, describe how you would apply affinity propagation clustering to segment customers based on their purchasing behavior. Discuss the parameters of affinity propagation and demonstrate the clustering using Python.</p>	3	3	2	15