CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐ **MMC201**

Second Semester MCA Degree Examination, June/July 2025
Machine Learning & Data Analytics using Python

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	**a.**	Define Machine Learning. Describe its types with examples.	**10**	**L2**	**CO1**
	b.	Illustrate the data visualization using matplotlib with three different charts.	**10**	**L3**	**CO1**
		OR			
Q.2	**a.**	Demonstrate the use of NumPy and Pandas for reading a csv file and manipulate the data with appropriate examples.	**10**	**L3**	**CO1**
	b.	Explain the steps involved in Data Preprocessing. Mention the techniques used for handling missing values and outliers.	**10**	**L2**	**CO1**
		Module – 2			
Q.3	**a.**	Explain Linear and Polynomial Regression. Provide code examples using sklearn.	**10**	**L2**	**CO2**
	b.	Describe model evaluation metrics like MAE, MSE, and RMSE.	**5**	**L2**	**CO2**
	c.	Write a short note on overfitting and underfitting with visual explanation.	**5**	**L2**	**CO2**
		OR			
Q.4	**a.**	Describe the working of K-Nearest Neighbors (KNN) algorithm. Write code for classification using KNN.	**10**	**L2**	**CO2**
	b.	List and explain any four classification algorithms and their use cases.	**10**	**L2**	**CO2**
		Module – 3			
Q.5	**a.**	Discuss K-Means clustering algorithm and its implementation in Python.	**10**	**L2**	**CO3**
	b.	Illustrate Principal Component Analysis (PCA) and its use in dimensionality reduction.	**10**	**L3**	**CO3**

OR					
Q.6	**a.**	Develop a Python program to perform Hierarchical clustering and visualize using a dendrogram.	**10**	**L3**	**CO3**
	b.	Explain Apriori algorithm and its use in market basket analysis.	**10**	**L2**	**CO3**
Module – 4					
Q.7	**a.**	Differentiate Bagging and Boosting with suitable examples.	**6**	**L2**	**CO4**
	b.	Describe the XGBoost algorithm and provide a working Python example.	**8**	**L2**	**CO4**
	c.	Define Support Vector Machine. Explain kernel trick with a diagram.	**6**	**L2**	**CO4**
OR					
Q.8	**a.**	What are CNNs? Discuss their architecture and applications.	**10**	**L2**	**CO4**
	b.	Write a Python code to build and train a simple neural network using Keras.	**10**	**L2**	**CO4**
Module – 5					
Q.9	**a.**	Explain steps in Exploratory Data Analysis (EDA) with examples.	**10**	**L2**	**CO5**
	b.	Describe the ARIMA model and its use in time series forecasting.	**10**	**L2**	**CO5**
OR					
Q.10	**a.**	With an example, explain building a web application with Django for ML model integration.	**10**	**L2**	**CO5**
	b.	Explain model deployment using Flask. Provide a deployment flow diagram.	**10**	**L2**	**CO5**

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