



CBCS SCHEME

MBABA413

Fourth Semester MBA Degree Examination, June /July 2026 Machine Learning

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any **FOUR** full questions from Q.No.1 to Q.No.7.
2. Question No. 8 is compulsory.
3. M : Marks, L: Bloom's level, C: Course outcomes.

			M	L	C
Q.1	a.	Define Machine Learning.	03	L1	CO1
	b.	Explain Cross Validation and its types.	07	L2	CO2
	c.	Write a note on the following terms: Accuracy, F1-score and ROC curve.	10	L2	CO2
Q.2	a.	List any three business applications of unsupervised machine learning.	03	L1	CO1
	b.	Discuss the techniques used for feature selection and engineering.	07	L2	CO1
	c.	Discuss any strategies used to overcome the problems of over fitting and under fitting in a machine learning model.	10	L4	CO3
Q.3	a.	State the significance of data splitting into training, validation, and test datasets.	03	L2	CO1
	b.	Explain the importance of the following evaluation metrics in regression analysis: Mean Absolute Error (MAE), Mean Squared Error (MSE), and R-squared.	07	L2	CO4
	c.	List and explain the real-life challenges faced by businesses in implementing machine learning techniques in their day-to-day business operations.	10	L2	CO2
Q.4	a.	Define Logistic Regression and state its primary application in a business context.	03	L1	CO2
	b.	Explain the K-Means clustering algorithm along with its implementation steps.	07	L2	CO3
	c.	Explain how companies use the t-SNE technique to understand complex customer data, supporting your answer with a simple business example.	10	L3	CO2
Q.5	a.	Define Precision and Recall in the context of model evaluation.	03	L1	CO4
	b.	Discuss Principal Component Analysis (PCA) as a dimensionality reduction technique and state its business use cases.	07	L3	CO4
	c.	Illustrate how SVM can be applied in a business scenario, such as a bank detecting fraudulent credit card transactions.	10	L3	CO4

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Q.6	a.	Briefly explain the concept of the Bias-Variance trade-off.	03	L2	CO4			
	b.	Write a detailed note on the basics of Neural Networks and their practical applications in deep learning.	07	L2	CO1			
	c.	Python is widely used in business analytics for building machine learning models. Explain the specific applications of NumPy, Pandas, and Scikit-learn in this process.	10	L4	CO4			
Q.7	a.	Briefly explain the primary objective of a Support Vector Machine (SVM).	03	L2	CO2			
	b.	Classify the different types of Machine Learning. Provide one business use case for each type.	07	L3	CO4			
	c.	A retail company has collected raw customer data containing several missing values and outliers. Formulate a complete data collection, cleaning, and feature engineering strategy to prepare this dataset for machine learning models.	10	L4	CO1			