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| **SESSION** | **FEB-MARCH 2025** |
| **PROGRAM** | **MASTER OF BUSINESS ADMINISTRATION (MBA)** |
| **SEMESTER** | **III** |
| **COURSE CODE & NAME** | **DADS303 INTRODUCTION TO MACHINE LEARNING** |
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**Assignment Set – 1**

**Q1. Discuss the relevance of Machine Learning in Business 10**

**Ans 1.**

**Machine Learning in Business Context**

Machine Learning (ML) is a subset of artificial intelligence (AI) that enables systems to learn from data and improve their performance without being explicitly programmed. In the business environment, ML algorithms analyze historical and real-time data to uncover patterns, make predictions, and automate decision-making. With the explosive growth of data from digital platforms, businesses are increasingly adopting machine learning to gain competitive advantage, reduce operational costs, and enhance customer experience.

The relevance of machine learning in business stems from its ability to convert raw data into

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**Q2. What do you mean by Regularization? Briefly discuss various methods to do Regularization in Regression. 10**

**Ans 2.**

**Concept of Regularization**

Regularization is a crucial technique in machine learning that helps to prevent overfitting in predictive models, especially in regression tasks. Overfitting happens when a model learns both the true patterns and the noise in the training data, which leads to poor performance when applied to new, unseen data. Regularization improves a model’s generalization ability by adding a constraint to the learning process, effectively penalizing large or overly complex coefficients in the regression equation.

In simpler terms, regularization reduces the complexity of the model by discouraging it from

**Q3. Briefly discuss Binary Logistic Regression.**

**Ans 3.**

**Binary Logistic Regression**

Binary Logistic Regression is a type of classification algorithm used when the dependent variable has only two possible outcomes. Unlike linear regression, which predicts continuous values, binary logistic regression predicts the probability that a given input belongs to one of two distinct classes. These classes are typically coded as 0 and 1, such as “No” and “Yes”, “Failure” and “Success”, or “Negative” and “Positive”.

This method is widely used in fields like marketing, finance, healthcare, and social sciences to make decisions or predictions based on historical data. For example, it can be used to

**Assignment Set – 2**

**Q4. Explain K-Means Clustering algorithm**

**Ans 4.**

**K-Means Clustering**

K-Means is a popular unsupervised machine learning algorithm used for clustering tasks. Clustering involves grouping data points in such a way that points in the same group, or cluster, are more similar to each other than to those in other clusters. K-Means is widely used in market segmentation, pattern recognition, image compression, and customer behavior

**Q5. Briefly explain ‘Splitting Criteria’, ‘Merging Criteria’ and ‘Stopping criteria’ in Decision Tree. 10**

**Ans 5.**

**Decision Trees**

Decision trees are supervised learning models used for both classification and regression problems. They mimic human decision-making by breaking down data into branches based on specific conditions. The structure of a decision tree consists of root nodes, internal nodes for decision points, branches as outcomes, and leaf nodes representing final predictions. The quality and performance of a decision tree depend heavily on how it splits, merges, and

**Q6. What is Support Vector Machine? What are the various steps in using Support Vector Machine? 10 ‘**

**Ans 6.**

**Support Vector Machine**

Support Vector Machine (SVM) is a supervised machine learning algorithm used for both classification and regression tasks, though it is more commonly applied to classification problems. The main goal of SVM is to find the optimal boundary, known as a hyperplane, that best separates different classes in the dataset. SVM is effective in high-dimensional spaces and is especially useful when there is a clear margin of separation between classes. It is known for its robustness and ability to handle both linear and non-linear data through the