Code No.: R22CS58311OE | R22 | H.T.No. | | | 8 | R | | | | | |

**CMR ENGINEERING COLLEGE: : HYDERABAD**
**UGC AUTONOMOUS**
**II–M.TECH–I–Semester End Examinations (Regular) - Feb- 2024**
**MACHINE LEARNING (OE)**
**(CSE)**

**[Time: 3 Hours]** **[Max. Marks: 60]**

**Note:** This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A** **(10 Marks)**

| | | |
|---|---|---|
| 1. a) | What is supervised Learning? | [1M] |
| b) | Compare Linear Regression and Logistic Regression? | [1M] |
| c) | Provide an example of a real-world scenario where a mixture model could be applied. | [1M] |
| d) | Define clustering. | [1M] |
| e) | Describe the concept of cross-validation. | [1M] |
| f) | How to mitigate the issues of overfitting? | [1M] |
| g) | Define Deep Learning? | [1M] |
| h) | What is Time Series Data? | [1M] |
| i) | What are the recent trends in Machine Learning? | [1M] |
| j) | What are the challenges in using IOT Data for classification? | [1M] |

**PART-B** **(50 Marks)**

2. Describe the logistic regression model and its application in binary classification. [10M]

**OR**

3. Explain the k-nearest neighbor's algorithm and its basic principles. [10M]

4. Explain the limitations of the original K-means algorithm and how kernelization helps to overcome them. Compare the advantages and disadvantages of Kernel K-Means compared to standard K-Means. [10M]

**OR**

5. Explain the concept of matrix factorization in the context of dimensionality reduction. [10M]

6. What are precision, recall, and F1-score, and how are they used in binary classification evaluation? [10M]

**OR**

7. Explain the concept of bagging and how it helps in building more robust machine learning models. [10M]

8. Define Feature Representation Learning in the context of deep learning. [10M]

**OR**

9. How does sparse modeling differ from dense modeling in terms of parameter estimation? [10M]

10. Can you list a few key features of Scikit-learn that make it popular among machine learning practitioners? [10M]

**OR**

11. Discuss the trade-offs involved in selecting an algorithm based on the characteristics of IoT data application. [10M]

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