**Sub Code:AIML001** **ROLL NO……..……..**

**ODD SEMESTER EXAMINATION, 2023 – 24**

# IInd yr B.Tech. – ME/CE/CS&E/E&CE

# Introduction to AI and Machine Learning

**Duration: 3:00 hrs** **Max Marks: 100**

***Note: - Attempt all questions. All Questions carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption made in the answer.***

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| Q 1. | Answer any four parts of the following.<br>a) Explain the difference between Data, Information, Knowledge, and Wisdom with the help of a suitable example.<br>b) Explain the four types of Machine Learning with suitable examples.<br>c) Explain the following-<br>i) Using Predicate Logic in Artificial Intelligence<br>ii) Representing Simple facts in Logic<br>d) Explain the concept of Gradient descent along with a real-life application of it in Machine learning.<br>e) Discuss the difference between Underfitting and overfitting in terms of Machine learning.<br>f) What is Artificial Intelligence? Give an example of where AI is used daily. | 5x4=20 |
| Q 2. | Answer any four parts of the following.<br>a) Explain the components of Learning and also mention the applications of machine learning<br>b) Explain the difference between Artificial Intelligence, Machine Learning, and Deep learning with suitable examples.<br>c) Explain what is Logic Programming with some suitable examples.<br>d) Explain How is Machine Learning related to Artificial Intelligence?<br>e) Explain the concept of Bias-Variance tradeoff in Machine Learning.<br>f) Explain the concept of Cost function in terms of Dataset in Artificial Intelligence. | 5x4=20 |
| Q 3. | Answer any two parts of the following.<br>a) Explain the components of Learning and also mention the applications of machine learning<br>b) Explain the various clustering algorithms and use cases centered around clustering and classification.<br>c) Discuss the process of Knowledge Discovery in a Database with proper diagram illustrating the whole process. | 10x2= 20 |
| Q 4. | Answer any two parts of the following.<br>a) Explain how to classify machine learning problems in terms of regression, classification, supervised and unsupervised learning with the help of examples.<br>b) Explain what is Hypothesis representation in terms of Machine learning and also highlight the usage of Decision Boundary in classifying classes in Logistic Regression.<br>c) Explain why the problem of Overfitting occurs in Logistic regression and suggest some remedies to overcome the problem of overfitting. | 10x2= 20 |
| Q 5. | Answer any two parts of the following. | 10x2= 20 |

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| | a) Explain the following:<br>i) Training and testing data<br>ii) Classification and regression<br>b) Discuss the statement that "Matrix theory and statistics are foundational mathematical concepts that play a crucial role in machine learning".<br>c) Discuss the difference between the following-<br>i) Computable function and Predicates<br>ii) Declarative Knowledge and Comparative Knowledge | |

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