

Roll No.

23737

**M. Tech. 2nd Semester Artificial
Intelligence and Data Science
Examination – June, 2023**

MACHINE LEARNING

Paper : 21MTAI22C1

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory. All questions carry equal marks.

1. Write short notes on the following : 20
- (a) Unsupervised learning
 - (b) Bagging
 - (c) Clustering
 - (d) LQG

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SECTION – I

2. What are the steps present in developing a learning system ? 20
3. Describe the following : 20
- (i) Linear discriminative classification family
 - (ii) Overfitting

SECTION – II

4. Describe the following : 20
- (i) Exponential family
 - (ii) Naive Bayes
5. Explain the following : 20
- (i) The adaboost algorithm
 - (ii) Optimal hyper plane

SECTION – III

6. What is PCA and why do we use it in machine learning ? 20
7. Explain the following : 20
- (i) EM algorithm
 - (ii) Hidden Markov models

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SECTION – IV

8. Give a complete description about Reinforcement learning. 20
9. Explain the following : 20
- (i) Bellman equation
 - (ii) LQR
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