

**III B. Tech II Semester Supplementary Examinations, December -2023**  
**MACHINE LEARNING**

(Com. To CSE & IT)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**  
 All Questions Carry Equal Marks

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**UNIT-I**

1. a) What are the main challenges of artificial intelligence? Explain. [7M]
- b) Describe the role of training and testing data in learning. [7M]

(OR)

2. a) Distinguish between machine learning and deep learning. [7M]
- b) What cross-validation? Give its significance. Explain about 5-fold cross-validation. [7M]

**UNIT-II**

3. a) Discuss about Stochastic Gradient Descent in detail. [7M]
- b) Compare linear regression with polynomial regression. [7M]

(OR)

4. a) What is the basic principle of SVM? Why SVM gives better accuracy? [7M]
- b) Explain decision boundaries in logistic regression. [7M]

**UNIT-III**

5. a) Explain about bagging and boosting in detail. [7M]
- b) Describe the role of soft margin in classification of SVM. [7M]

(OR)

6. a) Explain about Naïve Bayes classifiers in detail. [7M]
- b) Give the merits and demerits of Linear and non-linear SVM classification models. [7M]

**UNIT-IV**

7. a) What are Bayesian Gaussian Mixture Models? How does they support unsupervised learning. [7M]
- b) Compare and contrast various approaches for dimensionality reduction. [7M]

(OR)

8. Define clustering. Explain in detail k-means clustering algorithm along with its merits and demerits. [14M]

**UNIT-V**

9. Describe the process of building an Image Classifier Using the Sequential API in detail. [14M]

(OR)

10. Explain the following:
  - a) Biological Neurons Vs Artificial neuron. [7M]
  - b) Building a Regression MLP using the Sequential API. [7M]

