

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3171617

Date:13-11-2025

Subject Name:Applied Machine Learning

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|-----|--|-----------|
| Q.1 | (a) | Discuss supervised, unsupervised, and reinforcement learning. | 03 |
| | (b) | Explain the concept of mean, median, mode, and standard deviation with an example. | 04 |
| | (c) | Discuss any two sampling distributions and their advantages and disadvantages. | 07 |
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| Q.2 | (a) | Compare human learning with machine learning. | 03 |
| | (b) | Differentiate Null and Alternative Hypothesis. | 04 |
| | (c) | Discuss the workings of the K-Means clustering method. Also describe its application, advantages and disadvantages. | 07 |
| OR | | | |
| | (c) | Discuss the various steps of hypothesis testing. | 07 |
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| Q.3 | (a) | Discuss any three tools or technologies used for machine learning. | 03 |
| | (b) | Explain Bayes' Rule with an appropriate example. | 04 |
| | (c) | Discuss uniform distribution and normal distribution in detail. | 07 |
| OR | | | |
| Q.3 | (a) | Discuss the Monte Carlo approximation in brief. | 03 |
| | (b) | Discuss the naive Bayes classifier with its advantages and disadvantages. | 04 |
| | (c) | Explain the concept of a Bayesian belief network with an example. | 07 |
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| Q.4 | (a) | Discuss the learning steps of the classification model. | 03 |
| | (b) | Explain Apriori algorithm with an example. | 04 |
| | (c) | Discuss the workings of the support vector machine classifier. Also describe its application and its advantages and disadvantages. | 07 |
| OR | | | |
| Q.4 | (a) | Discuss the basic structure of an artificial neural network. | 03 |
| | (b) | Discuss the simple linear regression model with an example. | 04 |
| | (c) | Discuss the workings of the k-nearest neighbour classifier. Also describe its application and its advantages and disadvantages. | 07 |
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| Q.5 | (a) | Discuss the advantages and disadvantages of neural networks. | 03 |
| | (b) | Discuss any two activation functions used in machine learning. | 04 |
| | (c) | Explain the architecture of convolutional neural network and its applications. | 07 |
| OR | | | |
| Q.5 | (a) | Discuss hyper-parameter tuning methods in the neural network. | 03 |
| | (b) | Discuss the applications of deep reinforcement learning. | 04 |
| | (c) | Explain the concept of a multi layer feed forward neural network with an example. | 07 |
