

Enrolment No. /Seat No.: \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA INTEGRATED – SEMESTER VII- EXAMINATION –WINTER-2025**

**Subject Code: 2678601**

**Date: 14/11/2025**

**Subject Name: 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. Use of simple calculators and non-programmable scientific calculators are permitted.

- Q.1** (a) Differentiate between human learning and machine learning **05**  
(b) Write the list of state-of-the-art languages/tools used in machine learning. **09**  
Explain on any four of them.
- Q.2** (a) Explain Feature transformation and its type. Explain one of the type of it. **07**  
(b) Draw flow chart of overall feature selection process and explain it in detail. **07**  
OR  
(b) Draw classification chart for the data types in machine learning. Explain **07**  
“Nominal” data type with example.
- Q.3** (a) Explain Brute-force Bayesian algorithm with in detail. **07**  
(b) Differentiate between supervised and unsupervised machine learning. **07**  
OR  
(a) Find the variance and standard deviation for both samples. Form the value of **08**  
variance and standard deviation, write comparison comment for samples.  
Sample 1 values : 49, 44, 46, 42, 48, 45, 47, 43, 50  
Sample 2 values : 28, 34, 46, 32, 59, 39, 58, 52, 54  
(b) Explain Bayesian belief network in detail. **06**
- Q.4** (a) Explain k -Nearest Neighbour algorithm. **07**  
(b) Explain simple regression with equation and examples **07**  
OR  
(a) Explain logistic variable linear regression with equation and example **07**  
(b) Explain Random Forest algorithm. **07**
- Q.5** (a) For association rule learning, explain Apriori algorithm in detail. **07**  
(b) Explain backpropagation in Neural Network with example. **07**  
OR  
(a) Explain K-mediods algorithm. **07**  
(b) Explain types of activation functions in Neural Network. **07**

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