



25805799

QP CODE: 25805799

Reg No : .....

Name : .....

**I M C A DEGREE EXAMINATION, DECEMBER 2025**

**Ninth Semester**

INTEGRATED MCA

**ELECTIVE - IMCA9E04E - MACHINE LEARNING**

2020 Admission onwards

FB11741C

Time: 3 Hours

Maximum: 75 Marks

**Part A**

*Answer any **ten** questions*

*Each question carries 3 marks*

1. Define machine learning.
2. Define mean, median, and mode with an example.
3. Is Naïve Bayes a good choice for high-dimensional data? Provide reasons.
4. What is majority voting in k-NN?
5. What is Gini Index?
6. List out the advantages and limitations of linear regression.
7. What is the difference between input, hidden, and output layers?
8. What is backpropagation? Explain its role in training neural networks.
9. Explain a real-world application where SVM is preferred over other classifiers.
10. Outline the importance of confusion matrix representation.
11. Explain the difference between training, validation, and test sets in model evaluation?
12. Differentiate between bagging and boosting in terms of training strategy, model diversity, and error handling.

(10×3=30 marks)





## Part B

Answer *all* questions

Each question carries **9** marks

13. a) Explain the importance of understanding data before applying machine learning algorithms.

OR

b) "Understanding data distribution is a critical step in machine learning." – Justify this statement with examples of uniform and normal distributions.

14. a) Explain lazy learning in detail. Why is k-NN considered a lazy learner? Discuss its advantages and limitations.

OR

b) Explain the working of the Naïve Bayes Classifier with Bayes' Theorem. Illustrate with a suitable example.

15. a) With a neat diagram, explain the structure of a Decision Tree and describe how it performs decision-making.

OR

b) With the help of an example, describe the steps involved in performing Multiple Linear Regression.

16. a) Discuss the role of neural networks in pattern recognition.

OR

b) Compare SVM with other classification algorithms such as Decision Trees and Neural Networks.

17. a) Explain Boosting in detail. Discuss the working of AdaBoost with algorithm.

OR

b) Write short notes on the following  
a) Confusion matrix  
b) precision and recall  
c) specificity and sensitivity  
d) f1-score

(5×9=45 marks)

