

PG (CBCS)
M.SC. Semester- III Examination, 2023
COMPUTER SCIENCE
PAPER: COS 302
(MACHINE LEARNING & DEEP LEARNING)

Full Marks: 40

Time: 2 Hours

The figures in the right-hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Write the answer for each unit in separate sheet

M1: MACHINE LEARNING

GROUP-A

1. Answer any **TWO** of the following questions: 2×2=4
- What are support vectors in SVM?
 - Explain the Bayes rule.
 - What is 'Classification' in machine learning?
 - What is Concept Learning?

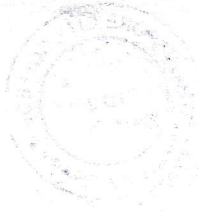
GROUP-B

2. Answer any **TWO** of the following questions: 2×4=8
- Briefly Explain Logistic Regression.
 - What are the differences between bagging and boosting?
 - What is Pruning in Decision Trees, How do esit work?
 - What is Bias and Variance in a Machine Learning Model?
 - What are the differences between semi-supervised supervised and unsupervised learning?

GROUP-C

3. Answer any **ONE** of the following questions: 1×8=8
- Compare K means clustering with Hierarchical Clustering Techniques. What is a Perceptron? Explain the working of a perceptron with a neat diagram.
 - What is activation function? Explain different activation functions

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**M2: DEEP LEARNING****GROUP-A**1. Answer any **TWO** of the following questions:

2×2=4

- a) What are Autoencoders?
- b) What is CNN?
- c) Why are generative adversarial networks(GANs) so popular?
- d) What is supervised learning?

GROUP-B2. Answer any **TWO** of the following questions:

2×4=8

- a) What is Backpropagation? What are the differences between deep learning and machine learning?
- b) Write the differences between RNN and CNN.
- c) Explain following Zero-Shot, Few-Shot and One-Shot Learning
- d) What are the difference between Multilayer Perceptron Neural Network and Conventional Neural Network?

GROUP-C3. Answer any **ONE** of the following questions:

1×8=8

- a) Draw and explain the architecture of a convolutional neural network (CNN).
- b) What is RNN. Explain different types of RNN.
