Roll No……..….. **Total No. of Printed Pages: 1**
Total No. of Questions: [11]

MCA (Semester – 4th)
MACHINE LEARNING
Subject Code: MCAPD1-421
Paper ID: [20270126]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(4 marks each)**

Q1. Differentiate between clustering and classification.
Q2. Discuss the various issues in decision tree learning approach.
Q3. Draw and explain the general architecture of a single layer neural network.
Q4. Explain the various operators used to genetic algorithm.

Section – B **(8 marks each)**

Q5. Design a learning system with the help of machine learning approach to distinguish between two fruits (an apple and an orange) from a given set of n images.
Q6. Consider a case study from education sector to explain how decision trees are used for classification.
Q7. "The goal of the back propagation algorithm is to optimize the weights so that the neural network can learn how to correctly map arbitrary inputs to outputs." Justify with the help of a suitable example.
Q8. How case based reasoning captures lessons from past problem-solving experiences to find solutions to new problems?

Section – C **(10 marks each)**

Q9. What is the goal of feature selection techniques in machine learning? Why don't we give all the features to the machine learning algorithm and let it decide which feature is important?
Q10. How does k-means perform clustering? Why does k-means clustering use mostly the Euclidean distance metric? Give suitable example to support your answer.
Q11. How will the use of facial recognition by private companies affect privacy? How is facial recognition different from facial characterization?