(b) Explain hierarchical clustering algorithm with proper illustration. (CO4)

(c) Explain the terms core point, border point, noisy point, density reachable and density connected in relation to DBSCAN algorithm. (CO4)

5. (a) Differentiate between linear regression and logistic regression with proper examples. (CO5)

(b) Explain K nearest neighbor algorithm in detail with the help of an example. What are its advantages and disadvantages ? (CO5)

(c) Explain decision tree algorithm in detail. What are some of the design issues of the algorithm ? (CO5)

H Roll No. .....

TBC–403

B. C. A. (FOURTH SEMESTER) END SEMESTER EXAMINATION, June/July, 2022

INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any ***two*** sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty.**

(iv) Each sub-question carries 10 marks.

1. (a) What are the different definitions of AI ? Which among these is the right definition ? (CO1)

(b) What do you mean by a rational agent ? Illustrate the rational agent and explain its different components in detail. (CO1)

(c) Explain task environment with an example. Differentiate between deterministic and stochastic task environment and episodic and sequential task environment. (CO1)

2. (a) Explain Hill climbing algorithm in your own words. How is it different from informed search algorithm ? (CO2)

(b) Explain A* algorithm in detail. Explain the two heuristics used to evaluate the A* algorithm. (CO2)

(c) Explain alpha beta pruning in minmax tree. What is the requirement for pruning the tree ? (CO2)

3. (a) What are the components of knowledge base ? Differentiate between TELL and ASK function. (CO3)

(b) Differentiate between forward chaining and backward chaining. What is the use of these methods in first order logic ? (CO3)

(c) What do you mean by Resolution ? Prove the following using Resolution by constructing a resolution graph : (CO3)

(i) Humidity is high or sky is cloudy.

(ii) If the sky is cloudy, then it will rain.

(iii) If the humidity is high, then it is hot.

(iv) It is not hot.

Goal : it will rain

4. (a) Define Machine learning focusing on the terms tasks, learning from experience and performance evaluation. Differentiate between the four machine learning techniques stating examples for each. (CO4)