

Surendranath College
M.Sc. in Computer Science
Mid-Semester Examination, 2023

Semester: III

Paper Name: Artificial Intelligence

Paper Code: CSMC304

Time: 1 hour

Full marks: 30

(Answer any six questions out of eight. Each question carrying **5** marks)

Given two fuzzy sets A and B, $A = \{(x_1, 0.5), (x_2, 0.1), (x_3, 0.4)\}$ and $B = \{(x_1, 0.2), (x_2, 0.3), (x_3, 0.5)\}$. What is the union of the two sets?

What is the difference between probability and fuzzy logic?

(2+3)

2. Explain the CART algorithm with an example.

3. Realize AND (2 inputs) using perceptron learning. Assume the weights are initialized to 0.5, and Bias input is 0.9.

4. Define the term environment and agent in the context of artificial intelligence. Differentiate between the working principles of a utility-based agent and a goal-based agent.

(2+3)

What do you mean by heuristic? How does Uniform Cost search differ from A* search?

(2+3)

6. How can Alpha-Beta pruning improve searching by cutting-off a portion of the game tree? Explain with a suitable example.

7. Explain depth-first search algorithm with an example. State the approach that can alleviate the problem of unbounded trees in depth-first search.

(3+2)

"Iterative deepening is actually faster than breadth-first search, despite the repeated generation of states" — Justify the statement with an example.