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**PRESIDENCY UNIVERSITY
BENGALURU**

Department of Research & Development

Mid - Term Examinations - August 2024

Odd Semester: Ph.D. Course Work

Date: 12/08/2024

Course Code: CSE5005

Time: 09:30am – 11:00am

Course Name: Artificial Intelligence

Max Marks: 50

Department: SOCSE & IS

Weightage: 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.
 - (ii) Do not write any matter on the question paper other than roll number.
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PART A (THOUGHT PROVOKING)

Answer all the Questions. Each question carries 5 marks.

(4Qx 5M= 20M)

1. Compare the implications of using mutable vs. immutable objects as attributes in Python classes. (CO: 01 BL: Understand)
2. Elucidate the concept of operator overloading in Python with a suitable example. (CO: 01 BL: Understand)
3. Explain briefly about problem solving agents with an example. (CO: 02 BL: Understand)
4. Summarize Stimulated annealing. (CO: 02 BL: Understand)

PART B (PROBLEM SOLVING)

Answer all the Questions. Each question carries 10 marks.

(3Qx 10M= 30M)

5. A dataset with multiple variables and complex relationships needs to be visualized to identify patterns and insights. Classify how Pandas, Seaborn, and Matplotlib can be used to achieve this visualization. What are the strengths and weaknesses of each library in this context? (CO: 01 BL: Apply)
6. The recommendation system needs to provide recommendations across different domains (e.g., movies, books, and music). How can intelligent systems be designed to handle cross-domain recommendations effectively? What techniques can be used to transfer knowledge and preferences between different domains? (CO: 02 BL: Apply)

7. In a game like chess, where the state space is enormous, you plan to enhance the Minimax algorithm with Alpha-Beta pruning to improve performance. Determine how Alpha-Beta pruning reduces the number of nodes evaluated by Minimax. Demonstrate the key principles of Alpha-Beta pruning, and how does it affect the efficiency of the search algorithm?

(CO: 02 BL: Apply)