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020402

May 2024

B. Tech. (RAI) (Fourth Semester)

Artificial Intelligence (PCC-RAI-402-21)

Time : 3 *Hours*] [*Maximum Marks :* 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) What are the different task domains of AI ? **1.5**

(b) Explain the criteria to check the success of a machine. **1.5**

(c) Write any *two* problems associated with FOPL. **1.5**

(d) What do you mean by problem reduction in AI ? **1.5**

(e) What is the difference between Weak AI and Strong AI ? **1.5**

(f) List the advantages and disadvantages of Best first search algorithm. **1.5**

(g) Explain mapping between facts and representations using suitable diagram. **1.5**

(h) Define ADL. **1.5**

(i) What is semantic processing in NLP ? **1.5**

(j) Define Induction Learning. **1.5**

Part B

2. (a) Explain the A* algorithm. Why is it called an admissible algorithm ? **10**

   (b) Check whether the set of statements "I will be wet if it rains and I go out of the house. It is raining now. I go out of the house. I will not be wet." Are consistent or inconsistent using semantic tableau ? **5**

3. (a) What are the problems associated with hill climbing ? How can they be resolved ? **5**

   (b) What is NLP ? Also explain Discourse and Pragmatic Processing. **10**

4. What is an Expert System ? What are its characteristics ? Explain each and every component of Expert System Development Life Cycle in brief. **15**

5. (a) "Mary will get her degree only if she registers as a student and passes her exam. She has registered herself as a student. She has passed her exam." Show that she will get a degree. Solve using resolution refutation method. **5**

   (b) What is Genetic Algorithm ? For what kind of problem Genetic Algorithm ? **10**

6. (a) How does Demster Shafer Theory differ from Bayesian Reasoning. **10**

   (b) What is learning in AI ? How does a computer learn ? Explain Rote Learning and Explanation based learning in detail. **5**

7. Write short note on the following : **15**

   (a) Constraint Satisfaction Problem

   (b) Fuzzy Reasoning

   (c) Hidden Markov Model