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Total number of printed pages-4

4 SEM BCA (CBCS) IAI 1

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2019

(June)

COMPUTER APPLICATION

Paper: 4.1

(Introduction to AI)

Full Marks: 60

Time: Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following:

1×5=5

- (a) What is Expert System?
- (b) Define Heuristic function.
- (c) What is Plateau in hill-climbing method?
- (d) Define the term fact.

Contd.

- (e) Which among the following usually requires less memory?
 - (i) BFS
 - (ii) DFS
 - (iii) Undecidable
 - (iv) None of the above.
 (Choose the correct option)
- 2. Answer the following: 2×5=10
 - (a) Mention the differences between forward chaining and backward chaining method.
 - (b) Write about any two applications of AI.
 - (c) Define Modus Ponens with example.
 - (d) What are the limitations of propositional logic?
 - (e) What is clausal form? Convert "All dogs are animal" to clausal form.
- 3. (a) Differentiate between weak AI and strong AI.
 - (b) Describe the state space for "Water Jug Problem". Solve this problem by giving its operation sequence.

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OR

How to define a problem as state space? Explain with the help of an example.

- 4. (a) Write the algorithm for Generate and Test. 3
 - (b) Explain Steepest Ascent Hill Climbing method with example. Write the difference between Steepest Ascent Hill Climbing and Simple Hill Climbing.

7+2=9

(3)

OR

Explain Iterative Deepening Search method with a suitable example. What are the advantages of this method over Breadth-First Search method.

7+2=9

- 5. (a) Prove that "A is happy" from the following statements using resolution:
 - (i) All Philosophers are Greek.
 - (ii) All Greeks are happy.
 - (iii) Either A or B is a Philosopher
 - (iv) B is not a Philosopher.

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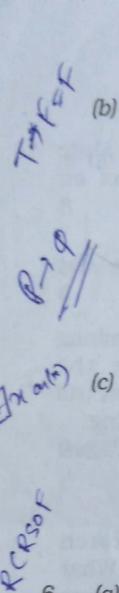
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Convert the following into First-order logic:

- (i) All indoor games are easy.
- (ii) Rajiv likes cricket.
- (ii) Any person who is respected by every person is a king.
- (iv) Alka likes all kinds of food.
- (v) Anything anyone eats is called food.
- (c) Explain Instance and Is-A relationship with example.

OR

What are the different quantifiers used in First-order Logic? Give example.

3

- (a) Determine whether the following statement is a tautology or contradictory. 3 $((A \to \neg B) \land (\neg C \to A)) \land B) \to C$
- (b) Define knowledge. Explain different issues in knowledge representation.

1+6=7

OR

What is Constraint satisfaction problem? Explain with example.

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