G 1216

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B.TECH. DEGREE EXAMINATION, MAY 2016

Eighth Semester

Branch : Computer Science and Engineering / Information Technology

ARTIFICIAL INTELLIGENCE (RT)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 4 marks.

1. Present a formal definition of search space and explain the same.

2. Explain depth-limited search with a simple example.

3. What is simulated annealing ?

4. Explain heuristic search.

5. Give example for a game tree and explain the same.

6. What are frames ? Give example.

7. Explain reasoning with example.

8. What is resolution ? Give example.

9. Explain the meaning of the following predicates in Prolog:

    Brother (Khanna, Veena).

    Wife (Narmatha, Khanna).

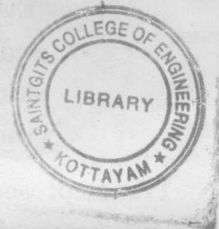10. What are meta-predicates in Prolog ? Give example.

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 12 marks.

11. Explain breadth first search (BFS) and depth first search (DFS) strategies with example and diagrammatic illustration.

Or

Turn over

12. Explain with example and diagrammatic illustration a constraint satisfaction problem can be viewed as a search problem with the following sequence of steps: initial state, successor function, goal test, and path cost.

13. Explain iterative deepening search algorithm with example and diagrammatic illustration.

Or

14. Explain with example the use of heuristic function in hill climbing algorithm to estimate how close a given state is to a goal state. Illustrate each step of the hill climbing algorithm diagrammatically.

15. Explain with example alpha-beta pruning algorithm. Illustrate each step of the algorithm diagrammatically.

Or

16. Discuss representation of knowledge in semantic net and frames using the following concepts :—

"Every human, animal and bird is living thing that breathe and eat. All birds can fly. All man and woman are humans who have two legs. Cat is an animal and has a fur. All animals have skin and can move. Giraffe is an animal who is tall and has long legs. Parrot is a bird and is green in color".

17. Represent the following sentences in first order logic (FOL) by defining your own vocabulary:

    (i)   Everyone in Kerala is hard working.

    (ii)   Every student who studies for at least three hours a day passes the exam.

    (iii)   Students who are regularly late for first hour classes are hostel students.

    (iv)   You can get tasty food everywhere in Kerala.

Or

18. Explain with example inference in rule-based systems using forward chaining and backward chaining.

19. Give examples for simple queries, rules and recursive queries in Prolog with example and discuss the same.

Or

20. When does Prolog do unification ? Discuss with example.

(5 × 12 = 60 marks)