Reg. No. :

Question Paper Code : 20069

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Third Semester

Artificial Intelligence and Data Science

AL 3391 — ARTIFICIAL INTELLIGENCE

(Regulations 2021)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define AI and write the applications of AI.

2. List the steps involved in simple problem solving technique.

3. What is Heuristic function?

4. What are the things that agent knows in online search problems?

5. Write the components of a game.

6. What do you mean by constrain propagation?

7. What are the three levels in describing knowledge based agent?

8. State Unification in first order logic.

9. Why does uncertainty arise?

10. What is Baye's rule? Mention its use.

PART B — (5 × 13 = 65 marks)

11. (a) (i) What is an Agent? How does it interact with environment? Explain. (5)

    (ii) What are informed search techniques? Explain any one. (8)

Or

    (b) List the basic kinds of intelligent agents and explain any two agents with neat schematic diagram. (13)

12. (a) (i) What is heuristic search technique in AI? How does heuristics search works? Explain its advantages and disadvantages. (8)

  (ii) Describe the local search algorithm with neat sketch. (5)

Or

  (b) (i) Explain the steps involved in formulating problems with example. (8)

  (ii) Write short notes on genetic algorithm. (5)

13. (a) Explain the constraint satisfaction problem and the variations on constraint satisfaction problem with example. (13)

Or

  (b) (i) Write short notes on Monte-Carlo search. (4)

  (ii) Define local consistency. What are the different types of local consistency? Explain any two. (9)

14. (a) (i) What are logical connectives? Explain in detail. (8)

  (ii) Describe an algorithm for general propositional inference based on model checking. (5)

Or

  (b) Discuss the Knowledge Engineering Process with proper illustration. Depict the concept of forward chaining. (13)

15. (a) What is Bayesian network? Explain the method for constructing Bayesian networks. (13)

Or

  (b) (i) What are the ways to understand the semantics of Bayesian Networks? (6)

  (ii) Discuss the exact inference in Bayesian networks. (7)

PART C — (1 × 15 = 15 marks)

16. (a) (i) How does Alpha beta search algorithm differ from Minimax algorithm. Analyse. (7)

  (ii) What is the significance of knowledge representation? Mention the desirable properties of knowledge representation. (8)

Or

  (b) What is conjunctive normal form? Illustrate and explain the procedure to convert sentences into conjunctive normal form with a neat example. Depict real time images where it could be applied. (15)

2

20069