

[Time:2.30 Hours]

[ Marks:75 ]

Please check whether you have got the right question paper.

- N.B:
1. All question are compulsory.
  2. Figures to the right indicate full marks.

- Q.1** Attempt any three of the following: **15**
- a. What is artificial intelligence? Explain various definitions of AI.
  - b. Explain how the AI is developed in last many decades.
  - c. List and explain the applications of AI.
  - d. Summarize how rational agent is different than intelligent agent?
  - e. Demonstrate PEAS properties in automated taxi driving in detail.
  - f. Explain different types of environments.
- Q.2** Attempt any three of the following: **15**
- a. Demonstrate problem formulation in 8 queen problem.
  - b. Compare BFS and DFS algorithm in detail
  - c. Explain with the example Best First Search.
  - d. Write a note on Heuristic function.
  - e. Define Hill Climbing Algorithm? Discuss the limitations of Hill Climbing Algorithm
  - f. Illustrate with the example Genetic algorithm.
- Q.3** Attempt any three of the following: **15**
- a. Explain with example Minimax algorithm.
  - b. Write a note on knowledge based agent.
  - c. Discuss the problem of Wumpus world in detail.
  - d. Illustrate Resolution algorithm in detail.
  - e. Explain backward and forward chaining with example.
  - f. Explain various strategies of game playing.
- Q.4** Attempt any three of the following:
- a. Explain Universal and Existential quantifier with example.
  - b. Explain Knowledge Engineering process in detail.
  - c. Define following terms.
    1. Predicate
    2. Function (in logic)
    3. Model in First-order Logic
    4. First-order Logic
  - d. Write the following assertions in first-order logic:
    1. Emily is either a surgeon or a lawyer.
    2. Joe is an actor
    3. All surgeons are doctors.
    4. Joe does not have a lawyer (i.e., is not a customer of any lawyer).
    5. Emily has a boss who is a lawyer. f. Every surgeon has a lawyer.
  - e. Explain Conjunctive Normal Form (CNF) in First-Order logic.
  - f. What is Unification? Explain in brief about Unification.

**Q.5**

Attempt **any three** of the following:

**15**

- a. What are nondeterministic domains? Explain planning adaption for non-deterministic domains
- b. Write a short note on conditional planning or contingency planning
- c. Explain sensorless planning or conformant planning
- d. Elaborate Mental Events
- e. With the help of example explain in detail about semantic networks.
- f. Explain briefly about internet shopping world

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