

(Time: 2½ hours)

Total Marks: 75

- N. B.: (1) All questions are compulsory.
 (2) Make suitable assumptions wherever necessary and state the assumptions made.
 (3) Answers to the same question must be written together.
 (4) Numbers to the right indicate marks.
 (5) Draw neat labeled diagrams wherever necessary.
 (6) Use of Non-programmable calculators is allowed.

1. Attempt any three of the following: 15
 - a. What is Artificial Intelligence? State its applications
 - b. Discuss Turing test with Artificial Intelligence approach.
 - c. What are agents? Explain how they interact with environment.
 - d. What is rational agent? Discuss in brief about rationality.
 - e. Explain PEAS description of task environment for automated taxi.
 - f. Give comparison between Full observable and partially observable agent.
2. Attempt any three of the following: 15
 - a. Discuss in brief the formulation of single state problem.
 - b. Give the outline of Breadth First Search algorithm.
 - c. Give the outline of tree search algorithm.
 - d. Explain the mechanism of genetic algorithm.
 - e. Explain how transition model is used for sensing in vacuum cleaner problem.
 - f. Give the illustration of 8 queen problem using hill climbing algorithm.
3. Attempt any three of the following: 15
 - a. Explain the working mechanism of min-max algorithm.
 - b. Explain in brief about resolution theorem.
 - c. Write a note on Kriegspiel's Partially observable chess.
 - d. Explain in brief about knowledge base agent.
 - e. Explain the syntax for propositional logic.
 - f. Write a note on Wumpus world problem.
4. Attempt any three of the following: 15
 - a. What is first order logic? Discuss the different elements used in first order logic.
 - b. Explain universal and existential quantifier with suitable example.
 - c. Convert the following natural sentences into FOL form:
 - i. Virat is cricketer.
 - ii. All batsman are cricketers.
 - iii. Everybody speaks some language
 - iv. Every car has wheel.
 - v. Everybody loves somebody some time.
 - d. What is knowledge engineering? Write the steps for its execution.
 - e. Give comparison between forward chaining and backward chaining
 - f. Explain in brief about unification.
5. Attempt any three of the following: 15
 - a. What is planning? Explain STRIPS operators with suitable example.
 - b. Explain in brief about partially ordered plan.
 - c. Explain in brief about hierarchical planning.
 - d. Write a note on mutex relation.
 - e. What is semantic network? Show the semantic representation with suitable example.
 - f. Write a note on Event calculus.