

(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. Elaborate artificial intelligence with suitable example along with its applications.  
 b. Discuss the historical evolution of Artificial Intelligence.  
 c. State the relationship between agents and environment.  
 d. Explain the concept of Rationality.  
 e. Explain types of environments.  
 f. Explain reflex agents with state.
2. Attempt any three of the following: 15  
 a. Write the procedure for tree search.  
 b. Explain the algorithm for breadth first search algorithm.  
 c. Give the outline of Uniform-cost search algorithm.  
 d. Explain A\* algorithm for the shortest path.  
 e. Give the outline of Hill climbing algorithm.  
 f. Explain the working mechanism of genetic algorithm.
3. Attempt any three of the following: 15  
 a. What is alpha-beta pruning? Explain the function of alpha beta pruning.  
 b. Give the outline of min-max algorithm.  
 c. Write a note on card games.  
 d. What is knowledge based agent? Explain its role and importance.  
 e. Write a note on Wumpus world problem.  
 f. Give the outline of resolution algorithm.
4. Attempt any three of the following: 15  
 a. What are predicates? Explain its syntax and semantics.  
 b. What are Quantifiers? Explain the types with syntax and example.  
 c. Convert the following into predicate form:  
     i. Virat is software engineer.  
     ii. All vehicles have wheels  
     iii. Some-one speaks some language in this class.  
     iv. Everybody loves somebody sometime.  
     v. All software engineer develops software.  
 d. Explain the process of knowledge engineering.  
 e. What is unification? Explain the process of unification.  
 f. Give the outline of simple forward chaining algorithm.
5. Attempt any three of the following: 15  
 a. What is planning? Explain the need of planning.  
 b. Explain block world problem for the following start state and end state.  
 c. Write a note on planning graph.  
 d. What are events? Explain its importance.  
 e. Write a note on semantic network.  
 f. Write a note on Truth maintenance system.