

(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 the purpose of turing test?
 - b. What is Artificial intelligence? Explain with example.
 - c. Explain the concept of agent and environment.
 - d. Give the PEAS description for taxi’s task environment.
 - e. Explain the rational agent approach of AI.
 - f. Explain the working of simple reflex agent.

2. **Attempt any three of the following:** 15
 - a. List and explain performance measuring ways for problem solving.
 - b. Formulate the vacuum world problem.
 - c. Write the uniform cost search algorithm. Explain in short.
 - d. With suitable diagram explain the following concepts
 - i. shoulder
 - ii. Global maximum
 - iii. Local maximum
 - e. How generic algorithm works?
 - f. Explain the working of AND-OR search tree.

3. **Attempt any three of the following:** 15
 - a. List and explain the elements used to define the game formally.
 - b. Write the minimax algorithm. Explain in short.
 - c. Explain alpha-beta pruning with suitable example.
 - d. Write the connectives used to form complex sentence of propositional logic. Give example for each.
 - e. Explain the concept of knowledge base with example.
 - f. Write a short note on propositional thermo proving.

4. **Attempt any three of the following:** 15
 - a. Explain the following with example
 - i. Atomic sentence
 - ii. Complex sentence
 - b. Explain universal qualifier with example.
 - c. Define the wumpus world problem in terms of first order logic.
 - d. Explain the following concepts
 - i. Universal Instantiation
 - ii. Existential Instantiation
 - e. Write and explain a simple backward-chaining algorithm for first-order knowledge bases.
 - f. Explain the first order definite clause.

[TURN OVER]

5. Attempt any three of the following:

15

- a. Write PDDL description of an air cargo transportation planning problem.
 - b. Explain GRAPHPLAN algorithm.
 - c. List various classical planning approaches. Explain any one.
 - d. Explain the following terms
 - i. Circumscription
 - ii. Default logic
 - e. Write a short note on description logics.
 - f. Explain semantic network with example.
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