

(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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