

(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**

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

2. Attempt any three of the following:**15**

- List and explain performance measuring ways for problem solving.
- Formulate the vacuum world problem.
- Write the uniform cost search algorithm. Explain in short.
- With suitable diagram explain the following concepts
i. shoulder ii. Global maximum iii. Local maximum
- How generic algorithm works?
- Explain the working of AND-OR search tree.

3. Attempt any three of the following:**15**

- List and explain the elements used to define the game formally.
- Write the minimax algorithm. Explain in short.
- Explain alpha-beta pruning with suitable example.
- Write the connectives used to form complex sentence of propositional logic. Give example for each.
- Explain the concept of knowledge base with example.
- Write a short note on propositional thermo proving.

4. Attempt any three of the following:**15**

- Explain the following with example
i. Atomic sentence ii. Complex sentence
- Explain universal qualifier with example.
- Define the wumpus world problem in terms of first order logic.
- Explain the following concepts
i. Universal Instantiation ii. Existential Instantiation
- Write and explain a simple backward-chaining algorithm for first-order knowledge bases.
- 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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