

**Q. P. Code: 11255**

(Time:  $2\frac{1}{2}$  hours)

[Marks: 60]

Please check whether you have got the right question paper.

- 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** calculator is **allowed**.

**1. Attempt any two of the following:**

**12**

- Define rational agent. Explain the difference between rationality and omniscience with an example.
- Briefly explain model-based reflex agent with its schematic diagram.
- List and explain the components of a well defined problem.
- Explain the concept of Simulated Annealing.

**2. Attempt any two of the following:**

**12**

- What are the elements of a game?
- State and explain the semantics of propositional logic.
- Explain any three types of local consistency.
- Explain the various resolution strategies.

**3. Attempt any two of the following:**

**12**

- Explain any one approach to search for a plan.
- Write a short note on contingent planning.
- State the importance of likelihood weighting for inference in Bayesian networks.
- How to keep track of many objects? Explain.

**4. Attempt any two of the following:**

**12**

- List and explain the six constraints required for reasonable preference relation.
- Discuss Dominance with an example.
- Explain the policy iteration algorithm for optimal policy.
- Describe Inductive logic programming with an example.

**5. Attempt any two of the following:**

**12**

- Explain the general form of expectation-maximization algorithm.
- Elaborate on the HITS algorithm.
- How active reinforcement learning is different from passive reinforcement learning?
- Describe the three-layer architecture in robotic software architectures.