

- N.B.: (1) Question No. 1 is compulsory  
 (2) Write any four questions out of remaining.  
 (3) Assume suitable data if required.

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|---|-----|--|----|
| 1 | (a) | Discuss Belief network.  | 5  |
|   | (b) | Explain Heuristic function with example.                                     | 5  |
|   | (c) | Describe robot workspace.  | 5  |
|   | (d) | Explain Screw Transformation.  | 5  |
| 2 | (a) | Explain A* search with example.  | 10 |
|   | (b) | What is Uncertainty? Explain Bayesian network with example.                  | 10 |
| 3 | (a) | Explain various methods of knowledge representation with example.            | 10 |
|   | (b) | Explain steps in problem formulation with example.                           | 10 |
| 4 | (a) | Obtain Inverse Kinematic solution for 4-axis SCARA Robot.                    | 10 |
|   | (b) | Discuss various position sensors used in robots.                             | 10 |
| 5 | (a) | Discuss partial order planning giving suitable example.                      | 10 |
|   | (b) | Explain supervised, unsupervised and reinforcement learning with example.    | 10 |
| 6 | (a) | Explain the structure of learning agent. What is role of critic in learning? | 10 |
|   | (b) | Describe different types of environments applicable to AI agents.            | 10 |
| 7 |     | Write short note on  | 20 |
|   | (a) | Properties of environment  |    |
|   | (b) | Limitations of Hill-Climbing Algorithm                                       |    |
|   | (c) | PROLOG   |    |
|   | (d) | Crypt Arithmetic   |    |