

Code :R7321506

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III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
ARTIFICIAL INTELLIGENCE
(Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) Define the following:
(i) Initial state (ii) successor function
(iii) State space (iv) goal test (v) path cost
(b) Draw the schematic diagram of a model based reflex agent and its operation.
2. (a) Explain the greedy best first search method.
(b) Compare the performance of the depth. First search with the breadth first search.
3. (a) What is constraint satisfaction problem? Explain with relevant example.
(b) Explain the hill climbing method.
4. Explain the alpha-beta pruning algorithm and compare it with min max algorithm.
5. (a) Explain the resolution procedure in propositional logic.
(b) What are the desirable properties of knowledge representation.
6. What is back ward chaining? Explain basic algorithm and describe how it is used in logic programming.
7. (a) Explain the partial-order planning with example.
(b) Explain heuristics for state space search.
8. Briefly explain the following learning methods
(a) Supervised learning
(b) Un supervised learning
(c) Reinforcement learning

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1. (a) With a neat sketch explain the concept of an agent.
(b) Distinguish the following:
 - i. Discrete VS continuous
 - ii. Single agent VS multi agent
2. (a) Define Heuristic function? Explain Heuristic search technique with the help of an example.
(b) Explain the greedy best first search method.
3. Explain the depth first search approach to non-monotonic reasoning with example.
4. (a) Explain the min max algorithm for a game.
(b) Explain the evaluation functions.
5. (a) Describe the wumpus world with PEAS representation.
(b) Explain the basis of resolution.
6. (a) What is unification? What is the most general unifier?
(b) What is resolution? Describe conjunctive normal form for first order logic.
7. Explain planning with state-space search and also discuss forward states space search, backward states space search in detail.
8. Explain the following:
 - (a) Nearest-neighbor model
 - (b) Kernel model

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1. (a) Explain the components of a learning agent.
(b) Distinguish the following:
 - i. Fully observable VS partially observable
 - ii. Episodic VS sequential.
2. (a) In what kind of a problem space would be a depth-first search be better than a breadth first one.
(b) What is the need for heuristic functions and heuristic search? What problems does it address.
3. Discuss the following:
 - (a) Hill climbing.
 - (b) Constrained satisfaction.
4. (a) Show how alpha-beta pruning can make search faster.
(b) Explain the min max algorithm for a game.
5. (a) Explain the resolution inference rule.
(b) What is a knowledge based agent? What does it do?
6. Explain the following quantifiers with examples.
 - (a) Universal quantifier
 - (b) Existential quantifiers
 - (c) Nested quantifiers
7. (a) Explain the backward state search with example.
(b) Explain Heuristics for state space search.
8. Explain the following:
 - (a) Learning Bayesian networks.
 - (b) Learning hidden Markov models.

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1. (a) Define the following:
 - i. agent
 - ii. agent function
 - iii. agent program
 - iv. rationality
 - v. autonomy
 - vi. learning(b) Explain the components of a learning agent.
2. (a) When would best-first search be worse than simple breadth first search.
(b) Explain A* search algorithm in detail.
3. (a) Explain simulated annealing in detail with the help of an example.
(b) Explain constrain satisfaction problem.
4. Explain playing of chess game using alpha-beta pruning algorithm.
5. (a) Briefly describe the different technique for knowledge representation.
(b) Explain the resolution inference.
6. Explain the forward chaining and backward chaining algorithms. Compare their utility and applications.
7. Explain partial-order planning with example.
8. Explain briefly:
 - (a) Discrete models.
 - (b) Continuous models.
