

Student ID#: _____

AI Comprehensive Exam
Fall 2002

Tick all (but only) correct cases. Some questions may have more than one correct alternative!

Each question has a number of points mentioned within parentheses.

1. (10p) Which ones of the following inference types are sound in the most general case?

- a) abduction
- b) induction
- c) deduction

2. (10p) Give the Modus Ponens inference rule:

3. (10p) Which of the following algorithms is not guaranteed to return first the shortest solution?

- a) DFS
- b) BFS
- c) Iterative Deepening Search
- c) Greedy Search
- d) Bidirectional BFS

4. (10p) What is the advantage of Iterative Deepening Search over BFS?

- a) the cheapest solution is the first found one.
- b) no suboptimal solution is explored.
- c) the time complexity is lower.
- d) the space complexity is lower.
- e) the queue ordering is cheaper.

5. (10p) What are the 3 elements of a general search problem?

- a) initial state, final state, operators
- b) states, operators, cost
- c) queue-ordering, heuristic-cost function h , generated-cost function g
- d) states, cost, queue

6. (10p) What is the main design issue in approaching a problem with a general search algorithm?

- a) the choice of the operators
- b) the choice of the heuristic cost function
- c) the choice of the states

7. (10p) Write in First Order Logic.

- a) All my books are interesting
- b) I have no small book
- c) Everybody speaks a language
- d) There is exactly one language spoken by everybody.

8. (10p)

a) Discuss why do you think Hierarchical planning may be a better choice in terms of efficiency.

b) A plan that uses the "sensing action" and can handle contingencies is called -----.

9. (10p) Compare and contrast between the Belief networks and the Artificial neural networks.

10. (10p) Between Depth-First Search and Iterative Deepening Search algorithms, which one would you recommend for solving Constraint Satisfaction Problems (CSPs)? Discuss your answer.