

2005 Paper 3 Question 3

Artificial Intelligence I

- (a) What are the advantages and disadvantages of *constraint satisfaction problem* (CSP) solvers compared with search algorithms such as A^* search, etc? [3 marks]
- (b) Give a general definition of a CSP. Define the way in which a solution is represented and what it means for a solution to be *consistent* and *complete*. [5 marks]
- (c) Assuming discrete binary constraints and finite domains, explain how breadth-first-search might be used to find a solution and why this is an undesirable approach. [3 marks]
- (d) Give a brief description of the basic *backtracking algorithm* for finding a solution. [4 marks]
- (e) Describe the *minimum remaining values heuristic*, the *degree heuristic* and the *least constraining value heuristic*. [5 marks]