

科目：人工智慧 (B)

日期：96 年 7 月 26 日 第 1 頁 共 1 頁

請 “✓” 明    ✓不可看書    可看書

\* 請將答案依題號順序寫入答冊

1. (15 points) Consider the standard  $9 \times 9$  Sudoku puzzle.
  - (a) (5 Points) Formulate it as a constraint satisfaction problem by defining the variables, values, and constraints.
  - (b) (5 Points) Use an example to explain how one may improve the basic backtracking search.
  - (c) (5 Points) Argue for or against solving the Sudoku puzzle using local search.
2. (10 points) Prove  $A^*$  is admissible.
3. (10 points)
  - (a) Describe a search space in which iterative deepening performs much worse than depth-first search.
  - (b) Describe the characteristics of complex domains in which IDA\_ has difficulties.
4. (15 points) Consider the following sentences in English:

The law says that it is a crime for an American to sell weapons to hostile nations.  
The country Nono, an enemy of America, has some missiles, and all of its missiles were sold to it by Colonel West, who is American.

  - a) represent the facts in FOL, all symbols have to be their meanings.
  - b) use generalized modus ponens to prove West is a criminal.
  - c) what is the general problems with FOL during problem solving. Use examples to show the problems