

# 國立交通大學試題紙

科目：演算法 (B)

日期：96 年 7 月 27 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. (10%) Given a set of  $n$  real numbers on the real line, describe an efficient algorithm to determine the smallest set of unit-length closed intervals that contains all of the given points. Prove that your algorithm is correct.
2. (16%) Describe an  $O(|V|^2 \log |V| + |V| |E|)$ -time algorithm to solve the all-pairs shortest-paths problem with weighted graphs  $(V, E)$ , where negative weights are allowed.
3. (12%) For the maximum flow problem, describe the algorithm by Edmonds-Karp and derive the total running time of this algorithm.
4. (12%) Prove that the vertex cover problem is NP-complete. Hint: reduce the clique problem to the vertex cover problem.