

MAD 3105 DM2 **Quiz 9x** 27 Mar 1996 Name: _____

Show **ALL** work for credit; be neat; and use only **ONE** side of each page of paper.

1. Arrange in increasing order: $O(n^2 \log n)$, $O(n!)$, $O(n^3)$, $O(n^2)$, $O(3^n)$, $O(n^{100})$, $O(n\sqrt{n})$, $O(n^2\sqrt{n})$, $O(2^n)$.

2. Give network counterexamples to each statement below:

- A. A transport network with a unique maximal flow has a unique minimal cut.
- B. A transport network with a unique minimal cut has a unique maximal flow.
- C. If F is a flow and $(\mathcal{S}, \mathcal{T})$ is a cut so that $F(\mathcal{T}, \mathcal{S}) = 0$, then $(\mathcal{S}, \mathcal{T})$ is a minimal cut.