

Name	Ent. No.
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**Important:** Keep your answer within the box. Anything written outside the box will be treated as rough work. Do your rough work on the free space on the flip side of this sheet.

**Q.** A *topological sorting* of a partially ordered set  $(X, \preceq)$  is a total order  $\preceq_T$  on  $X$  such that for all  $x, y \in X$ ,  $x \preceq y$  implies  $x \preceq_T y$ . Prove that every finite poset  $(X, \preceq)$  has a topological sorting.