1. (18 points) Identify all of the following statements that are true about transactions of various kinds
   
   A. A Saga may be defined that, in effect, has a vital subtransaction
   B. No Saga may be defined that, in effect, has two or more vital subtransactions
   C. Consider an extended transaction with exactly two subtransactions, \( T_1 \) and \( T_2 \). Compensating \( T_1 \) means how to undo \( T_2 \) if \( T_1 \) succeeds
   D. When two or more subtransactions have completed and must be undone, we must undo them in exactly the same order in which they happened to complete
   E. An open nested transaction model is one which relaxes isolation
   F. An open nested transaction model is one which allows additional subtransactions to be added into a transaction
   G. The two-phase commit protocol determines whether two or more parties unanimously agree to commit
   H. Two-phase commit is biased in favor of the No decision: even if one party out of one hundred says no, the decision is necessarily a No
   I. Compositional serializability is not adopted in open environments, because it would not ensure correctness

   **Solution:** A, E, G, H

2. (8 points) Identify all correct expressions that capture the following specification involving event computations:
   If \( e \) precedes \( f \), then \( f \) precedes \( e \)

   A. \( \bar{e} \lor \bar{f} \lor f \cdot e \)
   B. \( \pi \lor \bar{f} \)
   C. \( \pi \land \bar{f} \)
   D. 0

   **Solution:** A