Problem	1	2	3	Total
Points:	22	8	12	42
Score:				

This homework assignment has 3 problems, for a total of 42 points.

1. (22 points) Of the following statements, identify all that hold about markets.
   A. Markets respect the autonomy of participants: they can bid as they please
   B. Markets respect the heterogeneity of participants: details of their construction don't matter
   C. Markets respect the dynamism of open environments: participants can change their bids arbitrarily
   D. Market mechanisms guarantee that each participant gains value
   E. Markets are a closed architecture, because they have well-defined components and interconnections
   F. Markets are a centralized architecture because the essential functions are performed in the marketplace
   G. Marketplaces such as eBay are endogenous because they require specifying ending times for all auctions, in contrast to stock markets which go on forever
   H. Marketplaces such as eBay provide support for nonrepudiation
   I. Given M sell and N buy bids, at the (M–1)st highest price, supply may exceed demand
   J. Given M sell and N buy bids, at the (M+2)nd highest price, demand would necessarily exceed supply
   K. When there is exactly one buy and one sell bid, auction theory proves that there is no way to make a trade in an individually rational, incentive compatible, and budget balanced way

2. (8 points) Of the following statements, identify all that hold about optimality. For each of these, assume that (1) certain goods and money are initially allocated among some participants; (2) all the numbers involved are finite; (3) each participant has enough money to buy all the above goods, if need be.
   A. Either the initial allocation is Pareto optimal or another Pareto optimal allocation exists
   B. At most one Pareto optimal allocation exists
   C. All Pareto optimal allocations yield the same total valuation (if summed over the participants)
   D. If a Pareto optimal allocation exists, then a Pareto optimal allocation can be found by exchanging goods and money between pairs of participants, each at a price that is rational for both members of a pair

3. (12 points) Consider an auction in which prices are treated somewhat differently than traditionally. Assume $M \geq 1$ sell bids and $N \geq 1$ buy bids are placed. The (M+1)st price is received by each seller who bids below that price. The (M+1)st price is paid by each buyer who bids above that price. Matching sellers who bid the (M+1)st price are paid \$1 more than they bid. Matching buyers who bid the (M+1)st price pay \$1 less than they bid.
   A. At least one bid equals the (M+1)st price
   B. This auction is individually rational for all participants
   C. This auction is budget balanced when no seller bids the (M+1)st price
   D. This auction always runs a budget deficit
   E. This auction is incentive compatible either for the sellers or for the buyers
   F. This auction is efficient