ECON1100 ECONOMICS I (HONOURS) **SEMESTER 2,2003**

ANSWER ANY 6 OF THE FOLLOWING 8 QUESTIONS
EACH QUESTION WILL RECEIVE THE SAME WEIGHT

QUESTION 1

(a) Explain in detail the minimax approach to solving constant-sum games. Discuss also its main defects.
(b) Assume that a simultaneous, constant-sum game is illustrated in a game matrix in the standard way. Any (pure-strategy) Nash equilibrium outcome in this game must have the following characteristics. An equilibrium payoff, found in a particular square of the matrix, must be both the _____ number in that column of the matrix, and the _____ number in that row of the matrix.
   (i) smallest; largest
   (ii) largest; smallest
   (iii) smallest; smallest
   (iv) largest; largest
   Answer the multiple choice question and justify your answer by means of an example.

QUESTION 2

State whether the following is true of false and explain in detail why. If a simultaneous game has two outcomes that both satisfy the definition of a Nash equilibrium, it must be true that one player would prefer to have the game end in one equilibrium while the other player would prefer to have the game end in the other equilibrium.

QUESTION 3

(a) Explain the main differences between moral hazard and adverse selection.
(b) Consider two types of college students: A (able) and C (challenged). Potential employers are willing to pay \$150.000 to A and \$100.000 to C. Suppose the types differ in their tolerance for taking a tough course rather than an easy one. Each must sacrifice something but this sacrifice is slightly less for A than C (A cost is \$7.500 a year of salary and C cost is \$8.000 a year of salary). Consider the following policy: anyone who has taken a certain number, *n*, or more of tough courses will be regarded as A, and anyone who has taken less than *n* will be regarded as C. *n* must be an integer. What is the minimum level of *n*, if any exists, that will achieve separation?

QUESTION 4

Fill the gaps and provide a sketch of proof for the following proposition:

In a sealed-bid, first-price auction in an informational environment of private values with *n* bidders, if private values are uniformly distributed over the real numbers between 0 and 100, then there is an equilibrium in which each individual bids the fraction ___ of his or her Buyer Value. The object is sold to the person with the highest Buyer Value at a price equal to the fraction ___ of the highest Buyer Value.

QUESTION 5

(a) Only one of the 3G Telecom auctions explained in class was a sealed-bid auction: the Danish one. Explain the differences between ascending and sealed-bid auctions with respect to entry and collusion. Discuss the Danish 3G Telecom auction.
(b) In the 3G Telecom auctions, how did the sequencing matter?

QUESTION 6

You are planning to buy a bicycle and a bicycle of the kind you want costs \$50 in the local shop. A departing senior is about to get rid of her bicycle. You are not personally acquainted with the bike owner and will not se her again after she leaves campus. The senior knows that you would be willing to pay \$50 for her bicycle, and you know that it is worth nothing to her if she doesn't sell it to you, because she plans to abandon it if she doesn't sell it to you. Consider a three-stage sequential bargaining game: the buyer makes an offer to the seller, if the seller rejects the buyer's first offer and makes a counteroffer, the buyer will get a chance to reject the counteroffer and make one more offer before the bargaining is over. Making offers and counteroffers takes time and reduces the value of the bicycle to the buyer. If the buyer's first offer is accepted the bicycle is worth \$50 to him. If his first offer is rejected and the buyer accepts the seller's counteroffer, the bicycle is worth \$40 to him. If, instead, the buyer rejects the seller's counteroffer and makes another offer that is accepted by the seller, then the bicycle is worth \$32 to the buyer.

(a) Explain the concepts of backward induction and subgame perfect equilibrium in general.
(b) Compute the subgame perfect equilibrium of the previous example, assuming all individuals involved are selfish profit maximizers.

QUESTION 7

A popular voting scheme is rank-order voting, where individuals assign a rank (1,2,3, etc.) to the possible alternatives: the assigned ranks are then added up, and the alternative with the lowest sum wins. 5 voters (John, Jim, Tom, Lucy and Jill) have to choose one among three alternatives (swimming pool, library, tennis court). John and Jim prefer a swimming pool to a library to a tennis court. Tom, Lucy and Jill prefer a tennis court to a swimming pool to a library. What is the alternative chosen by rank-order voting if the three alternatives are taken into account? What is the result of rank-order voting if library is not taken into account in the voting process? Is the outcome independent of irrelevant alternatives?

QUESTION 8

(a) Explain the concepts of rent and rent-seeking. Provide some examples of rent-seeking activity.
(b) Consider the beverage tax example (Cooter, p. 69) discussed in class: Assume that a small town has many restaurants whose customers come from outside the area. The residents want to shift the burden of taxation from themselves to the customers of the restaurants. The local government proposes to reduce a poll tax on residents and replace lost revenues with a new tax on consumption of beverages sold in restaurants. Discuss rent-seeking activities in this situation with the help of a graph.

END OF EXAM