

FIRST MIDTERM EXAM
Econ 4011, Spring 2013

Do all questions. The questions have equal weight. You have 1hr and 20minutes.

1. BDM

A participant in a laboratory experiment is given asked to bid a price (an integer). A random number from $\{3,4,5,6,7\}$ is drawn with equal probabilities. If the bid is higher than or equal to the random number, the participant gets five dollars minus the number drawn; if the bid is lower than the random number the participant gets zero.

- What bid or bids are *not* weakly dominated.
- What should you bid if when you win you are paid five dollars minus your bid rather than five dollars minus the random number?

2. Extensive Form Game

There is an incumbent firm and an entrant. The entrant moves first and decides whether to enter the market. If he does not, he gets zero and the incumbent gets two. If he does enter, the incumbent can either share the market in which case each gets 1 or he can start a price war in which case both get -1 .

- Find the normal form of the game.
- What are the Nash equilibria of the game?
- Which Nash equilibria are Pareto efficient?
- Do either of the Nash equilibria involve the use of weakly dominated strategies?
- What is the subgame perfect equilibrium?

3. Cournot/Hotelling Duopoly

Unbalance (firm 1) and Contrapositive (firm 2) are the leading producers of slippers. The demand function for pairs of slippers produced by firm i is given by $p_i = 60 - 2x_i - x_{-i}$. Both produce with a marginal cost of 1. The two firms can choose any positive level of production.

- Write down the profit equations for Unbalance and Contrapositive.
 - Write down the reaction (best response) functions.
 - What are the Nash Equilibria choices of x_1 and x_2 .
- (Note: Assume that fractions of slippers can in fact be produced and sold!)