Natural Resource Economics: Final Exam
2010 Spring Semester

Professor: Hojeong Park
Instruction: Your answers must be in English and you will be given 60 minutes. Please provide your answers in the sheets separately distributed.

1. (25 points. each 5 points) Answer 'T' for true, or 'F' for false.

   (a) _____ EU ETS (Emission Trading Scheme) is a voluntary trading mechanism.

   (b) _____ As grandfathered allocation increases, the capacity to satisfy the double dividend hypothesis increases.

   (c) _____ Groundwater is a renewable resource.

   (d) _____ Gordon-Schaefer model is a pure biological control problem.

   (e) _____ In the presence of export effect in invasive species control problem, it is always optimal to eradicate all invasive species.

2. (30 points) Consider rotation models studied in the class.

   (a) (15 points) In the **single rotation model**, when is the optimal time to cur the tree when interest rate is 0? Provide your answers clearly based on a graph and, if possible, simple math.

   (b) (15 points) In the Faustmann's **multiple rotation model**, discuss the effect of ad-valorem tax on harvest time.

3. (30 points) Suppose that there is a decrease of catching effort cost in fishery industry due to technological progress. In response to cost decrease, fishermen would adjust their catching behaviors. But the effects can be distinguished into the short-term and long-term as stated below.

   (a) (15 points: short-term problem) From the myopic sense of fishermen, what is the effect of such cost decrease on catching effort level compared to the case before the cost decreases. Provide your answers along with graphical illustrations.

   (b) (15 points: long-term problem) In the long-term, fish price may be lowered because more fishes can be harvested thanks to technological progress. What is the effect on catching effort level compared to the short-term case above?

4. (15 points) Influence of outbreak of foot-and-mouth disease recently reported in Korea and Japan is severe because it causes embargos of livestocks. Suppose eradication effort cost is given by $TC = cE^2$ where E denotes the effort and c is the unit effort cost. Discuss your control policy? Do you suppress or eradicate?