AP/ECON 4080   Mid–term Exam   February 12 2013

time : 60 minutes

Do all 3 questions. All count equally.

1. What are the conditions which must be satisfied for an allocation to be efficient in an economy in which there are many people, and 3 goods : 2 private goods and 1 public good?

2. How much tax revenue would be collected by the following "pivot tax" mechanism, if each person tries to use the mechanism to make herself as well off as possible?

The indivisible ("all or nothing") public project costs $5000. There are 5 people : each person knows how much she herself values the project (but nobody else knows her valuation). People #1, #2 and #3 each value the project at $1400, and people #4 and #5 each value the project at $500.

The rules of the tax are : the project will be undertaken if and only if the sum of the 5 people's announced valuations exceeds the cost of the project, $5000. If the project is undertaken, each person will pay the same share, $1000, of the cost. In addition, if any person is "pivotal" (that is, if her valuation alters the overall result), then she will have to pay a pivot tax, equal to the (absolute value of the) difference between the sum of everyone else's announced valuations and the sum of the shares of the cost (4000) which they must pay.

3. Suppose that the output produced by firm #1 was an increasing function of the number of workers hired by firm #2 (as well as an increasing function of the number of workers hired by firm #1 itself), and that the output produced by firm #2 was an increasing function of the number of workers hired by firm #1 (as well as an increasing function of the number of workers hired by firm #2 itself).

Is there a need for government intervention to correct an externality in the situation just described? Explain.