Economics 1  Professor Patricia M. Anderson

Problem Set 6
(due at the beginning of class May 28, 1999)

I. Multiple Choice Questions

For each of the following questions, choose the best answer and explain clearly why you chose that answer over the other choices.

1. If the production of a product involves positive externalities, then it is likely that
   a) a tax on the production of this product will lead to a more efficient allocation.
   b) a free market will produce too much of the product.
   c) marginal social benefits are greater than marginal private benefits
   d) marginal private costs are less than marginal social costs.

2. Two men and a woman share a house and are considering installing smoke detectors. For each man, the marginal utility (MU) of the first detector is $4, for the second is $2 and for the third is $1. For the woman, the MU of the first detector is $7, for the second is $3 and for the third is $2. If a detector costs $7, then the optimal provision of this public good
   a) requires that no detectors be installed
   b) requires that one detector be installed
   c) requires that two detectors be installed
   d) requires that three detectors be installed

3. There may not be a loss in economic efficiency after the imposition of direct safety regulations if
   a) there are public costs associated with injuries to individuals
   b) there is not perfect information about the actual safety of the product
   c) without the regulation, all consumers would choose to consume products that were at least as safe as the regulated ones
   d) all of the above

4. If a tax is placed on a good with perfectly elastic supply, then
   a) the incidence is borne entirely by consumers, and there is no deadweight loss.
   b) the incidence is borne entirely by consumers, and there is also a deadweight loss.
   c) the incidence is borne entirely by suppliers, and there is no deadweight loss.
   d) the incidence is borne entirely by suppliers, and there is also a deadweight loss.

5. Which of the following is not true?
   a) Public goods are unlikely to be supplied by profit-maximizing firms.
   b) Public goods are all things the government spends money on.
   c) Public goods can be enjoyed by many people at once, and it is difficult to exclude those who do not want to pay from enjoying the good.
   d) Public goods have a zero marginal cost of serving additional customers

II. Short Answer Questions

1. In 1984, deregulation of the U.S. phone system began by opening up the long distance market to competitors such as MCI and Sprint. In the first five years, the price of long distance service fell by as much as 40 percent. At the same time, local phone bills increased enough to absorb much of
this savings. Using the concept of cross-subsidization by a monopoly to provide universal service, explain how economists were able to predict this outcome. Who do you think most likely benefitted from deregulation? Who most likely benefitted least? How might an "average" consumer make out?

2. At one point during 1996's never-ending presidential campaign, there was a controversy over a 4.3 cents per gallon tax on gas that had been signed by President Clinton. After gas prices were observed to be very high in the key state of California, Senator Dole proposed repealing this tax. A Republican legislator was quoted as saying that if Congress would just repeal this tax, then gas prices would fall by at least 4.3 cents per gallon. Discuss why this politician is likely to be disappointed, but how there are some conditions under which his expectations will be met. For your answer, assume that gas is sold in a competitive market.

III. In-Depth Problem

To solve the problem of overcrowding in the Fall Term, Dartmouth tries to encourage students to take the Fall off. Suppose that there are equal numbers of two types of students (Types 1 and 2), with the following schedule of total costs for taking off Falls.

<table>
<thead>
<tr>
<th>Total Cost of Taking Falls Off</th>
<th>Type 1 Students</th>
<th>Type 2 Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Falls Off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>$300</td>
<td>$250</td>
</tr>
<tr>
<td>2</td>
<td>$625</td>
<td>$525</td>
</tr>
<tr>
<td>3</td>
<td>$975</td>
<td>$825</td>
</tr>
<tr>
<td>4</td>
<td>$1400</td>
<td>$1175</td>
</tr>
</tbody>
</table>

a) Suppose that on average, Dartmouth needs each student to take 2 Falls off, so Dartmouth decides to issue each matriculating student 2 permits for being on in the Fall. Is this the most efficient way to achieve the goal? Use marginal analysis to briefly explain why, or why not.

b) If the outcome in a) is not an efficient way to achieve the goal, briefly, but clearly, explain how the goal could still be achieved in an efficient manner by making the permits tradable. If the outcome in a) is an efficient way to achieve the goal, briefly, but clearly, explain how the goal could still be achieved in an efficient manner even if Dartmouth had misallocated the permits.