Policy Analysis I, 88–220, Fall 1994 Second Exam
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[5] YOUR NAME: _____

Please show all relevant work and **clearly mark all of your final answers**. Points per question are indicated by the quantities in square brackets (200 points are possible—comprising 20% of your final grade). Answers should be short and concise (excessively long and rambling answers will be penalized). The exam is 8 pages long.

Good luck.

[5] Draw something interesting in the space below:

Part I: Quickies

I-1. Charles has the following set of indifference curves between music and flowers (higher levels of utility are indicated by higher numbers), and faces either budget constraint B_1 or B_2:

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I-1.a. [5] Under B_1 what bundle will be chosen (label this point in the diagram with a 1)?

I-1.b. [5] Under B_2 what bundle will be chosen (label this point in the diagram with a 2)?

I-1.c. [5] Are the above preferences well-behaved (why or why not)?

I-2. Use the following diagram for these questions:

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I-2.a. [10] In the above diagram, draw a set of indifference curves such that the individual likes parks but doesn't care about swimming pools?

I-2.b. [5] Suppose parks cost \$5,000 to build, and swimming pools cost only \$1,000 each. If this person has \$100,000 to spend, what bundle will she choose?

I-2.c. [5] What is unusual about this person's MRS at her optimal choice?

I-3. Consider the market for dogs and cats, and suppose that the price of dogs is \$5 and the price of cats is \$1.

[10] Suppose that an individual enters the market with 5 dogs and 10 cats. Draw this individual's budget set.

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I-4. There are a number of goods in the world where the quantity demanded of the good is *not* very responsive to price, and yet they are priced at low levels (e.g., drinking water, addictive drugs, etc.).

[10] Why does the price of these goods stay so low?

I-5. There are two goods, books and movies, both priced at \$1 each. Suppose that an individual initially has \$20 in income.

I-5.a. [5] Suppose that income goes up to \$30 and the price of movies increases to \$2. What can you say about the change in this individual's welfare caused by the price and income change?

I-5.b. [5] Suppose that under the initial price and income conditions you also know that the individual was consuming 10 movies and 10 books. What can you say about the change in this individual's welfare caused by the price and income change that occurred in the previous question?

I-6. Some questions about taxes and subsidies:

I-6.a. [5] In general, do subsidies cause economic inefficiency? Why or why not?

I-6.b. [5] Under what two conditions will sellers best be able to pass on a tax?

I-6.c. [5] Under what two conditions will a tax *not* lower economic efficiency?

I-7. Currently, CMU will place students on a waiting list when a course fills to capacity.

I-7.a. [5] Is this Pareto efficient? Why or why not?

I-7.b. [5] Suppose a waiting list has already been created. Suggest a new policy that would improve Pareto efficiency.

Part II: Longer Problems

II-1. Below are the demand functions for kids and adults for milk.

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[5] Using this information plot the market demand function.

[5] Suppose it is currently the case that only half the kids are drinking milk. Draw a feasible supply curve (that is responsive to price) in the diagram above that is consistent with this scenario, and label the equilibrium price (P^*) and quantity (Q^*).

The government is concerned with the fact that not all kids are consuming milk, and has decided to subsidize the drinking of milk by everyone to the point where all kids will be drinking milk (i.e., you consume a glass of milk, the government will pay you $\$s$).

[5] In the market diagram above indicate the size of the subsidy needed to achieve this outcome (label it s).

[5] Label the new price paid by the buyers (P_d) and received by the sellers (P_s) in the diagram.

[5] Provide a sound economic reason for *not* implementing this policy. (Hint: Think about a less expensive way to structure the subsidy and still achieve the same ends.)

II-2. A set of preferences is said to be quasilinear when the indifference curves are just vertically shifted versions of one another (that is, you take one indifference curve and then move every point upward by the same amount to get a new indifference curve).

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[10] Since quasilinear indifference curves are simply vertical copies of one another, what must be true about the slope of each indifference curve at a fixed level of x? (Hint: draw a vertical line in the diagram above, and think about the slope at each point where the line intersects the indifference curves.)

[5] Now, thinking carefully about your answers to the above, what will the income consumption curves look like in this diagram? Why?

[5] How will changes in income effect the demand for good x (i.e., what do the Engle curves look like)?

II-3. Consider the market for heroin (a highly addictive narcotic). Assume that quantity demanded is completely unresponsive to price changes (due to addiction).

[5] In the diagram below, draw a representative set of supply and demand curves assuming heroin use was *legal*. Label the equilibrium price (P^*) and quantity (Q^*).

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[5] If we outlaw all heroin trades, will the resulting market be Pareto efficient? Why or why not?

[5] Provide a simple argument as to why we might see an illegal market form under this policy?

[10] Suppose that we impose a policy that makes the selling of heroin illegal (but not the consumption), and if you are caught selling, you will pay a penalty. Using the diagram above, graph the new supply and demand conditions in this market and label the equilibrium price (P') and quantity (Q').

[5] Give a cogent economic argument for legalizing this market.

II-4. CMU is concerned with the fact that many incoming students do not have proper access to the electronic media necessary to do well at the university. Suppose CMU forces all students to spend \$500 on a "communications terminal" when they enroll in school. This communications terminal is at least as good as any other system available for \$500 or less. Students are allowed to buy a better computer if they wish, but if they do so, their communications terminal is of no use, and it will be sold for \$250 on the used terminal market. (Thus, if you want to buy a better computer you will have to sacrifice \$250 (which is equal to the \$500 you originally spent on the terminal less the \$250 you received when you sold it back) and then pay at least \$500 on a new computer.)

[10] In the diagram below, plot the budget constraint facing a CMU student with an income of \$2000. Clearly label all significant quantities and dollar amounts.

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[5] In the above diagram draw a well-behaved indifference curve that would indicate the student will only have the terminal (label this curve I_t).

[5] In the above diagram draw a well-behaved indifference curve that would indicate the student will buy a better computer (label this curve I_b).

[5] Suggest an alternative policy that will make students at least as well off, and justify your answer.