**NAME: Student ID number:**

**Econ 201 - Examination 2 Answers**

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READ THE FOLLOWING CAREFULLY

You have 1 hour and 15 minutes for this examination. It is a closed note/book exam. You may use a non-programmable calculator only. Explain all of your answers and show all of your work. A complete answer illustrates how you arrived at that answer. Label all graphs and axes. The points for each question and sub-question are listed in parentheses.

Be sure to write your name, and student ID# above.

Good Luck!









Utility-Maximization Rule: 

1. (20) Mrs. Simpson buys loaves of bread and quarts of milk each week at prices of $1 and $0.80, respectively. At present she is buying these two products in amounts such that the marginal utilities from the last units purchased of the two products are 80 and 70 utils, respectively. Is she buying the utility maximizing combination of bread and milk? If not, how should she reallocate her expenditures between the two goods? Explain.

(80/1) is not equal to (70/0.80) so she is not buying the utility maximizing combination of bread and milk. She should buy more milk and less bread because the marginal utility per dollar spent on milk is higher than the marginal utility per dollar spent on bread.

2. (15) The following shows demand and supply for a good. What is the total consumer surplus in equilibrium? Explain.

|  |  |  |
| --- | --- | --- |
| Price  | Demand  | Supply |
| 100  | 0  | 2 |
| 90  | 1 | 2 |
| 80 | 2 | 2 |
| 70 | 4 | 2 |

ANSWER: The equilibrium price is 80, and two units are bought. The first consumer gets a consumer surplus of 90-80=10. The second consumer gets a consumer surplus of 80-80=0. So consumer surplus is 10.

3. (15 points) Four roommates who will spend the weekend in their dorm room watching old movies are debating how many to watch. Here is their willingness to pay for each film. Note that a movie is a public good for these people.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Orson | Alfred | Woody | Ingmar |
| First Film | $7 | $5 | $3 | $2 |
| Second Film | 6 | 4 | 2 | 1 |
| Third Film | 5 | 3 | 1 | 0 |
| Fourth Film | 4 | 2 | 0 | 0 |
| Fifth Film | 3 | 1 | 0 | 0 |

If renting each video costs $8, how many videos should the roommates rent to maximize total surplus? Explain.

ANSWER: The valuation of the first film across all four people is 7+5+3+2=17; the aggregate valuation of the second film is 6+4+2+1=13; the aggregate valuation of the third film is 5+3+1+0=9; the aggregate valuation of the fourth film is 4+2+0+0=6. A film should be rented if its aggregate valuation exceeds the cost of renting it; so three films should be rented.

4. (15 points) Suppose government subsidizes production of a good, and suppose demand is inelastic. What happens to total spending by consumers on that good? Explain. (A subsidy is a form of financial assistance paid to a business or economic sector. Most subsidies are made by the government to producers or distributors in an industry.)

ANSWER: The subsidy will shift the supply curve down and to the right (indicating higher supply at any price). The equilibrium price must therefore fall. For an inelastic demand curve, a fall in price reduces total spending by consumers.

5. (15 points) Suppose the elasticity of **supply** is 1. If price increases by ten percent, would total revenue by sellers increase by more or less than ten percent? Explain.

ANSWER: The elasticity of supply is *(*Δ*Q/Q)/(* Δ*P/P)*. With an elasticity of 1, a price increase of 10 percent increases the quantity sold by 10 percent. So total revenue increases by (1.1\*1.1-1\*1)/(1\*1)=21%.

6. (20) The table below represents the total utility schedule of two goods X and Y at different quantities:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Quantity | TUx | MUx | MUx/Px | MUx/P'x | TUy | MUy | MUy/Py |
| 0 | 0 |  |  |  | 0 |  |  |
| 1 | 36 | 36 | 18 | 36 | 22 | 22 | 22 |
| 2 | 68 | 32 | 16 | 32 | 42 | 20 | 20 |
| 3 | 96 | 28 | 14 | 28 | 60 | 18 | 18 |
| 4 | 120 | 24 | 12 | 24 | 76 | 16 | 16 |
| 5 | 140 | 20 | 10 | 20 | 90 | 14 | 14 |
| 6 | 156 | 16 | 8 | 16 | 102 | 12 | 12 |
| 7 | 168 | 12 | 6 | 12 | 112 | 10 | 10 |
| 8 | 176 | 8 | 4 | 8 | 120 | 8 | 8 |
| 9 | 181 | 5 | 2.5 | 5 | 125 | 5 | 5 |
| 10 | 184 | 3 | 1.5 | 3 | 128 | 3 | 3 |

a. (10) If Price of X=$2, Price of Y=$1, Consumer’s income=$10, what is the optimal combination of good X and good Y that will maximize consumer’s utility? What is the total utility of this optimal combination? Explain.

The optimal combination that will maximize consumer’s utility is 3 units of X and 4 units of Y. The total utility is 96 + 76 = 172.

b. (10) If Price of X= $1, Price of Y=$1, Consumer’s income=$10,

1. What is the new optimal quantity of good X and good Y? Explain.

The consumer will increase the quantity of X to 6 units and will keep the quantity of Y the same at 4 units.

1. What has happened to the quantity of good X and to the quantity of good Y? What can you conclude about the relationship between good X and good Y (substitutes or complements)? Explain.

The quantity of X has increased and the quantity of Y has stayed the same. Good Y and good X are neither complements nor substitutes, they are unrelated goods.

1. Calculate the cross-price elasticity of the two goods.

The cross-price elasticity is zero because the quantity of Y does not change for a given change in the price of X.