

**ECON 102 - Principles of Microeconomics**

**Professor Elliott Parker**

**Second Exam**

April 2, 2007

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N A M E

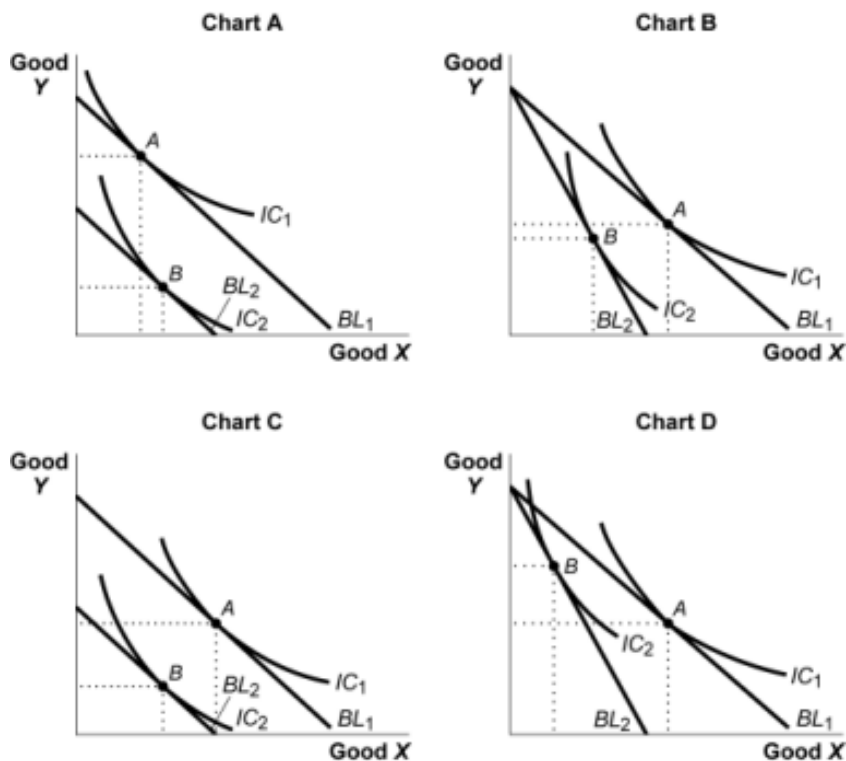
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**Part I (60%) - Multiple Choice: on a scantron mark the single best answer, two points each.**

1. In a perfectly competitive economy, which is *not* true?
  - A) All producers of any particular homogenous good would sell them at the same price, and this price would be equal to their marginal costs.
  - B) The marginal utility per dollar would be equal for all goods, for all consumers.
  - C) Wages for a particular type of labor would be equal for all workers, and this wage would equal to the value of their marginal products.
  - D) Anyone able to perform a particular job and willing to work at the market wage rate would be employed.
  - E) The marginal rate of substitution would be equal to the relative marginal products of labor and capital.
2. The \_\_\_\_\_ is the increase in output obtained by hiring an additional worker.
  - A) marginal product
  - B) average product
  - C) marginal cost
  - D) total product
3. The idea of diminishing returns to an input in production suggests that if UNR hires more and more custodians, their marginal product of labor will \_\_\_\_\_ over time.
  - A) not change
  - B) increase at an increasing rate
  - C) increase at a decreasing rate
  - D) decrease
4. Zoe's Bakery determines that  $P < ATC$  and  $P > AVC$ . In a competitive market, Zoe should:
  - A) continue to operate as she is making an economic profit.
  - B) raise the price until she has maximized her profits.
  - C) continue to operate even though she is enduring an economic loss.
  - D) shut down immediately as she is enduring an economic loss.
5. Which of the following is *not* a characteristic of a perfectly competitive industry?
  - A) Profits may be positive in the short run.
  - B) Firms have differentiated products.
  - C) Firms seek to maximize profits.
  - D) There are many firms.
  - E) Average total cost is minimized in the long run.
6. For large beer breweries, it is common for average total cost to decline as output increases. This indicates that many breweries achieve:
  - A) constant returns to scale.
  - B) diseconomies of scale.
  - C) diminishing marginal returns.
  - D) economies of scale.
7. Austin's firm has a total fixed cost is \$3,600, he employs 20 workers, and pays each worker \$60. The average product of labor is 30, and the marginal product of the 20<sup>th</sup> worker is 12. What is the marginal cost of the last unit produced by the last worker Austin hired?
  - A) \$5
  - B) \$240
  - C) \$720
  - D) \$0.20

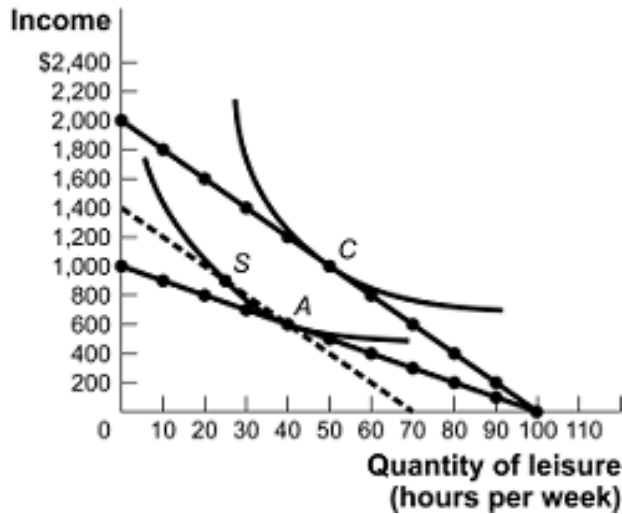
8. Consider a perfectly competitive firm in the short run. Assume that it is sustaining economic losses but continues to produce. At the profit-maximizing (loss-minimizing) output, all of the following statements are correct *except*:
- price is equal to marginal cost.
  - marginal cost is less than average total cost.
  - marginal cost is less than average variable cost.
  - marginal cost is equal to marginal revenue.
9. A competitive firm operating in the short run is maximizing profits and just breaking even. Its costs include a monthly license fee of \$100 that is imposed by the state and must be paid for as long as the firm is in existence. The license fee is now raised to \$150. In the short run, the profit-maximizing firm should:
- not change output.
  - increase price.
  - increase output.
  - reduce output.
10. Xavier notices that the marginal utility of working with a tutor seems to fall with each hour the tutor helps him study. If Xavier keeps the tutor until his grade actually begins to fall, his marginal utility will be:
- positive, but rising more slowly.
  - zero.
  - immeasurable.
  - negative.
11. Joseph consumes pizza and soda. He is currently consuming three units of pizza and two units of soda. The price of pizza is \$5 and the price of soda is \$1. If he is consuming the optimal consumption bundle and his marginal utility of pizza is 50, then his marginal utility of soda is:
- 5.
  - 10.
  - 50.
  - none of the above
12. For the vast majority of goods, demand curves slope downward because:
- the income effect constitutes almost the entire effect of a price change, and this effect always causes quantity demanded and price to be inversely related.
  - marginal utility rises as quantity demanded increases.
  - the substitution effect constitutes almost the entire effect of a price change, and this effect always causes quantity demanded and price to be inversely related.
  - none of the above.
13. The relative price rule says that at the optimal consumption bundle the *MRS* between two goods must be equal to their relative price. This is equivalent to saying that:
- the marginal utility per dollar is the same for both goods.
  - goods should be consumed in the same ratio as their relative price.
  - the *MRS* is not equal to the ratio of marginal utilities.
  - the marginal utility of each good consumed must be the same.
14. Mary is considering hiring another worker in an assembly line for stereo speakers. Mary knows the average product of labor is 15 speakers per day. She also believes that the next worker hired will produce an extra 12 speakers per day. A speaker sells for \$10 each. Mary should hire another worker only if:
- Mary should hire another worker, since the marginal product is below the average product.
  - the new worker's daily wage is \$120 or less.
  - the new worker's marginal product is 12 or more.
  - the new worker's daily wage is \$150 or less.

Use the following charts to answer questions 15-18:



15. Which chart shows the effect of a decrease in income when both good X and good Y are normal goods?  
 A) Chart A    B) Chart B    C) Chart C    D) Chart D    E) None of the above charts
16. Which chart shows the effects of a decrease in income when good X is an inferior good and good Y is a normal good?  
 A) Chart A    B) Chart B    C) Chart C    D) Chart D    E) None of the above charts
17. Which chart shows the effects of an increase in the price of X, when good X and good Y are substitutes?  
 A) Chart A    B) Chart B    C) Chart C    D) Chart D    E) None of the above charts
18. Which chart shows the effects of an increase in the price of X, when good X and good Y are complements?  
 A) Chart A    B) Chart B    C) Chart C    D) Chart D    E) None of the above charts
19. Which of the following wage disparities is an example of compensating differentials?  
 A) National park rangers earn less than city police officers with similar amounts of experience.  
 B) Professional basketball players get paid more than college professors.  
 C) On the average, white men get paid more than women of all ethnicities.  
 D) A manager gets paid more than a janitor working in the same building.
20. Karen consumes gasoline and other goods. A new excise tax on gasoline raises gas prices. However, the government pays Karen an income subsidy which is just enough for her to stay on her original (pre-tax) indifference curve. Her new optimal consumption bundle will:  
 A) be more inefficient because there it is well known that gasoline consumption has a significant negative externality.  
 B) have less gas and more of other goods.  
 C) have the same amount of both goods as before.  
 D) have less of other goods and more gas.  
 E) This question can't be answered, since some essential information (such as Karen's income, the pre- and post-tax prices of gas, etc.) is missing.

Use the following figure to answer questions 21-22:



21. The above figure shows the income and leisure opportunities for Keisha when she has 100 hours per week for working or at leisure and she can earn \$10 per hour working, and the opportunities when she can earn \$20 per hour working. As the amount she earns increases from \$10 per hour to \$20 per hour, Keisha will work \_\_\_\_ hours *solely* due to the substitution effect.
  - A) 25 fewer
  - B) 10 fewer
  - C) 15 more
  - D) 50 more
  
22. As the amount Keisha earns increases from \$10 per hour to \$20 per hour, Keisha will work \_\_\_\_ hours *solely* due to the income effect.
  - A) 25 fewer
  - B) 10 fewer
  - C) 15 more
  - D) 50 more
  
23. Kurt receives a wage of \$100 per hour; Jim receives a wage of \$10 per hour. To maximize utility, Kurt works 45 hours per week and Jim works 50 hours per week. The equilibrium value of an additional hour of leisure is:
  - A) less than \$100 for Kurt.
  - B) higher for Kurt than Jim.
  - C) greater than \$10 for Jim.
  - D) higher for Jim than Kurt.
  
24. Which of the following represents the definition of efficiency?
  - A) from each according to his ability, to each according to his needs
  - B) The distribution of utility among individuals is fair.
  - C) the greatest good for the greatest number
  - D) Nobody can be made better off without making others worse off.
  
25. One reason that wage discrimination based on gender or ethnicity could continue to exist is:
  - A) that it is justified by the marginal productivity theory of income distribution.
  - B) the existence of higher than equilibrium wages due to market interference or market failure.
  - C) that market competition makes it profitable to engage in discrimination.
  - D) that countries with histories of discrimination tend to achieve faster rates of growth.
  - E) because it is costly to discriminate when markets are efficient.

26. Suppose the government decides to increase the child tax credit, which increases the after-tax income of families with children. If leisure is a normal good, how would this tax credit affect the amount of labor supplied by parents of children?
- The labor supply curve will shift right, so the quantity of labor will also increase.
  - We don't know what will happen to the quantity of labor supplied, since we don't know if the income effect or substitution effect will dominate.
  - Since the income effect will dominate the substitution effect, the amount of labor supplied will decrease.
  - Since the income and substitution effects move in the same direction, the amount of labor supplied will increase.
  - Since this has a fixed effect on taxes, it does not change the wage and does not affect labor supply.
27. Which of the following would lead to market inefficiency?
- a positive price being charged for downloading software or music from the Internet
  - a quota restricting the output of a good below the market equilibrium
  - a steel firm disposing its industrial waste for free by dumping the waste into a nearby river
  - all of the above
  - none of the above
28. If a firm's fixed costs (such as a tax on property value) fall, then:
- Profits increase, and the firm will produce more in the short run.
  - Profits increase in the long run if the tax cut is permanent.
  - Profits increase in the short run, but the firm won't produce any more than before.
  - Prices will fall in the short run, as existing firms compete for customers.
  - New firms won't enter the market in the long run because these costs are fixed.
29. In a perfectly efficient free market economy, which is *not* true?
- All buyers and sellers in all markets are price takers, and goods are homogeneous.
  - All buyers and sellers in all markets have perfect information about the goods and services they are buying or selling.
  - The benefits of all transactions go only to buyers, and all long-run costs are paid for by the seller or producer.
  - The distribution of income is determined by the distribution of resource ownership and the market prices for those resources, so that if ownership of higher-valued capital, labor, and other resources is unfairly distributed, income will also be unfairly distributed.
  - The net surplus value of current market goods is maximized at the expense of non-market goods such as the environment, especially in the long run.
30. One reason that wage discrimination based on gender or ethnicity could continue to exist is:
- employers find that gender or ethnicity are statistically correlated with unobservable skills, and workers in discriminated groups believe they won't be given a chance to get a skilled job.
  - the existence of higher than equilibrium wages due to market interference or market failure.
  - it is justified by the marginal productivity theory of income distribution.
  - A and B
  - A, B, and C

## Part II (40%) – Problems and Short Answers.

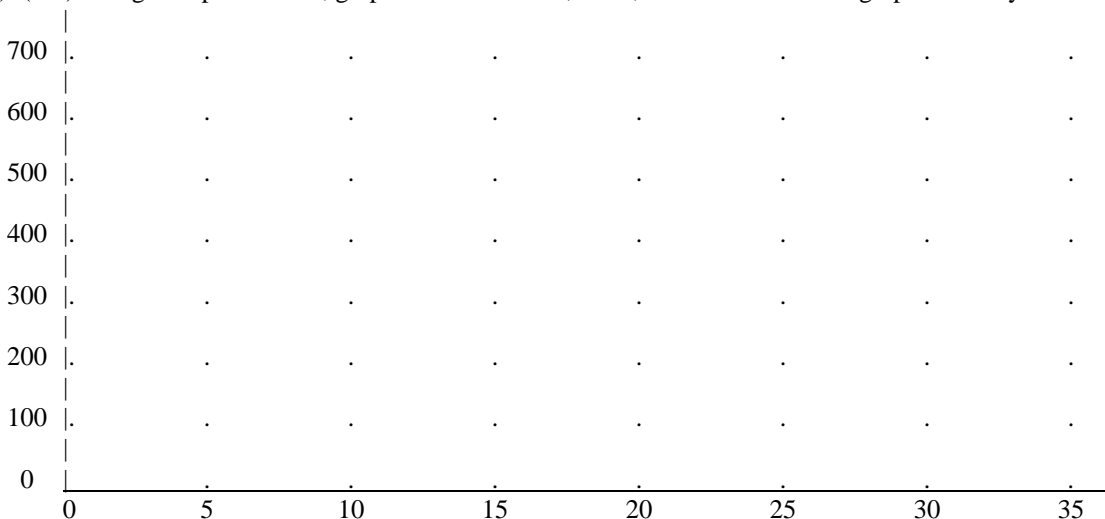
1. (12%) Joe Blow makes \$30,000 per year, but after deducting taxes, rent, a car payment, insurance, tuition, books, and groceries, he find he has \$100 left each week to spend on gas and entertainment. Each unit of entertainment (e.g., a movie, a dinner out) costs him \$10, while gas is \$3 per gallon. Answer the following below, and on the back of the page if necessary:

- A) With gas on the horizontal axis and entertainment on the vertical, draw Joe's budget constraint and label it B1. Label your axes and your intercepts. If Joe chooses to buy 20 gallons of gas, how much entertainment can he buy? Show this point on your diagram, and label it C1.
- B) Suppose gas increases from \$3 to \$5 per gallon. Show his new budget constraint on your diagram, and label it B2. Is he better off, worse off, or indifferent?
- C) Assuming gas and entertainment are both normal goods, what is the income effect of the change from B1 to B2? That is, will he choose to consume more or less of each good?
- D) What is the substitution effect of the change from B1 to B2? That is, will he choose to consume more or less of each good?
- E) Combining the income and substitution effects, find a feasible consumption combination on B2. Label it C2.
- F) Suppose Joe now gets a pay increase that leaves him with \$40 more per week to spend on gas and entertainment. Gas is still \$5 per gallon. Show his new budget constraint on your diagram, and label it B3. If he bought 20 gallons of gas, how much entertainment could he buy? Show this.
- G) What is the income effect of the change from B2 to B3? What is the substitution effect? Label his new consumption choice C3.
- H) Suppose the increase in gas prices and the pay increase happened simultaneously (perhaps due to a gas tax designed to cut CO<sub>2</sub> emissions, combined with a cut in the payroll tax). Compare his choice C1 with C3. Will Joe buy more or less gas, and more or less entertainment?
- I) Draw the indifference curves (I1, I2, and I3) on your diagram to show Joe's utility for each budget constraint.

2. (20%) Radco is a small company specializing in automobile painting, a very competitive business. Lloyd Crocker, the owner, has calculated that his fixed costs are \$2100 per week, and these are sunk. Lloyd has also charted his variable costs of production per week (including the cost of labor and overtime, electricity, paint supplies, tax and everything, even a fair salary for his own time), and he notices that it is significantly related to the number of cars that he paints per week, as shown in the following table.

Cars Painted	Weekly Variable Cost	TC	AVC	ATC	MC
0	\$0	_____			
5	\$1,500	_____	_____	_____	_____
10	\$2,500	_____	_____	_____	_____
15	\$3,900	_____	_____	_____	_____
20	\$5,800	_____	_____	_____	_____
25	\$8,250	_____	_____	_____	_____
30	\$11,250	_____	_____	_____	_____
35	\$14,875	_____	_____	_____	_____

- A) (6%) Complete the above cost table for Radco.
- B) (4%) The market price for a paint job is \$500. How many paint jobs should Radco produce, and why? What is Radco's profit per week?
- C) (4%) At what market price would Radco immediately go out of business? At what market price would Radco expect more competitors to enter the market, assuming no barriers to entry?
- D) (6%) Using the space below, graph the firm's AVC, ATC, and MC. Label the graph carefully.



3. (8%) Suppose all U.S. cotton producers have identical and normally-shaped cost curves, with significant fixed and sunk costs, and constant returns to scale. Suppose this market is perfectly competitive and in long-run equilibrium, but the revenue producers receive includes a subsidy and the market price for each unit of cotton they produce. Suddenly, the government agrees to pressure from the World Trade Organization and removes all agricultural subsidies. How will this affect price and quantity in the domestic cotton market, and the profitability and output of the typical domestic cotton producer in the short-run? What will happen in the long run to the number of cotton producers, the market price and quantity, and the profits of the typical cotton producer in the long-run? Use appropriate graphs to illustrate.

**Bonus** (10%) What are the three types of efficiency? Define and explain. Graphs and/or equations might help. Continue on back if necessary.