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Last 4 Digits _____

Economics 321
Chappell
Final Exam
December 17, 2006

Part I. Multiple Choice (2 points each)

- 1) In a perfectly competitive market, if the price were momentarily above the equilibrium price, then:
 - a) There would be a shortage.
 - b) There would be a surplus.
 - c) Total surplus would be at a maximum.
 - d) Output would exceed the competitive equilibrium level.

- 2) Suppose the cross elasticity of demand for donuts with respect the price of watch batteries is negative. Then:
 - a) Donuts and watch batteries are substitute goods.
 - b) Donuts and watch batteries are complementary goods.
 - c) Donuts and watch batteries are normal goods.
 - d) Donuts and watch batteries are Giffen goods.

- 3) Consider the market demand curve for bags of potato chips, which are sold in a perfectly competitive market. At a given quantity, the associated price on the market demand curve measures:
 - a) The highest price any consumer would be willing to pay for a bag of potato chips.
 - b) The valuation of an additional bag of potato chips by the marginal buyer.
 - c) The total value to consumers of all potato chips sold in the market.
 - d) All of the above.

- 4) Suppose that the price elasticity of demand for roller coaster rides is equal to 0.75. If the price of roller coaster rides is increased from \$2.00 to \$2.10. As a result:
 - a) Total revenue will rise.
 - b) Total revenue will fall.
 - c) Total revenue could rise or fall, depending upon the value of the income elasticity of demand.
 - d) Total revenue could rise or fall, depending upon the value of the cross-price elasticity of demand (with respect to the price of Ferris wheel rides).

- 5) Which statement best describes the law of demand?
- If preferences satisfy the usual assumptions made by microeconomic theorists, individuals' demand curves must slope downward.
 - An upward sloping demand curve has never been empirically observed.
 - Market demand curves are usually downward sloping.
 - Other things held equal, quantity demanded of a good falls when the price of the good falls.
- 6) The "more is better" assumption asserts that:
- If a consumer has more of good X and less of good Y, the consumer's utility rises.
 - If a consumer has more of good X and the same amount of good Y, the consumer's utility rises.
 - If a consumer has more of both goods X and Y, the consumer's utility rises.
 - Both b) and c) are correct.
- 7) A consumer's budget line shows:
- Combinations of inputs used in production that are equally costly.
 - How much of good X will be demanded at various prices.
 - Bundles of consumption goods that are exactly affordable.
 - None of the above.

- 8) Which equation correctly describes the slope of an indifference curve?

$$\begin{aligned}
 \text{a) } MRS_{x,y} &= \frac{\Delta y}{\Delta x} \Big|_{U=\bar{U}} = \frac{\frac{\Delta Q}{P}}{\frac{\Delta P}{P}} \\
 \text{b) } MRS_{x,y} &= \frac{\Delta y}{\Delta x} \Big|_{U=\bar{U}} = \frac{\frac{\Delta Q}{I}}{\frac{\Delta I}{I}} \\
 \text{c) } MRS_{x,y} &= \frac{\Delta y}{\Delta x} \Big|_{U=\bar{U}} = -\frac{MU_x}{MU_y} \\
 \text{d) } MRS_{x,y} &= \frac{\Delta y}{\Delta x} \Big|_{U=\bar{U}} = -\frac{MU_y}{MU_x}
 \end{aligned}$$

- 9) A consumer has a budget constraint and can spend income on goods X and Y. If a consumer's budget line is plotted with the quantity of X on the horizontal axis and the quantity of Y on the vertical axis, then:
- The slope of the budget line is $-\frac{p_y}{p_x}$.
 - The horizontal intercept of the budget line is $\frac{p_x}{I}$, where I is income.
 - The vertical intercept of the budget line is $\frac{I}{p_y}$.
 - All points outside of the budget line (i.e., on the side of the line away from the origin) are affordable.
- 10) Suppose that a consumer currently is consuming 3 units of X and 4 units of good Y. Also suppose that the marginal utility of X is 1.5 and the marginal utility of good Y is 2.5. Which of the following statements is correct?
- To maximize utility, the consumer should consume more of good X and less of good Y.
 - To maximize utility, the consumer should consume more of good Y and less of good X.
 - The consumer should continue to consume 3 units of X and 4 units of good Y.
 - Without additional information, it is not possible to determine which of the three cases above is correct.
- 11) When the price of good X rises, the income effect of the price change causes:
- The consumer to purchase less of good X.
 - The consumer to purchase more of good X.
 - The consumer to leave his choice of a quantity for good X unchanged.
 - The consumer to increase, decrease, or leave the quantity of X unchanged, with the result depending upon the exact preferences of the consumer.
- 12) Suppose that good X is a Giffen good for a particular consumer. Then for that consumer, when the price of X rises:
- The quantity demanded rises.
 - The quantity demanded falls.
 - The quantity demanded remains unchanged.
 - The quantity demanded could increase, decrease, or remain unchanged, with the result depending upon the exact preferences of the consumer.

- 13) Which of the following expressions best describes the “equivalent variation” of a change in the price of good X?
- The equivalent variation is the change in the quantity of good X chosen by a consumer that is the same as the change that would have been produced by an decrease in the price of good Y (equal to the original change in the price of good X).
 - The equivalent variation is the amount of income that would have to be paid to the consumer to leave him with the utility level that she had before the increase in the price of good X.
 - The equivalent variation is the amount of income loss for the consumer that would cause the same utility loss as that caused by the increase in the price of good X.
 - The equivalent variation is the percentage change in the quantity of good X divided by the percentage change in the price of good X.
- 14) Under what circumstances is the equivalent variation of a price change equal in value to the compensating variation of a price change?
- When income effects are positive.
 - When the utility function takes the Cobb-Douglas form.
 - When the elasticity of substitution is unitary.
 - When the utility function is quasi-linear.
- 15) A consumer chooses bundles of goods X and Y subject to a budget constraint. Suppose that good Y is a composite good. At a point where a consumer maximizes utility subject to the budget constraint, the marginal rate of substitution of (x for y), $MRS_{x,y}$, is:
- Greater than p_x .
 - Less than p_x .
 - Equal to p_x .
 - Any of the above is possible.
- 16) Suppose that good Y is a composite good. In the budget line indifference curve diagram, the quantity of good Y is:
- Equal to the quantity of good X.
 - Proportional to the quantity of good X.
 - Equal to the consumers expenditure on good Y.
 - Equal to the consumers expenditure on good X.
- 17) A market demand curve is:
- Horizontal if the market is perfectly competitive.
 - Found by vertically summing individual consumer demand curves.
 - Found by horizontally summing individual consumer demand curves.
 - Found by horizontally summing the demand curves facing each of the firms selling in the market.

18) Suppose that in an isocost-isoquant diagram, that capital is measured on the vertical axis and labor is measured on the horizontal axis. Then the slope of an isoquant is measured by:

- a) $\frac{MP_L}{w}$
- b) $\frac{MP_K}{r}$
- c) $\frac{MP_L}{MP_K}$
- d) $\frac{MP_K}{MP_L}$

19) Suppose that in an isocost-isoquant diagram, that capital is measured on the vertical axis and labor is measured on the horizontal axis. Also suppose that at an arbitrarily selected point on an isoquant, the marginal product of labor is equal to 5, the marginal product of capital is equal to 3, the wage rate is \$12 per unit of labor, and the rental rate on capital is \$6 per unit of capital. Which statement is correct?

- a) An isoquant through this point is *steeper* than an isocost line through this point, and the firm should employ *more labor* in order to minimize costs of production in the long run.
- b) An isoquant through this point is *steeper* than an isocost line through this point, and the firm should employ *less labor* in order to minimize costs of production in the long run.
- c) An isoquant through this point is *less steep* than an isocost line through this point, and the firm should employ *more labor* in order to minimize costs of production in the long run.
- d) An isoquant through this point is *less steep* than an isocost line through this point, and the firm should employ *less labor* in order to minimize costs of production in the long run.

20) A low elasticity of substitution implies that:

- a) Two inputs, capital and labor, do not easily substitute for one another in production.
- b) The slope of an isoquant does not vary much with changes in the capital labor ratio.
- c) The marginal product of capital is high relative to the marginal product of labor.
- d) None of the above.

21) Suppose that marginal cost exceeds average cost. Then:

- a) The marginal cost curve is upward sloping.
- b) The marginal cost curve is downward sloping.
- c) The average cost curve is upward sloping.
- d) The average cost curve is downward sloping.

- 22) In the short run, if a competitive market is in equilibrium, then for each firm producing output, the following is true:
- $P = MC$
 - $P = AVC$
 - $P = SAC$
 - $P = AFC$
- 23) Suppose that there exist some fixed costs that are not sunk in the short run. In this situation, the best description of the short-run shut down condition for a competitive firm is:
- Shut down if $P < AVC$
 - Shut down if $P < ANSC$
 - Shut down if $P < ATC$
 - All of the conditions above are equivalent for this situation.
- 24) Suppose all inputs are doubled, and output goes up by more than double. The production function exhibits:
- Economies of scale
 - Diseconomies of scale.
 - Decreasing returns to scale.
 - Increasing returns to scale.
- 25) Consider an isocost line in a diagram that plots capital and labor inputs (K is on the vertical axis and L is on the horizontal axis). If the rental rate (price of capital) rises, what happens to the slope of the isocost line?
- Nothing happens, this price change affects isoquants, but not an isocost line.
 - The isocost line gets steeper.
 - The isocost line gets flatter.
 - The isocost line is increasingly bowed outward from the origin.
- 26) Which equation describes a necessary condition for cost-minimizing use of two variables inputs, K and L (with prices r and w)?
- $MP_L \cdot \Delta L + MP_K \cdot \Delta K = 0$
 - $MU_x = MU_y / p_x$
 - $\frac{MP_L}{MP_K} = \frac{r}{w}$
 - $\frac{MP_L}{MP_K} = \frac{w}{r}$
- 27) For a firm with monopoly power, profit maximization requires:
- $P = MC$
 - $P = AC$
 - $MR = MC$
 - All of the above.

28) Which expression correctly describes profit maximizing price markup of a monopolist?

a) $\frac{P}{P - MC} = \frac{1}{|\varepsilon_p|}$

b) $\frac{P}{P - MC} = \frac{Q}{|\varepsilon_p|}$

c) $P = \frac{1}{|\varepsilon_p|} \times MC$

d) $\frac{P - MC}{P} = \frac{1}{|\varepsilon_p|}$

29) Why is it likely to be easier to price discriminate in the sale of haircuts than in the sale of television sets?

- a) All consumers have (almost) identical tastes for television sets.
- b) Haircuts are a necessity, while television sets are not.
- c) Resale of haircuts is more difficult than resale of television sets.
- d) All of the above.

30) A firm has separate pizza monopolies in both Columbia and Greenville. This profit maximizing monopolist charges a price of \$10 per pizza in Greenville and \$8 per pizza in Columbia. It must be true that at these prices:

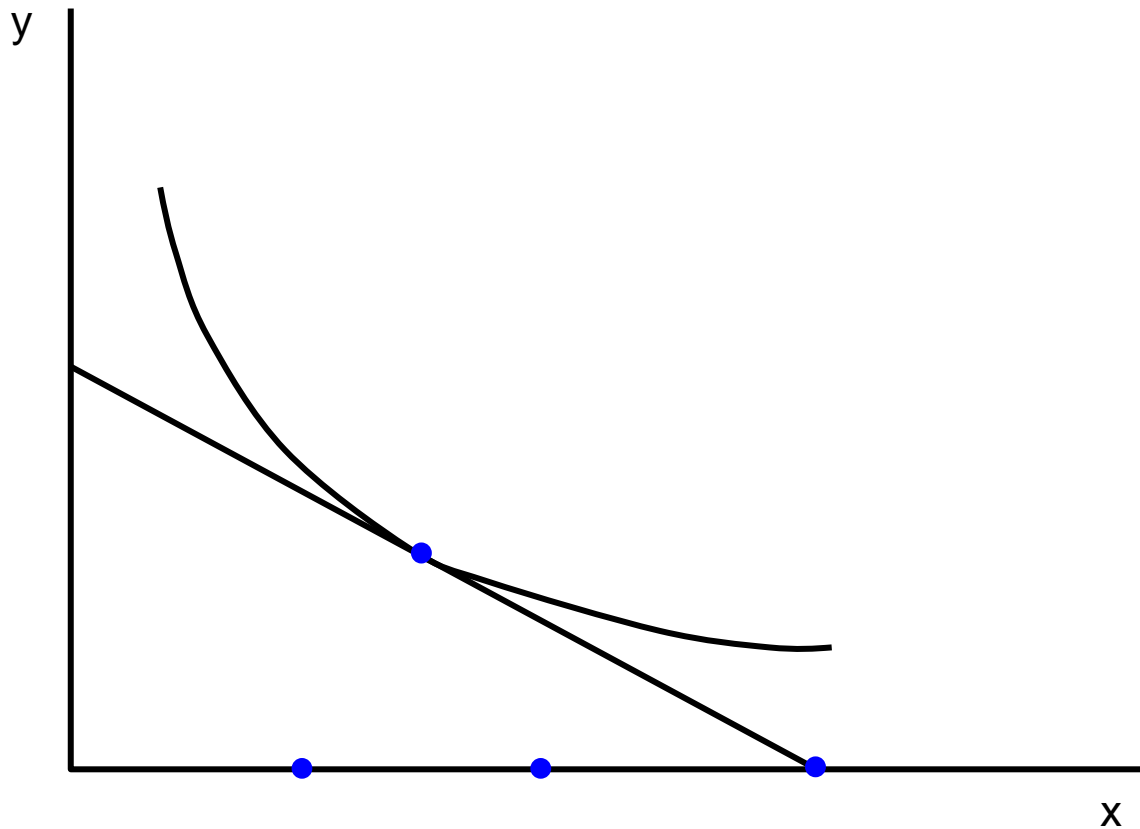
- a) The (absolute value of the) income elasticity of demand for pizza in Columbia exceeds the price elasticity of demand for pizza in Greenville.
- b) The (absolute value of the) income elasticity of demand for pizza in Columbia is less than the price elasticity of demand for pizza in Greenville.
- c) The (absolute value of the) price elasticity of demand for pizza in Columbia exceeds the price elasticity of demand for pizza in Greenville.
- d) The (absolute value of the) price elasticity of demand for pizza in Columbia is less than the price elasticity of demand for pizza in Greenville.

Analytical Questions

Analytical Question 1 (10 points)

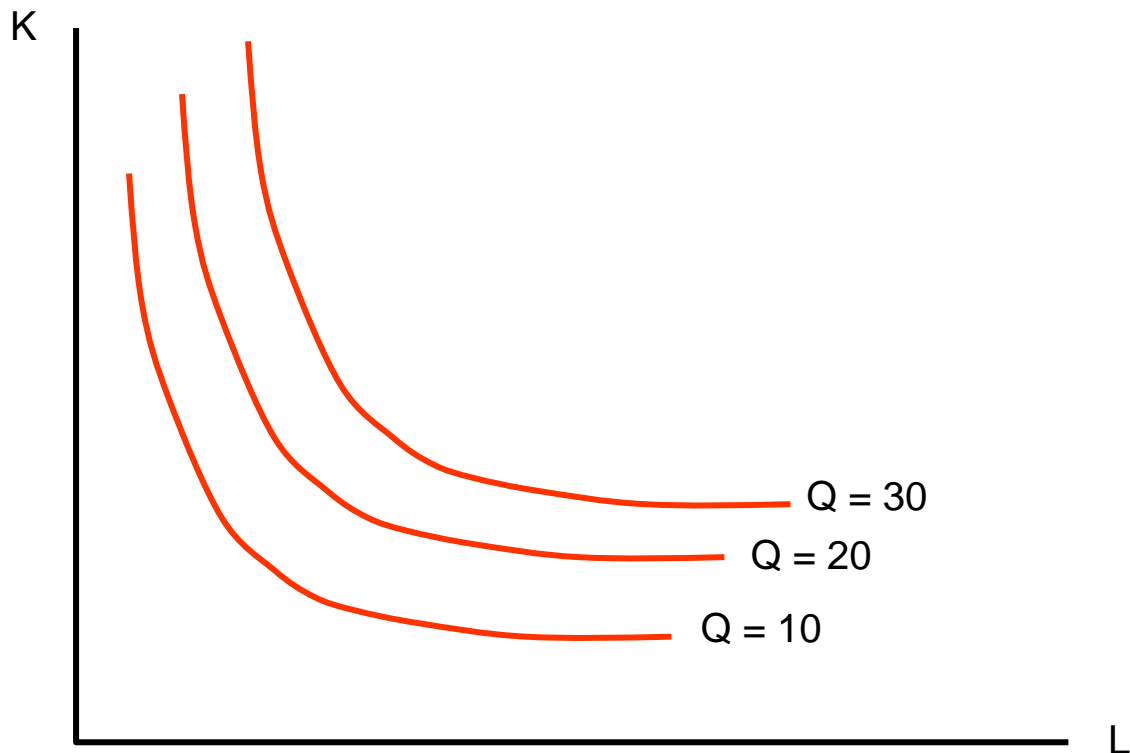
The diagram below illustrates a consumer's optimal choice of a bundle of goods X and Y.

- 1) Suppose that the price of good X triples. Show what happens to the consumer's budget line.
- 2) Now use (and add to) the diagram to illustrate the income and substitution effects of the price increase. Label these effects clearly.



Question 2 (15 points)

The diagram below shows three isoquant curves for a firm. Show how the isocost-isoquant diagram can be used to derive points that lie on the firm's long-run total cost curve. Add isocost lines to the diagram below as needed, label your diagram clearly, and explain how your diagram is related to the long-run total cost curve for the firm.



Question 3 (15 points)

Use a diagram to illustrate the profit maximizing price and quantity chosen by a monopolist. Your diagram should include the following curves: demand, marginal revenue, marginal cost, and average cost. Label all curves and axes carefully. Then briefly explain the nature of the inefficiency of the monopoly outcome.

