

Answer all questions in the space provided on the exam.

Total of 40 points (and worth 22.5% of final grade).

Read each question carefully, so that you answer the question.

Short Answer (6 points each)

1.(a) Suppose a consumer is a saver and interest rates increase.

State (1) the substitution effect of the interest rate change on the amount saved;

and (2) the income effect of the interest rate change on the amount saved.

(b) Suppose interest rates increase, leading to an increase in the price of capital. On an appropriate diagram show the effect of this on a firm's choice of inputs for a given level of output.

(c) Suppose interest rates increase, leading to an increase in the price of capital. On an appropriate diagram show the effect of this on a profit-maximizing price-taking firm's choice of output.

2. Suppose computer monitors are produced by Sony Corporation with weekly production function:

$$Q = 100 K^{0.5} L^{0.5}$$

where K is the number of assembly lines and L is the number of workers.

(a) Give the algebraic formula for the isoquant for 10,000 computer monitors.

(b) Give the algebraic formula for the marginal rate of technical substitution (MRTS) of capital for labor along this isoquant.

(c) Give the cost minimizing mix of inputs for producing 10,000 computer monitors when labor costs \$1,000 per week and an assembly line costs \$16,000 per week to run.

3. Café Extraordinaire is a profit-maximizing price-taking firm in a perfectly competitive market. The market equilibrium price is \$2 per cup. Café Extraordinaire has short-run variable daily costs in dollars given by

$$VC = Q + 0.01 Q^2$$

where Q is the number of cups of coffee served.

(a) Give the formula for the short-run supply curve for Café Extraordinaire.

(b) How many cups of coffee will Café Extraordinaire produce?

(c) What will be the profit or loss of Café Extraordinaire given you answer in part (b)?

4. To pay for increased airport security President Bush has proposed instituting a “Safe Skies Tax” of \$10 per ticket to be paid by airline companies.

(a) On an appropriate diagram show the effect of this tax. **For your diagram use as price the price of an airline ticket including the Safe Skies tax.**

(b) From your diagram in part (a) who is bearing most of the burden of this tax: airline companies or consumers? **Explain your answer.**

(c) On your diagram in part (a) indicate the net benefit or net cost to society of this tax.

5. Grocery stores in Davis were restricted to be no larger than 24,000 square feet. This law was changed to permit grocery stores that were much larger. We consider the impact of this on the market for grocery stores in Davis. **Throughout this question assume the following:**

- grocery stores have u-shaped average cost curves
- the market for grocery stores is perfectly competitive
- a larger grocery store has lower minimum average cost of production, though this minimum now occurs at a greater level of output.

(a) On an appropriate diagram show the impact of the change to larger grocery stores on the supply curve for a given grocery store.

(b) On an appropriate diagram show the impact of the change to larger grocery stores on market equilibrium in Davis, assuming no change in the number of grocery stores.

(c) If grocery stores are freely permitted to enter or exit in Davis what will be the long-run effect of the move to larger grocery stores on the number of grocery stores and on prices? **Explain your answer.**

Multiple Choice (2 points each)

1. Consumer theory when applied to labor supply shows that assuming that leisure is a normal good, when the wage increases
 - a. labor supply definitely increases
 - b. labor supply definitely decreases
 - c. labor supply possibly increases or possibly decreases.

2. The short-run demand for labor curve of a profit-maximizing price-taking firm is downward sloping because
 - a. the marginal product of labor is eventually decreasing
 - b. the marginal factor cost of labor is eventually decreasing
 - c. both a. and b.
 - d. neither a. nor b.

3. If hiring one more worker increases labor costs by \$100 and output by 5 units, and the firm is a price-taker and output sells for \$25 per unit, then the marginal revenue product of labor is
 - a. \$25
 - b. \$100
 - c. \$125
 - d. none of the above.

4. If a firm has production function $Q = 100 K^{0.6} L^{0.6}$ then returns to scale are
 - a. decreasing
 - b. increasing
 - c. constant
 - d. possibly any of the above.

5. In perfect competition the market supply curve will always be upward sloping
 - a. in the short-run when different firms have the same costs
 - b. in the long-run when different firms have different costs
 - c. neither a. nor b.
 - d. both a. and b.