

Economics 101
Professor H. Quirnbach
Second Midterm Exam

PRINT NAME _____
STUDENT ID NO. _____
DISCUSSION GROUP TIME _____

SCORE _____

INSTRUCTIONS:

1. Fill in all requested information above and on the answer sheet.
2. There are 25 multiple choice questions and one problem. Enter the ONE best answer for each multiple choice question on the answer sheet. There is no penalty for guessing. On the answer sheet, completely darken the letter representing your choice for each question. Do the problem on the test paper itself.
3. Please note that this test is to be only our own work. You are not to give help to nor receive help from any other person during the test.

MULTIPLE CHOICE QUESTIONS:

1. The amount of output that can be physically produced from any given combination of inputs is given by
 - a. the isocost line.
 - b. the production function.
 - c. the total cost function.
 - d. the supply curve.
 - e. none of the above.

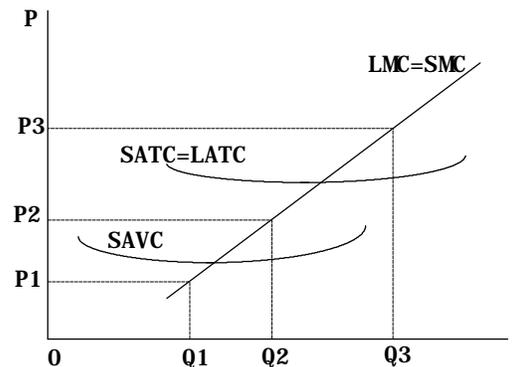
2. A firm with fixed costs in the long run
 - a. also has sunk costs in the long run.
 - b. has increasing returns to scale, at least at low output levels.
 - c. does not have variable costs in the long run.
 - d. Both b. and c. are true.
 - e. All of the above are true.

3. Suppose that, at a particular combination of inputs, a cost-minimizing firm's marginal product of labor is 3 while its marginal product of capital is 5. If the rental rate of capital is \$10 per hour, the firm
 - a. is using the cost-minimizing combination of labor and capital.
 - b. should use more capital and less labor if the wage is \$5.00/hr.
 - c. should use less capital and more labor if the wage is \$6.00/hr.
 - d. should use more capital and less labor if the wage is \$7.00/hr.
 - e. should use less capital and more labor if the wage is \$8.00/hr.

4. When the XYZ Corporation exactly doubles its usage of all inputs, its average costs decrease by 10%. The most reasonable conclusion is that
 - a. XYZ's technology exhibits decreasing returns to scale.
 - b. XYZ's total costs must increase by less than double.
 - c. XYZ's average costs must be below its marginal costs.
 - d. XYZ's industry must be competitive.
 - e. XYZ's average costs exceed its marginal costs.

5. The HAL Computer Corporation's average and marginal cost curves are graphed at the right. Note that in HAL's case the long-run and short-run marginal cost curves happen to be identical, as do the LR and SR average total cost curves. If HAL is a competitive firm,

- a. at price P1, HAL's output is Q1 in the SR but zero in the LR.
- b. at price P2, HAL's output is Q2 in the SR but zero in the LR.
- c. at price P3, HAL's output is Q3 in the SR but zero in the LR.
- d. at price P2, HAL's output is Q2 in both the SR and LR.
- e. at price P3, HAL's output is Q3 in the LR but zero in the SR.



6. At an output level of 100 units, a firm calculates its SR average total cost at \$20 per unit and its SR average avoidable cost at \$18 per unit. Thus, the firm's (total) sunk cost is

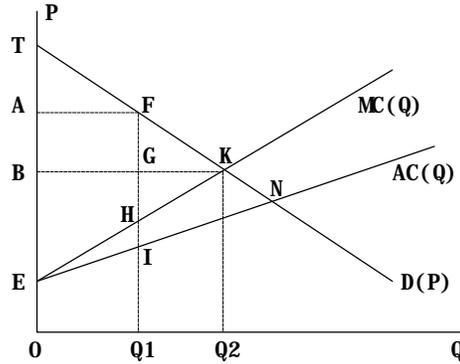
- \$0.02
- \$2.00
- \$20.00
- \$200.00
- \$2000.00

7. In the figure, if output = Q_1 , the producer surplus is given by area

- BKE.
- AEHF.
- FHK.
- AFIE.
- TAF.

8. In the same figure, the deadweight loss at output Q_1 is area

- FIN.
- FGK.
- TAF.
- GHK.
- FHK.



9. In the same figure, *consumers* are better off under competition than at output Q_1 by an amount equal to area

- TAF.
- TBK.
- FHK.
- ABKF.
- FGK.

10. For an economy to find a Pareto optimal answer to the "How?" question, which of the following must hold?

- $MRS^A = MRS^B$, for all consumers A and B.
- $MRTS_x = MRTS_y$, for all goods x and y.
- The economy must be free market capitalist.
- The economy must be centrally planned.
- Income must be fairly distributed.

11. For an economy to find a Pareto optimal answer to the "For Whom?" question, which of the following must hold?

- $MRS^A = MRS^B$, for all consumers A and B.
- $MRTS_x = MRTS_y$, for all goods x and y.
- The economy must be free market capitalist.
- The economy must be centrally planned.
- Income must be fairly distributed.

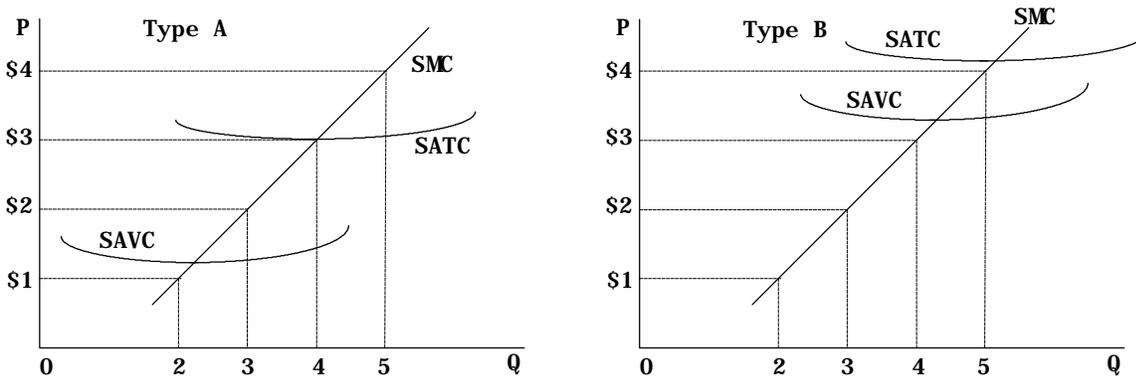
12. The price of product Q is \$7. The wage rate is \$4 and the marginal product of labor is 2. The rental rate of capital is \$2 and its marginal product is 3. A competitive firm could increase profits the most by
- increasing labor by one unit and increasing capital by one unit.
 - decreasing labor by one unit and increasing capital by one unit.
 - increasing labor by one unit and decreasing capital by one unit.
 - decreasing labor by one unit and decreasing capital by one unit.
 - decreasing labor by one unit and holding capital constant.
13. Mary derives all her income from labor. If her wage rate rises,
- her budget line rotates in with the leisure intercept fixed.
 - her budget line rotates out with the goods intercept fixed.
 - her budget line rotates out with the leisure intercept fixed.
 - her budget line makes a parallel outward shift.
 - her budget line makes a parallel inward shift.
14. Which of the following is/are likely to generate externalities?
- A beekeeper located next to an apple grower.
 - Replacing the light bulb in my closet.
 - A jogger after a long, hot run sitting next to you at a lunch counter.
 - All of the above.
 - Both a. and c.
15. In a general equilibrium,
- demand equals supply in all markets.
 - all firms earn positive profits.
 - all workers are happy with their jobs.
 - income is equally distributed.
 - both a. and b.
16. Labor supply curves are always
- upward sloping.
 - vertical.
 - downward sloping.
 - backward bending.
 - None of the above.
17. Suppose that a firm can produce 7 units of output at an average cost of \$10 per unit and 8 units at an average cost of \$11. The marginal cost of the firm's eighth unit is
- \$10.
 - \$11.
 - \$15.
 - \$18.
 - \$20.
18. Accounting costs differ from economic costs with regard to
- wages paid to employees.
 - interest paid to a bank for a loan.
 - foregone interest on money the owner invests in her own business.
 - the costs of rented machines or vehicles.
 - the costs of raw materials.

19. Suppose that you own a machine that can only be used to produce products A, B, or C. If you used the machine to produce A, your profits would be \$20. If you used it for B, your profits would be \$18. If for C, your profits would be \$15. The opportunity cost of using the machine to produce A is

- a. \$2.
- b. \$5.
- c. \$15.
- d. \$18.
- e. \$20.

20. Jeff's marginal utility for good x is 3, while his marginal utility for good y is 4. Todd's marginal utility for x is 8, while his marginal utility for y is 6. A Pareto improvement would be made if

- a. Jeff gave Todd units of both x and y, since Todd has higher marginal utilities for both goods.
- b. Jeff gave Todd one unit of x, and Todd gave Jeff one unit of y.
- c. Jeff gave Todd one unit of y, and Todd gave Jeff one unit of x.
- d. Jeff gave Todd two units of x, and Todd gave Jeff three units of y.
- e. No Pareto improvements are possible, since both people have positive marginal utilities for both goods.



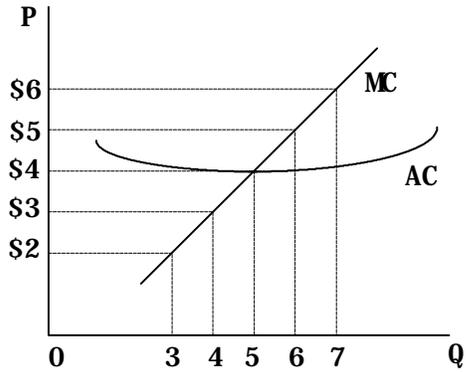
21. Suppose that a competitive industry consists of 10 firms with Type A technology and 10 more firms with Type B technology. The short-run cost curves for an individual firm of each technology type are given in the figures above.

If the price in the market is \$4.00, the short-run total industry supply is

- a. 5 units.
- b. 10 units.
- c. 25 units.
- d. 50 units.
- e. 100 units.

22. Given the same cost structure as the previous question, if the market price is \$2.00, the total industry competitive supply in the short run is

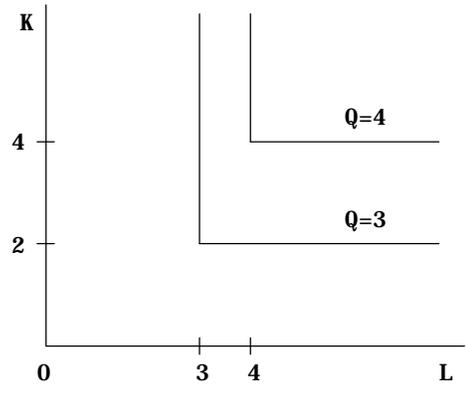
- a. 3 units.
- b. 6 units.
- c. 15 units.
- d. 30 units.
- e. 60 units.



Market Demand	
Price	Quantity
\$6	140
\$5	180
\$4	200
\$3	240
\$2	270

23. Suppose that in a particular industry the typical firm's average cost curve is as given in the above figure and that industry demand is as given in the above table. Then, if entry is free, input prices are stable, and the market is competitive in the long run, the equilibrium number of firms will be
- 20
 - 30
 - 40
 - 60
 - 90

24. For the technology whose isoquants are mapped at the right, if the wage rate is \$5/hr. and the rental rate of capital is \$2/hr., then the average cost of four units of output is
- \$4.00.
 - \$5.00.
 - \$6.33.
 - \$7.00.
 - \$9.00.



25. For the same situation as the last problem, the marginal cost of the fourth unit is
- \$4.00.
 - \$5.00.
 - \$6.33.
 - \$7.00.
 - \$9.00.

Name _____

Work out the answers to the following problem and record them on this test paper. For the requested graphs, use the axes below. Please draw and label your graphs carefully! Please do any scratch work below or on the back of this page.

PROBLEM

Suppose that the fertilizer industry is competitive. Let the technology for producing fertilizer exhibit constant returns to scale, with $AC = MC = \$10/\text{pound}$. Assume that new firms can enter the industry if they wish and that industry costs would be unaffected by such entry. Further suppose that the demand curve for fertilizer is $P = 20 - 2 \cdot Q$.

- a. Graph the industry demand and long run supply curves below.
- b. What is the long-run equilibrium price? _____
- c. What is the competitive industry output? _____
- d. What is the competitive industry profit? _____
- e. What is the consumer surplus? _____
- f. What is the value of social welfare, using the standard measure? _____

