

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_  
Student Number: \_\_\_\_\_

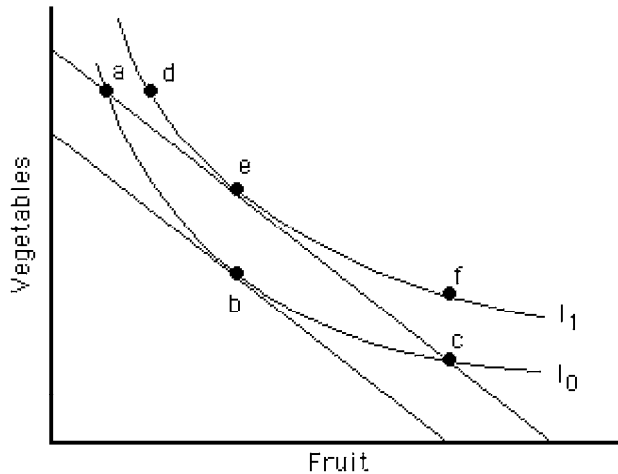
**Instructions:** Answer all questions on this exam. Note that the pages of this exam are double sided. Answers for multiple choice questions are to be completed on the sheet provided. This exam contains short answer problems at the end of the exam, enter your answers in the spaces provided on the exam sheet. When you have completed the exam hand in the exam sheet as well as the multiple choice answer sheet.

**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

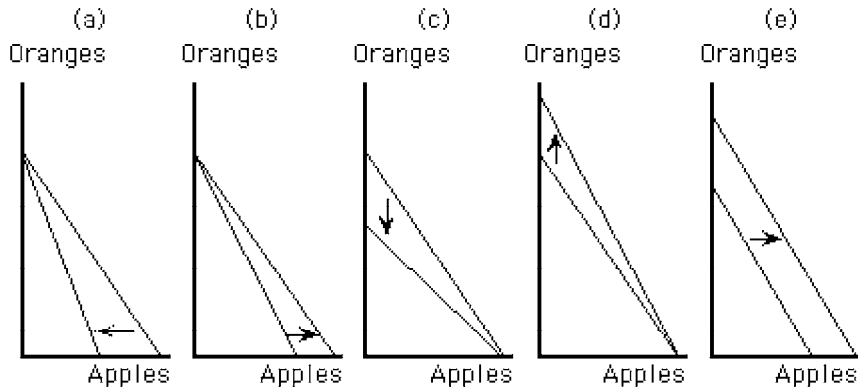
- \_\_\_\_\_ 1. The version of this exam is
  - a. A
  - b. B
  - c. C
  - d. D
  - e. E
  
- \_\_\_\_\_ 2. If the percentage change in quantity demanded is smaller than the percentage change in price, then demand is
  - a. inelastic
  - b. elastic
  - c. unit elastic
  - d. determined by supply
  - e. inadequate compared to supply
  
- \_\_\_\_\_ 3. When the numerical value of the price elasticity of demand is -3, then a one-percent change in price will cause a(n)
  - a. larger percentage change in quantity demanded, so demand is elastic
  - b. larger percentage change in quantity demanded, so demand is inelastic
  - c. smaller percentage change in quantity demanded, so demand is elastic
  - d. smaller percentage change in quantity demanded, so demand is inelastic
  - e. equal percentage change in quantity demanded, so demand is unitary elastic
  
- \_\_\_\_\_ 4. For which of the following goods is the income elasticity of demand likely to be largest?
  - a. poultry products
  - b. meals at restaurants
  - c. lemonade
  - d. used books
  - e. paperback mystery novels

Figure F-1



- \_\_\_\_\_ 5. Which of the following is true of the points in Figure F-1?
- points a, b, and c all represent the same level of utility, which is lower than that represented by points d, e, and f
  - points a, b, and c all represent the same level of utility, which is higher than that represented by points d, e, and f
  - points a, c, and e all represent the same level of utility, which is lower than that represented by point d
  - points a, c, and e all represent the same level of utility, which is higher than that represented by point b
  - point d represents a level of utility higher than any other labeled point
- \_\_\_\_\_ 6. Budget constraints exist for consumers because
- their utility from consuming goods eventually reaches a maximum level
  - even with unlimited incomes, they have to pay for each good they consume
  - they have to pay for goods and they have limited incomes
  - prices and income are inversely related
  - demand curves for goods generally slope downward
- \_\_\_\_\_ 7. The intercept of a budget line measures the
- amount of a good that a consumer will purchase
  - maximum amount of a good that a consumer could purchase, given his consumption of some other good
  - maximum amount of a good that could be consumed at given prices and income
  - minimum amount of a good that could be consumed at given prices and income
  - minimum consumption of a good consistent with utility maximization

Figure E-2



- \_\_\_\_\_ 8. Which panel in Figure E-2 shows the effect of a decrease in the price of apples, other things constant?
- panel a
  - panel b
  - panel c
  - panel d
  - panel e
- \_\_\_\_\_ 9. If food is measured on the horizontal axis of a budget line diagram, and clothing is measured on the vertical axis, an increase in
- the price of food will decrease the slope (e.g., -9 instead of -6) of the budget line
  - the price of food will increase the slope of the budget line
  - income will decrease the slope of the budget line
  - income will increase the slope of the budget line
  - the price of clothing will decrease the slope of the budget line
- \_\_\_\_\_ 10. Roger spends all of his money on racquetballs and food. What would happen to Roger's budget line if his income increased by 10 percent, holding prices constant?
- it would shift inward
  - it would pivot about the axis for food
  - it would pivot about the axis for racquetballs
  - nothing would happen to the budget line, since the relative prices for food and racquetballs have not changed
  - it would shift outward

**Figure E-6**

| Quantity of Apples | Total Utility |
|--------------------|---------------|
| 0                  | 0             |
| 1                  | 20            |
| 2                  | 34            |
| 3                  | 44            |
| 4                  | 50            |

- \_\_\_\_\_ 11. Figure E-6 shows the total utility that Jerry receives from consuming different numbers of apples per week. What is Jerry's marginal utility from consuming the second apple after he already consumed the first one?
- 0
  - 17
  - 20
  - 14
  - 34
- \_\_\_\_\_ 12. Figure E-6 shows the total utility that Jerry receives from consuming several different quantities of apples per week. What can be said about Jerry's utility schedule for apples?
- it conforms to the law of supply
  - marginal utility rises as consumption rises
  - average utility rises as consumption rises
  - it conforms to the law of diminishing marginal utility
  - the marginal and total utility lines cross at four apples
- \_\_\_\_\_ 13. If a consumer allocates her income between two goods, x and y, then she will be in equilibrium when
- $MU_x/P_x = MU_y/P_y$  and she is below her budget constraint
  - $MU_x = MU_y$  and she has spent all of her income
  - $MU_x/MU_y > P_x/P_y$  and all of her income is spent
  - $MU_x/P_x = MU_y/P_y$  and all of her income is spent
  - $MU_x = MU_y$  and she is below her budget constraint

**Figure G-1**

| Quantity of Labor | Tons of Coal Mined |
|-------------------|--------------------|
| 1                 | 80                 |
| 2                 | 180                |
| 3                 | 300                |
| 4                 | 480                |
| 5                 | 555                |

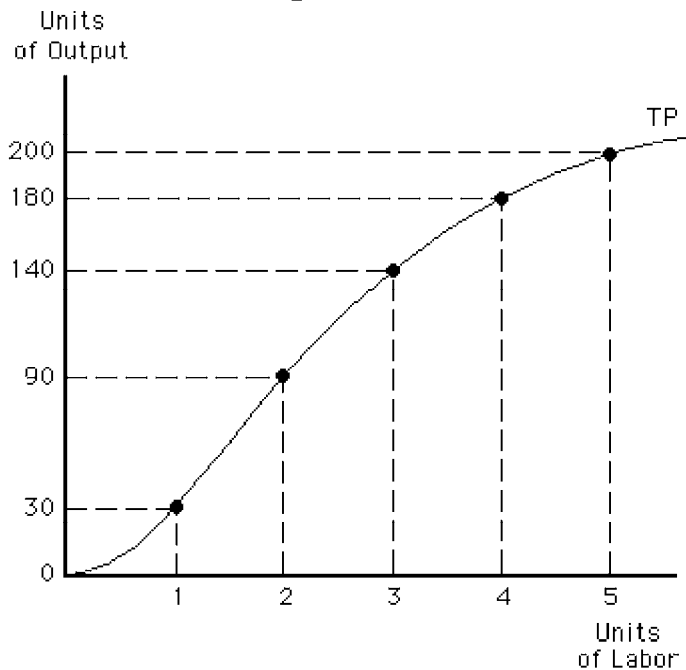
- \_\_\_\_\_ 14. Figure G-1 shows the amounts of coal that a mining company could produce per week by changing the number of workers while capital and technology remain constant. The marginal product of employing the fourth worker is
- 120 tons of coal
  - 480 tons of coal
  - 319 tons of coal
  - 180 tons of coal
  - 106.33 tons of coal

Figure G-2

| Quantity of Labor | Total Product |
|-------------------|---------------|
| 0                 | 0             |
| 10                | 100           |
| 20                | 230           |
| 30                | 340           |
| 40                | 410           |
| 50                | 460           |

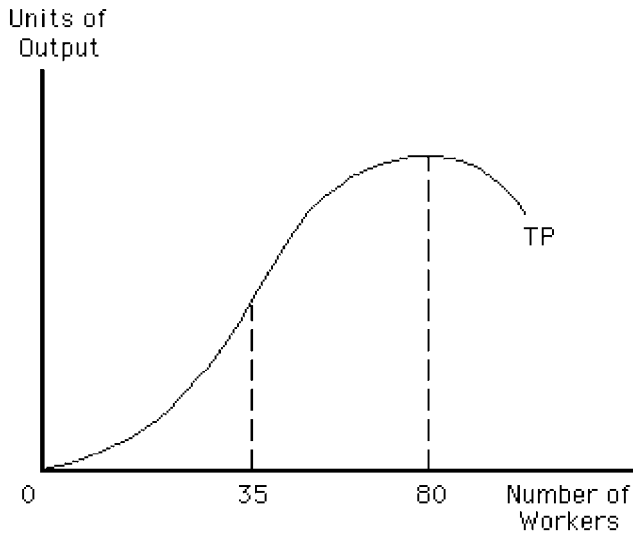
- \_\_\_\_\_ 15. Figure G-2 indicates a firm's short-run production function. What is the average product of labor when 20 units of labor are employed?
- 230 units
  - 11.5 units
  - 130 units
  - 6.5 units
  - 110 units

Figure G-3



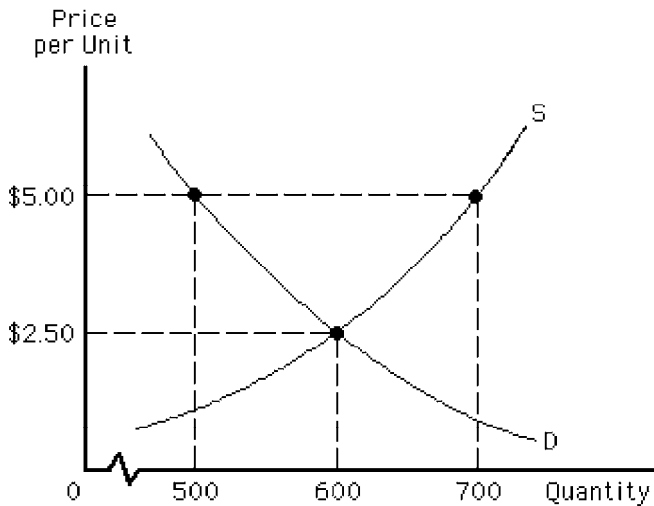
- \_\_\_\_\_ 16. For the total product curve shown in Figure G-3, the marginal product of hiring the fifth unit of labor is
- 200
  - 50
  - 20
  - 1,000
  - 1

Figure G-5



17. In Figure G-5, the law of diminishing marginal returns is evident
- between 0 and 35 workers
  - between 35 and 80 workers
  - between 0 and 80 workers
  - beyond 80 workers
  - over the entire Total Product curve

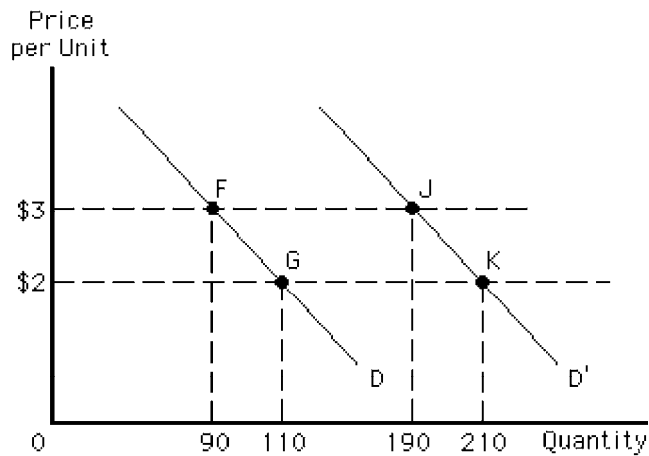
Figure D-4



18. Consider the market represented by Figure D-4 in which the government has imposed a price floor of \$5.00 per unit. To maintain the price floor, the government should
- buy up 200 units of the good
  - sell 200 units of the good
  - buy up 700 units of the good
  - sell 700 units of the good
  - buy up 500 units of the good

- \_\_\_\_\_ 19. If an excise tax is imposed on automobiles,
- the demand curve will shift upward and the market price will increase
  - the supply curve will shift downward and the market price will increase
  - the supply curve will shift upward and the market price will increase
  - the equilibrium quantity supplied will increase
  - the equilibrium quantity demanded will increase

Figure D-7



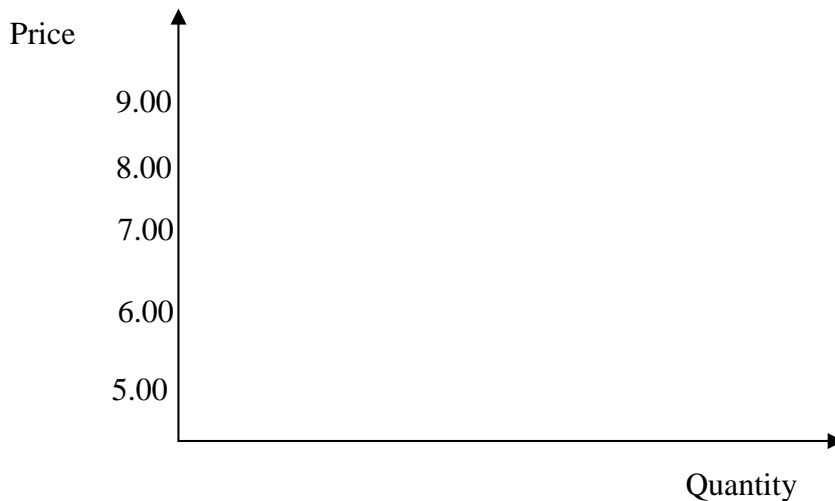
- \_\_\_\_\_ 20. In Figure D-7, compare demand curve D between points F and G to demand curve D' between points J and K. Which of the following statements is correct?
- both demand curves have the same slope, but D' is more elastic in the \$2 to \$3 range
  - both demand curves have the same slope, but D' is less elastic in the \$2 to \$3 range
  - both demand curves have the same price elasticity of demand, but D' has a lower slope
  - both demand curves have the same price elasticity of demand, but D' has a higher slope
  - both demand curves have the same slope and the same value for the price elasticity of demand

#1) The following is the weekly market demand schedule for used music cds in Ames for two different groups: #1 - college students, and #2 – all other residents.

| Price       | Group #1          | Group #2          | Market            |
|-------------|-------------------|-------------------|-------------------|
| Per used cd | Quantity Demanded | Quantity Demanded | Quantity Demanded |
| \$ 5.00     | 300               | 200               | _____             |
| \$ 6.00     | 250               | 150               | _____             |
| \$ 7.00     | 200               | 100               | _____             |
| \$ 8.00     | 150               | 50                | _____             |
| \$ 9.00     | 100               | 0                 | _____             |

a) In the table above, fill in the values for market quantity demanded.

b) Graph the market demand on the following set of axis. Make sure to label the diagram appropriately.



c) Using your graph above clearly indicate what would happen to the market demand for used cds if the price of new cd's were to decrease considerably (assume the cross-price elasticity for used cds and new cds is positive).

d) The following is the formula for own price elasticity of demand.

$$E_D = \frac{\frac{(Q_1 - Q_0)}{\left(\frac{Q_1 + Q_0}{2}\right)}}{\frac{(P_1 - P_0)}{\left(\frac{P_1 + P_0}{2}\right)}} = \frac{\frac{(Q_1 - Q_0)}{\frac{1}{2}(Q_1 + Q_0)}}{\frac{1}{2}(P_1 - P_0)} = \frac{(Q_1 - Q_0)}{(Q_1 + Q_0)} \times \frac{(P_1 + P_0)}{(P_1 - P_0)}$$

Compute the own price elasticity of demand for a price increase in the market used cds from \$6.00 to \$8.00.

e) Is market demand elastic or inelastic over the price range in part c above? why?

#2) An individual, Lisa, has a monthly income of \$1000 to spend on only food or clothing. She buys her food and clothing in bundles. The price of one bundle of food is \$200 and the price of one bundle of clothing is \$50. The following table represents different combinations that could be purchased at the above prices with the given income:

| Food     |             | Clothing |             |
|----------|-------------|----------|-------------|
| Quantity | Expenditure | Quantity | Expenditure |
| 0        | \$ -        | 20       | \$ 1,000.00 |
| 1        | \$ 200.00   | 16       | \$ 800.00   |
| 2        | \$ 400.00   | 12       | \$ 600.00   |
| 3        | \$ 600.00   | 8        | \$ 400.00   |
| 4        | \$ 800.00   | 4        | \$ 200.00   |
| 5        | \$ 1,000.00 | 0        | \$ -        |

a) Draw Lisa's budget line and label the graph appropriately.

b) Label the point where consumption is 2 bundles of food and 8 bundles of clothing as point A on your graph above. Could Lisa ever consume at this point? Why or why not?

c) Label the point where consumption is 4 bundles of food and 8 bundles of clothing as point B on your graph. Could Lisa ever consume at this point? Why or why not?

d) The following tables give the levels of utility from consuming the different goods, the marginal utility from the last bundle, and the marginal utility per dollar spent on the last bundle for Lisa.

Food

| Quantity | Expenditure | Utility | Marginal Utility |                                 |
|----------|-------------|---------|------------------|---------------------------------|
|          |             |         | of last bundle   | per dollar spent on last bundle |
| 0        | \$ -        | 0       | -                | -                               |
| 1        | \$ 200.00   | 400     | 400              | 2.00                            |
| 2        | \$ 400.00   | 750     | 350              | 1.88                            |
| 3        | \$ 600.00   | 950     | 200              | 1.58                            |
| 4        | \$ 800.00   | 1050    | 100              | 1.31                            |
| 5        | \$ 1,000.00 | 1100    | 50               | 1.10                            |

Clothing

| Quantity | Expenditure | Utility | Marginal Utility |                                 |
|----------|-------------|---------|------------------|---------------------------------|
|          |             |         | of last bundle   | per dollar spent on last bundle |
| 20       | \$ 1,000.00 | 1500    | 200              | 1.50                            |
| 16       | \$ 800.00   | 1300    | 170              | 1.63                            |
| 12       | \$ 600.00   | 1130    | 355              | 1.88                            |
| 8        | \$ 400.00   | 775     | 275              | 1.94                            |
| 4        | \$ 200.00   | 500     | 500              | 2.50                            |
| 0        | \$ -        | 0       | -                | -                               |

What combination of food and clothing would maximize Lisa's overall level of satisfaction? Why? Mark this point as C on your graph from a) and draw a plausible indifference curve through this point.

e) If Lisa suddenly finds she has \$1300 to spend on food and clothing would she ever consume at point C? Explain briefly.

#3) Consider the following information for a private company located in Boone county Iowa:

- The monthly lease for the building and equipment is \$3,000 per month
- Their only variable cost is for the airplane rental and gas which totals \$100 each time they take someone up for a lesson.

a) This company wishes to find out its cost structure for an average day (assume a 30 day month). Using your knowledge of total cost (TC), total fixed cost (TFC), total variable cost (TVC), marginal cost (MC), average fixed cost (AFC), average variable cost (AVC), and average total cost (ATC), fill in all the missing blanks in the following table:

| Lessons<br>per day | TFC   | TVC   | TC    | MC<br>(of last unit) | AFC   | AVC   | ATC   |
|--------------------|-------|-------|-------|----------------------|-------|-------|-------|
| 0                  | 100   | 0     | 100   | -                    | -     | -     | -     |
| 1                  | _____ | _____ | _____ | _____                | _____ | _____ | _____ |
| 2                  | 100   | 200   | _____ | _____                | _____ | 100   | 150   |
| 3                  | 100   | 300   | 400   | 100                  | 33.33 | _____ | _____ |

b) For this company and over the range of output given above do we see economies of scale, diseconomies of scale, or constant returns to scale? Why?

c) The above analysis is obviously for the short-run only. How do you think the ATC for 2 people would compare to the long run average total cost for 2 lessons per day? Why?