NOTRE DAME UNIVERSITY
PRINCIPLES OF MICROECONOMICS
ECN 211
FINAL EXAM

Name of student .....
Duration: 120 min.

44% PROBLEMS

10 points

1. a. Formulate the algebraic restatement of the utility maximizing rule.

$$\frac{\text{MU of last A}}{\text{Price of A}} = \frac{\text{MU of last B}}{\text{Price of B}} = \frac{\text{MU of last C}}{\text{Price of C}} = \cdots$$

b. Assume a consumer uses all of his income to buy only two types of goods that have utilities as follows:

Q	TUa	MUa	MUa/Pa	MUa/Pa'	TUb	MUb	MUb/Pb
1	90	90	10	7.8	60	60	15
2	113	23	2.6	2	90	30	7.5
3	133	20	2.2	1.7	98.8	8.8	2.2
4	148	15	1.7	1.3	106.8	8	2
5	158	10	1.1	0.9	111.8	5	1.25

(1) Find the marginal utilities for both products.

(2) Price of A = $9, and Price of B = $4. Find the marginal utilities per dollar for both products.

(3) If the weekly income of the consumer is $39, how many units of each he would buy?

3A and 3B

(4) Now assume the price of A rises to $11.5. Find the new MU/$ for A.

(5) How many units of each shall he buy after the rise in the price of A?

2A and 4B

(6) Derive from the above parts, a demand schedule for A.

P	Qd
9	3
11.5	2

(7) In the previous analysis, which reasoning of the law of demand was obvious?

THE SUBSTITUTION EFFECT

2 points

2. Below is an incomplete utility schedule of a typical consumer

Qa	TUa	Qb	TUb
1	10	1	25
2	>60	2	93
3	110	3	134

a. Fill in the empty space above, on condition that diminishing marginal utility appears only after Qa = 2 units.

A product market is a market in which:

a. households sell the services of the factors of production they control
b. firms sell their final output of goods and services
c. firms and government buy their needed goods and services
d. the government, households, and firms decide what will be produced in the coming year

12% TRUE AND FALSE

T F Economics is a physical science.

T F Human material wants are unlimited.

T F People survive without luxuries.

T F People survive without necessities.

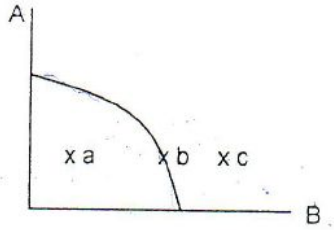
T F Factors of production are unlimited.

T F Householders are buyers in the resource market.

4% ESSAY

Draw a production possibilities curve.

a. Label the axes and name them.
b. Plot three points on your diagram, one representing a case of unemployment, one an optimal output, and one which is impossible. (be specific)



a. unemployment
b. optimal output
c. impossible

b. The consumer was buying 3 units of A and 2 units of B. If he decides to sacrifice 2 units of A and buy one more unit of B, by how much will his total utility rise?

Total utility shall fall by (110 – 10) – (134 – 93) = 59

10 points

3. Given the following schedules,

Price	Qs	Qd	P'
20	1	5	29
50	6	4	59

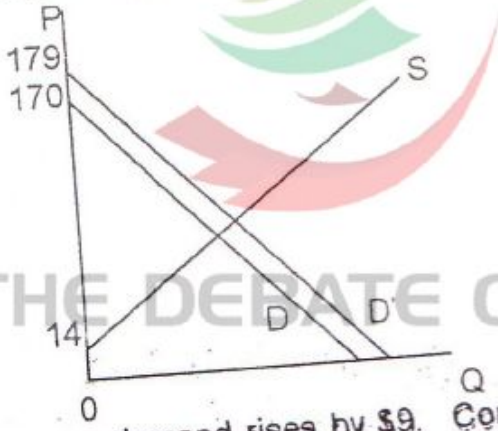
a. Derive the demand function

20 = Po - 30 (5)

Po = 20 + 150 = 170

D: P = 170 - 30 Q

b. Draw the demand curve. (be specific)



c. Now assume demand rises by $9. Complete the above table by showing the value of P'

d. Draw the shifted demand curve on the diagram of part (b).

e. Derive the new demand function.

D: P = 179 - 30 Q

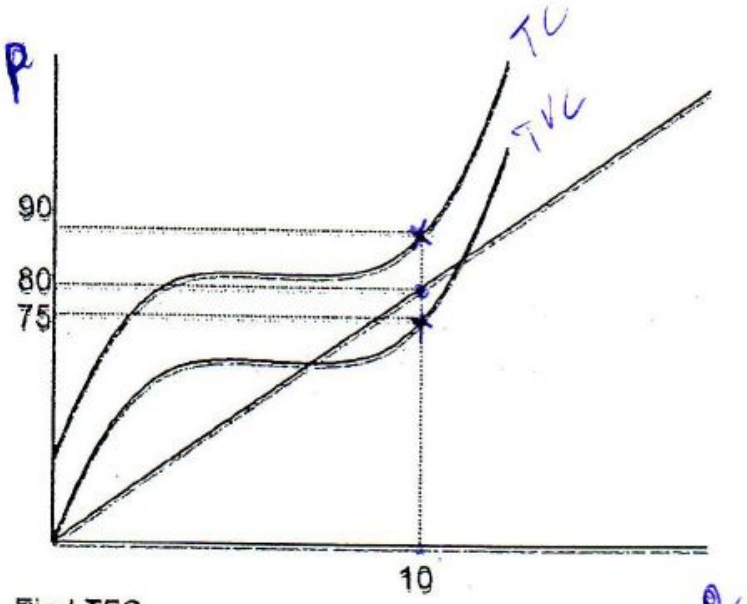
f. Draw the supply curve. (be specific)

20 = Po + 30/5 (1)

Po = 20 - 6 = 14

10%

5.



a. Find TFC.

90 - 75 = 15

b. Find price.

80 ÷ 10 = 8

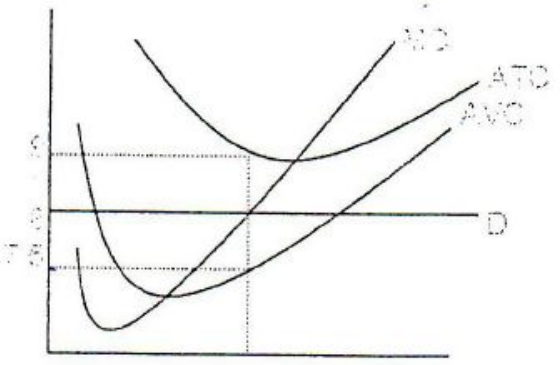
c. Find AVC.

75 ÷ 10 = 7.5

d. Find ATC.

90 ÷ 10 = 9

e. Following the above information, position on a graph below, the demand, ATC, AVC, and MC curves for the firm, and show on the axes the answers to parts "b", "c", and "d".



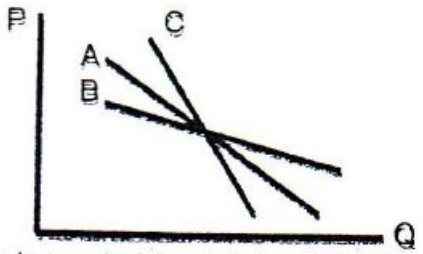
40% MULTIPLE CHOICE

A price lower than equilibrium price will result in:

a. a shift in the demand curve.
b. a shortage of quantity demanded.
c. a surplus of quantity supplied.
d. a shortage of quantity supplied.
e. none of the above.

Rank the demand curves in the diagram below, in order of greatest to least elasticity at the common intersection point:

a. A,B,C.
b. B,C,A.
c. B,A,C.
d. C,A,B.
e. none of the above.



According to utility theory, for a consumer who is maximizing total satisfaction, MU of product A divided by the MU of product B:

a. will equal the ratio of the price of A to the price of B.
b. will equal the ratio of total utility of A to that of B.
c. will not necessarily be related to prices.
d. will equal the ratio of the price of B to the price of A.
e. none of the above.

When total physical product is increasing, marginal physical product is

a. positive
b. zero
c. negative
d. increasing
e. decreasing

In the long run, if a firm cannot cover its costs, then the profit-maximizing firm will

a. continue to produce as long as total revenue exceeds fixed costs.
b. continue to produce as long as total revenue exceeds variable costs.
c. continue to produce to maximize its opportunity costs.
d. seek more rewarding opportunities in some other industry.
e. increase output and lower price.

If a profit-maximizing, perfectly competitive firm is producing at a loss in the short run, then

a. MR < AVC
b. P = AVC + AFC
c. P < ATC, but P > AVC
d. average revenue falls below price.
e. P < MR

Barriers to entry to a monopoly might include

a. the sole ownership of a strategic resource.
b. patents.
c. an exclusive governmental franchise.
d. huge financial capital required to get started.
e. all of the above.

A monopoly

a. is a sole seller of a good or service.
b. will charge a higher price than a competitive seller.
c. results in less of the product being supplied in the market.
d. can reap higher profits than competitive firms.
e. all of the above.

If marginal product is increasing, then

a. marginal cost must be rising.
b. marginal cost must be falling.
c. marginal revenue must be falling.
d. marginal revenue must be rising.
e. marginal revenue equals marginal cost.

The average fixed cost curve

a. slopes upward.
b. slopes downward.
c. slopes downward then upward.
d. slopes upward then downward.
e. is horizontal.

12 points

4. Given the following hypothetical data for a firm,

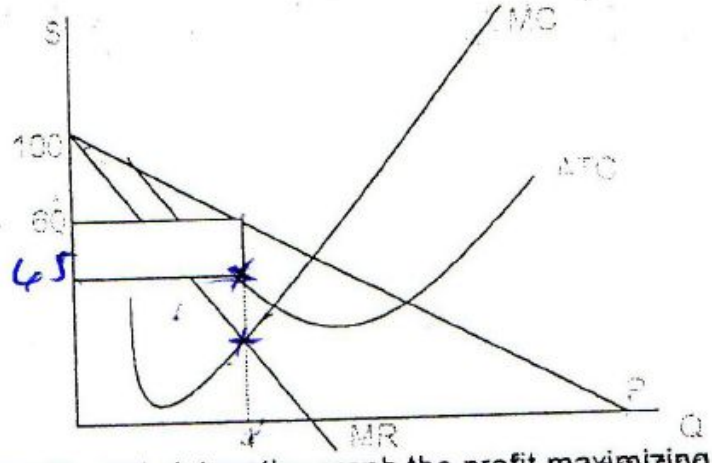
(1) Q	(2) P	(3) TR	(4) MR	(5) TC	(6) MC	(7) ATC
0	100	0		60		
1	90	90	90	100	40	100
2	80	160	70	130	30	65
3	70	210	50	150	20	50
4	60	240	30	180	30	45
5	50	250	10	220	40	44
6	40	240	-10	270	50	45
7	30	210	-30	329	59	47
8	20	160	-50	400	71	50

a. Derive the demand mathematical function.

$P = 100 - 10(Q)$

b. Fill in columns (3), (4), (5), and (6), in the table above.

c. Sketch on a graph the ATC, P, MR, and MC curves.



d. Identify and plot on the graph the profit maximizing output and price.

e. Calculate the elasticity of demand at the profit maximizing output.

$E_d = -4/4 = 40/30 = -1.5$

f. Calculate the profits and shade the corresponding area on the graph.

$\text{Profits} = 240 - 180 = 60$

If fixed costs rise, then
a. the marginal cost curve shifts up.
b. the marginal cost curve shifts down.
c. the average variable cost curve shifts down.
d. the average total cost curve shifts up.
e. a. and d.

Which of the following is a price taker?
a. a monopoly.
b. an oligopoly.
c. a monopolistically competitive firm.
d. a perfectly competitive firm.
e. all of the above.

The alternative methods of producing a product are given below.

	Units of capital	Man-hours
Method 1	7	150
Method 2	6	160
Method 3	5	200
Method 4	8	150

1850
1900
2250

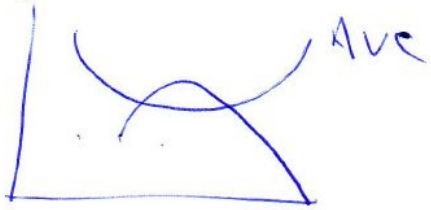
Given the above table, the factor prices per unit of capital is $50; man-hours is $10. The economically most efficient method is:
a. 1
b. 2
c. 3
d. 4

Given the table above, if the cost of a unit of capital increases to $110, while wage rates remain constant, the economically most efficient method is:
a. 1
b. 2
c. 3
d. 4

A production function:
a. is useful for long-run, but not short-run, decision making.
b. refers to the relationship between inputs and outputs.
c. measures the opportunity cost of producing a unit of output.
d. measures the relative cost of alternative ways of producing a good.

If total product is at a maximum, then:
a. average product must equal marginal product.
b. average product must be rising and must lie above marginal product.
c. marginal product must be greater than zero and must be falling.
d. marginal product must equal zero.

When average variable cost is decreasing, then:
a. marginal cost must be decreasing.
b. marginal product must be decreasing.
c. average product must be increasing.
d. marginal cost must be increasing.



The marginal utility of additional units consumed of any good
a. increases.
b. decreases.
c. remains the same.
d. is always positive.
e. is always negative.

The law of diminishing marginal utility states that

a. as more of a good or service is consumed, its marginal utility relative to other products increases.
b. as more of a good or service is consumed, its marginal utility relative to other products decreases.
c. as more of a good or service is consumed, its marginal utility relative to other products remains the same.
d. the marginal utility of all products consumed must be in equilibrium.
e. the marginal utility of the last unit consumed of any good is less than marginal utility of all other products consumed.

Consumers should allocate their income so that the marginal utility associated with the

a. last penny spent is equal for all goods.
b. first penny spent is equal for all goods.
c. last penny spent is greater for high-priced items than for lower-priced items.
d. first penny spent is greater for high-priced items than for lower-priced items.
e. first penny spent is less for high-priced items than for lower-priced items.

Because of the law of diminishing marginal utility, prices must be

a. reduced to entice people to buy more.
b. reduced to entice people to buy less.
c. increased to entice people to buy more.
d. constantly changing for consumer equilibrium to be maintained.
e. none of the above.

In the short run, in a perfectly competitive industry, which of the following will NOT occur?

a. P = ATC for the firm.
b. P < AVC for the firm.
c. P ≥ ATC for the firm.
d. P < ATC for the firm.
e. P > MR for the firm.

P = AR = MR

The law of diminishing returns states that

a. more output can be produced only with more resources
b. fewer resources are required to produce lesser output
c. as successive units of a variable resource are added to a fixed resource, additional output of each variable resource added will increase
d. as successive units of a variable resource are added to a fixed resource, additional output of each variable resource added will diminish
e. as successive units of a fixed resource are added to a variable resource, costs begin to rise

In pure competition the market supply curve is derived by adding

a. the upward-sloping marginal cost curves above AVC of all firms
b. the marginal product curves of all firms
c. the marginal benefit curves of all firms
d. the total product curves of all firms
e. the downward-sloping marginal cost curves of all firms

If marginal product is increasing, then

a. marginal revenue must be falling
b. marginal revenue must be rising
c. marginal revenue equals marginal cost
d. marginal cost must be rising
e. marginal cost must be falling

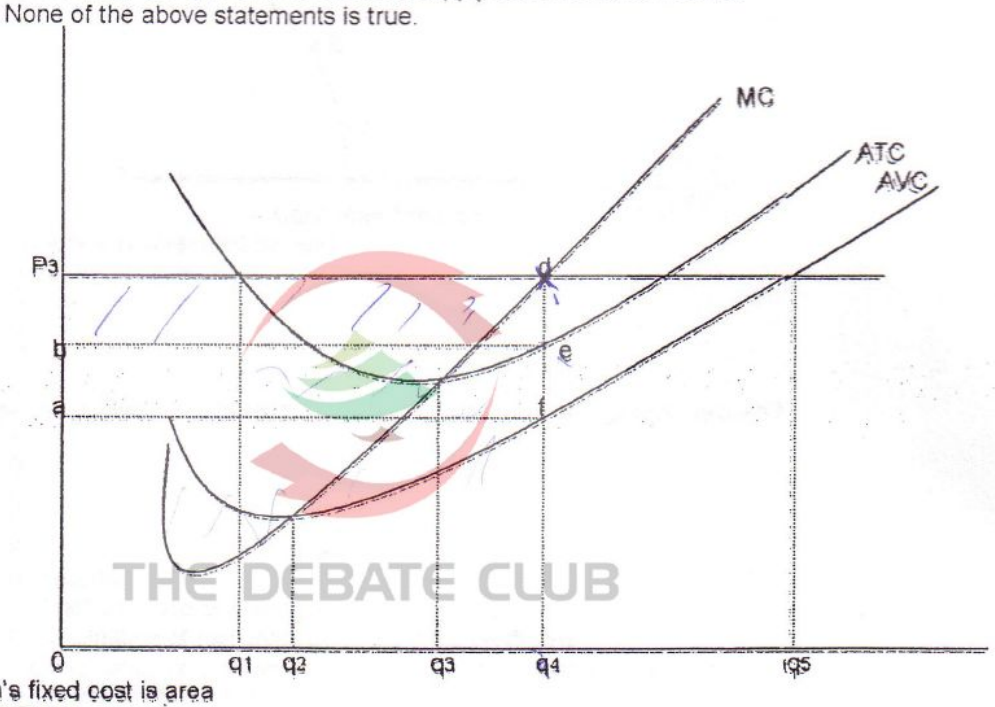
For a perfectly competitive firm

a. the profit-maximizing output level is achieved where marginal revenue equals marginal cost
b. when profits are being maximized price equals marginal cost
c. price is determined in the market
d. marginal revenue equals price
e. all of the above

A fixed cost
a. decreases with increases in the output level
b. increases with decreases in the output level
c. is any cost that does not vary with output level
d. increases with increases in the output level
e. decreases with decreases in the output level

The average fixed cost curve
a. is horizontal
b. slopes downward then upward
c. slopes upward then downward
d. measures the vertical distance between the average total cost and average variable cost curves at any output level
e. a. and b.

Which of the following statements is true of the circular flow of income model?
a. Households are the demanders (buyers) of resources.
b. Businesses (producers) are the suppliers (sellers) of resources.
c. Households supply and businesses demand in the product market.
d. Households demand and businesses supply in the resource market.
e. None of the above statements is true.



The firm's fixed cost is area
a. bP3dq4
b. aP3df
c. abef
d. Oafq4
e. none of the above

The firm's total cost is area
a. bP3de
b. OP3dq4
c. abef
d. Obeq4
e. none of the above

The firm's total revenue is area
a. AP3df
b. OP3dq4
c. bP3de
d. Obeq4
e. none of the above

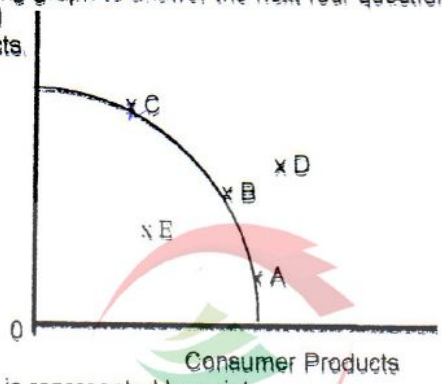
The firm's variable cost is area

a. bP3de
b. AP3df
c. abef
d. Oafq4
e. none of the above

If two variables are independent of each other, this will graph as a

a. upward sloping line.
b. downward sloping line.
c. circle.
d. horizontal or vertical line.
e. it will be impossible to graph.

Use the following graph to answer the next four questions.



Unemployment is represented by point

a. A.
b. B.
c. C.
d. D.
e. E.

Which of the following points will give us the greatest rate of economic growth?

a. A.
b. B.
c. C.
d. D.
e. E.

Point D represents

a. an inefficient use of resources.
b. a combination of resources that cannot be produced.
c. a combination of consumer and capital products that may be obtainable in the future but is impossible to produce now.
d. economic growth.
e. full employment.

Full employment is shown with point

a. A.
b. B.
c. C.
d. all of the above.
e. none of the above.

The opportunity cost of producing an additional unit of good A can be defined as:

a. the profit to be made from producing good A
b. the retail price of good A
c. the cheapest method of producing good A
d. what must be sacrificed of other goods to get an additional unit of good A