Economics 101
Spring 2001
Section 4 - Hallam
Final Exam A - Blue

1. Marginal cost measures
   a. the change in cost required to produce one more unit of output.
   b. the change in output that can be obtained from one more dollar of expenditure.
   c. the level of output divided by the level of input.
   d. the change in revenue from the production of one more unit of output.
   e. the change in output that results from one more unit of an input.

2. Marginal physical product measures
   a. the change in cost required to produce one more unit of output.
   b. the change in output that can be obtained from one more dollar of expenditure.
   c. the change in output that results from one more unit of an input.
   d. the change in revenue from the production of one more unit of output.
   e. the level of output divided by the level of input.

3. Marginal revenue measures
   a. the change in an input required to produce one more unit of output.
   b. the change in output that can be obtained from one more dollar of expenditure.
   c. the change in cost from the production of one more unit of output.
   d. the change in output that results from one more unit of an input.
   e. the change in revenue from the production of one more unit of output.

4. The cross price elasticity of demand measures
   a. the percentage change in the quantity demanded of a product when the price of a different product changes.
   b. the additional product produced from one more unit of an input.
   c. the amount of one good that must be given up to acquire more of another good while holding total utility constant.
   d. the percentage change in the quantity demanded of a product when its own price changes.
   e. the percentage change in output that occurs with an increase in expenditure.

5. Average physical product measures
   a. the change in cost required to produce one more unit of output.
   b. the change in output that can be obtained from one more dollar of expenditure.
   c. the change in output that results from one more unit of an input.
   d. the change in revenue from the production of one more unit of output.
   e. the level of output divided by the level of input.

6. The marginal rate of substitution (in production) measures
   a. the slope of an isoquant.
   b. the decrease in the quantity of input 1 (x_1) that is needed to accompany a one unit increase in the quantity of input two (x_2), in order to keep production the same.
   c. the slope of the isocost line.
   d. both a and b.
   e. a, b, and c.

7. The marginal rate of substitution (in consumption) measures
   a. the percentage change in the quantity demanded of a product when the price of a different product changes.
   b. the additional product produced from one more unit of an input.
   c. the additional utility from consuming one more unit of a product.
   d. the amount of one good that must be given up to acquire more of another good while holding total utility constant.
   e. the slope of the budget line.

8. Which of the following is a reasonable method to construct the production possibility set, which is the set of *all output combinations* that are producible for a given set of inputs?
   a. Set a level for each of the outputs, and then find all levels of inputs that are able to produce this specific output combination.
   b. Set a level for all inputs, pick a level of one of the two outputs, find the maximum level of the other output for this level of the first output, and then repeat for other levels of the first output.
   c. Set a level for all inputs, pick a level of one of the two outputs, find all feasible levels of the other output for this level of the first output, and then repeat for other levels of the first output.
   d. Set a level for each of the outputs, choose the level of each of the input in such a way that the cost of producing the set output level is minimized.
   e. Set a level for each of the outputs and hold this fixed, pick a level of one of the two inputs and then find the minimum level of the other input that is required to produce the chosen output combination given the fixed level of the first input, and then repeat for other levels of the first input.

9. Which of the following is a reasonable method to construct the cost function?
   a. Set a level for each of the outputs, and then find all levels of inputs that are able to produce this specific output combination.
   b. Set a level for all inputs, pick a level of each of the outputs in such a way that the revenue to the firm is maximized.
   c. Set a level for all inputs, pick a level of one of the two outputs, find all feasible levels of the other output for this level of the first output, and then repeat for other levels of the first output.
   d. Set a level for each of the outputs, choose the level of each of the inputs in such a way that the cost of producing the set output level is minimized.
   e. Set a level for each of the outputs and hold this fixed, pick a level of one of the two inputs and then find the minimum level of the other input that is required to produce the chosen output combination given the fixed level of the first input, and then repeat for other levels of the first input.

10. The production function gives
    a. all output levels attainable for a given level of input.
    b. the change in output that can be obtained from one more dollar of expenditure.
    c. the change in output that results from one more unit of an input.
    d. the maximum output attainable for a given combination of inputs.
    e. the level of output divided by the level of input.

11. What is the shutdown rule for a firm in the short-run?
    a. In the short-run, the firm should continue to produce if marginal revenue (MR) is equal to marginal cost (MC); otherwise, it should shut down.
    b. In the short-run, if some fixed costs are not sunk, the firm should continue to produce if (TR - TVC) > (Avoidable fixed costs) > 0; otherwise, it should shut down.
    c. In the short-run, the firm should continue to produce if total revenue (TR) exceeds total costs (TC); otherwise, it should shut down.
    d. In the short run the firm should continue to produce as long as it covers all costs.
    e. Both b and c are reasonable rules.

12. For a firm to minimize cost which of the following hold?
    a. $\frac{MPP_{x_2}}{w_2} = \frac{MPP_{x_1}}{w_1}$
    b. $MRS_{x_1x_2} = \frac{\Delta x_1}{\Delta x_2} = \frac{-w_2}{w_1}$
    c. The slope of the isocost line $\left(\frac{-w_2}{w_1} \right)$ and the slope of the isoquant curve are equal.
    d. both a and b
    e. a, b, and c

13. Opportunity cost is best described as
    a. the value of the time needed to make a choice.
    b. the value of the alternative opportunity given up when a choice is made.
    c. the most cost efficient way to produce an opportunity.
    d. the cost of discovering an opportunity.
    e. the cost of the inputs is a production process.

14. Under centrally planned capitalism, resources are allocated by
    a. command and owned privately.
    b. the market and owned by the state.
    c. the market and owned privately.
    d. command and owned by the state.
    e. tradition and owned by all.

15. Price discrimination refers to
    a. selling the same product at the same uniform price.
    b. selling the same product to different customers at different prices as a result of different production costs.
    c. charging a price just above average total cost in order to drive competitors out of the market.
    d. charging a higher price to people who are stupid.
    e. selling the same product to different customers at different prices for reasons unrelated to production costs.

16. In economics we say that a technology is a description of the set of outputs that can be produced by a given set of factors of production using a given method or process. When is a technology being utilized efficiently?
    a. When the firm produces a large amount of output.
    b. When the output of one product cannot be increased without reducing the output of another product, holding all inputs fixed.
    c. When the use of one input is minimized while holding the levels of all outputs and other inputs fixed.
    d. When the most recent advances in engineering are applied.
    e. Both b and c are correct.

17. Along any isoquant we know that output remains constant as we change levels of x_1 and x_2. We can write this statement in equation form as $\Delta x_1 \, MPP_{x_1} + \Delta x_2 \, MPP_{x_2} = 0$. This implies that
    a. $\dfrac{-w_2}{w_1} = \dfrac{\Delta x_1}{\Delta x_2}$
    b. $\dfrac{\Delta x_1}{\Delta x_2} = -\dfrac{MU_{x_2}}{MU_{x_1}}$
    c. $\dfrac{\Delta x_1}{\Delta x_2} = -\dfrac{MPP_{x_2}}{MPP_{x_1}}$
    d. The marginal rate of substitution of x_1 for x_2 is equal to $-\dfrac{MPP_{x_2}}{MPP_{x_1}}$
    e. Both c and d are correct.

18. When marginal product is positive but falling
    a. total product is falling.
    b. average product is falling.
    c. total product is rising at a decreasing rate.
    d. average product is at a maximum.
    e. total product is rising at an increasing rate.

19. Which of the following statements is true?
    a. The substitution effect of a price change measures movements between indifference curves.
    b. The income effect of a price change measures the change in the quantity demanded of a good due exclusively to changes in real income with prices held fixed.
    c. The income effect of a price change is always positive.
    d. The substitution effect of a price change can be of either sign.
    e. Both b and d are correct.

20. We say that a firm experiences *economies of scale* or increasing returns to size when
    a. MC is increasing.
    b. MC > AC.
    c. the firm imposes costs on outside firms.
    d. ε_S (elasticity of scale) < 1.
    e. AC > MC.

21. Ignoring all other goods, if Ehud's marginal utility per dagger is 30 and per trumpet is 90, his
    a. total utility could be increased by buying more daggers and less trumpets.
    b. total utility would be maximized if the price per dagger is 3 times the price per trumpet.
    c. total utility could be increased by buying more trumpets and less daggers.
    d. total utility would be maximized if the price per trumpet is one-fourth the price per dagger.
    e. total utility would be maximized if the price per dagger is one-third the price per trumpet.

22. In an equilibrium for an individual consumer,
    a. $\frac{-p_2}{p_1} = MRS_{q_1 q_2} = \frac{\Delta q_1}{\Delta q_2} = \frac{-MU_{q_2}}{MU_{q_1}}$
    b. $\frac{p_1}{p_2} = \frac{MU_{q_2}}{MU_{q_1}}$
    c. The isoquant is tangent to the budget line.
    d. both a and b.
    e. a, b, and c.

23. Which of the following conditions will guarantee a long run competitive equilibrium?
    a. For each firm in the industry price will be equal to marginal cost which will be equal to short run average cost.
    b. For each firm in the industry price will be equal to short run average cost.
    c. For each firm in the industry price will be equal to marginal cost which will be equal to short run average cost which will be equal to the minimum of long run average cost.
    d. For each firm in the industry price will be equal to long run average cost.
    e. For each firm in the industry price will be equal to short run average cost which will be equal to long run average cost.

24. In a Nash equilibrium,
    a. all economic actors (players) interacting with one another choose their best strategy, given the strategies that all other actors have chosen.
    b. ***Nash*** and Hudson merge to become American Motors.
    c. Neil Young joins with Graham ***Nash*** (formerly of the Hollies), Steven Stills (formerly with Buffalo Springfield) and David Crosby (formerly with The Byrds) to form Crosby, Stills, Nash and Young.
    d. no agent (player) would find it beneficial to deviate from his output level provided that all other agents do not deviate from their output levels.
    e. both a and d above.

25. In which of the following markets is price arbitrage most likely to take place?
    a. Hip replacement surgery
    b. Rental of ski boots
    c. Diamonds
    d. Dike construction
    e. Ready-mix concrete

26. Consider the following supply and demand curves, $D = 24 - 2P$ $S = 2P - 4$. The equilibrium price and quantity are given by
    a. P = 7, Q = 10
    b. P = 8, Q = 8
    c. P = 8, Q = 12
    d. P = 9, Q = 60
    e. P = 10, Q = 16

27. What is the elasticity of demand (mid-point formula) for a demand curve given by $Q^D = 24 - 2P$ as price goes from $4 to $5?
    a. -0.0247
    b. -3/5
    c. -2/3
    d. -20/3
    e. -5/3

28. Consider the following data on taco and burrito production.

Tacos	Burritos
100	0
95	10
87	20
77	30
64	40
47	50
27	60

    What is the opportunity cost of 10 more burritos when the firm is already producing 30?
    a. 17 tacos
    b. 10 tacos
    c. 13 tacos
    d. 6.5 tacos
    e. 13 burritos

Consider the following data on ginger and oil production in Fiji and Indonesia. The data in the table gives the **cost per unit** for each item.

	Per kilo ginger	Per barrel oil
Fiji	$1.20	$72
Indonesia	9,000 rupiah	360,000 rupiah

29. What is the opportunity cost of producing one more barrel of oil in Indonesia?
    a. 0.025 kilos of ginger
    b. 40 kilos of ginger
    c. 60 kilos of ginger
    d. 0.0166 kilos of ginger
    e. 5000 barrels of oil

Consider the following data on ginger and oil production in Fiji and Indonesia. The data in the table gives the **cost per unit** for each item.

	Per kilo ginger	Per barrel oil
Fiji	$1.20	$72
Indonesia	9,000 rupiah	360,000 rupiah

30. Which of the following is true?
    a. Fiji has a comparative advantage in producing oil.
    b. Indonesia has a comparative advantage in producing ginger.
    c. The opportunity cost of oil in Fiji is 60 kilograms of ginger.
    d. The opportunity cost of oil in Indonesia 60 kilograms of ginger.
    e. Indonesia has an absolute advantage in producing oil.

31. Consider a consumer who has an annual income of $46,000. She buys only two goods, cucumbers and tomatoes. Cucumbers cost $0.50 each while tomatoes cost $1.00 each. She normally graphs her budget line with cucumbers on the vertical axis. What is the slope of her budget line?
    a. ½
    b. - ½
    c. -2
    d. 2
    e. 23,000

32. For this problem the price of good 1= $p_1 = 12$, the price of good 2 = $p_2 = 10$ and Income = I = 84. Below is a table of alternative consumption choices q_1 and q_2, their cost and the marginal utility (MU_i) they provide. Which is the optimal choice?

q_1	q_2	MU_1	MU_2
6.5833	0.5000	0.5175	0.6073
6.1667	1.0000	0.5458	0.5361
5.7500	1.5000	0.5734	0.4779
5.3333	2.0000	0.6006	0.4290
4.9167	2.5000	0.6276	0.3872
4.5000	3.0000	0.6547	0.3508
3.6667	4.0000	0.7103	0.2899

    a. $q_1 = 6.1667$ $q_2 = 1.0$
    b. $q_1 = 5.7500$ $q_2 = 1.5$
    c. $q_1 = 5.3333$ $q_2 = 2.0$
    d. $q_1 = 4.9167$ $q_2 = 2.5$
    e. $q_1 = 4.5000$ $q_2 = 3.0$

33. Consider the following data on pig and timber production in Denmark and Gabon and where the data is **head per day for pigs and board feet per day for timber**. Assume that the production possibility frontier is linear. With no pig production, Denmark can produce 30,000 board feet of timber. With 1,500 pigs, Denmark has no timber production, etc.

	Pigs	Timber
Denmark	0	30,000
Denmark	1,500	0
Gabon	0	49,000
Gabon	1,750	0

If Denmark produces 1,000 pigs and Gabon produces 1,250 pigs and each used their remaining resources for timber production, what would total timber production be?

a. 26,000 board feet
b. 31,000 board feet
c. 19,000 board feet
d. 24,000 board feet
e. 1 bazillion board feet

34. Consider the following table which shows cost and revenue data for a specific firm. The firm is assumed to be a ***price setter***. Q denotes output, FC denotes fixed cost, VC denotes variable cost, TC represents total cost, AFC is average fixed cost, AVC is average variable cost, ATC is average total cost, and MC is marginal cost. TR is total revenue and MR is marginal revenue. How much output should the firm produce in the short run if 100 of the fixed cost is avoidable?

Q	FC	VC	C	AFC	AVC	ATC	MC	Price	TR	MR
0	144	0	144	—	—	—	12	42	0	42
1	144	13	157	144.00	13.00	157.00	14	40	40	38
2	144	28	172	72.00	14.00	86.00	16	38	76	34
3	144	45	189	48.00	15.00	63.00	18	36	108	30
4	144	64	208	36.00	16.00	52.00	20	34	136	26
5	144	85	229	28.80	17.00	45.80	22	32	160	22
6	144	108	252	24.00	18.00	42.00	24	30	180	18
7	144	133	277	20.57	19.00	39.57	26	28	196	14
8	144	160	304	18.00	20.00	38.00	28	26	208	10
9	144	189	333	16.00	21.00	37.00	30	24	216	6
10	144	220	364	14.40	22.00	36.40	32	22	220	2

a. 0
b. 7
c. 4
d. 5
e. 6

Consider the following production function

$$y = 80x_1 + 22x_2 - 2x_1^2 + x_1x_2 - x_2^2$$

The price of x_1 is \$100 and the price of x_2 is \$24. The price of output for this firm is \$4.00. Data on various output levels, the inputs needed to used them, average (APP) and marginal (MPP) physical products, and marginal cost (MC) are in the table below.

Output	x_1	x_2	w_1	w_2	APP_1	APP_2	MC	MPP_1	MPP_2
138.00	1.00	3.00	100.00	24.00	138.00	46.00	1.29	79.00	17.00
215.00	2.00	3.00	100.00	24.00	107.50	71.67	1.33	75.00	18.00
288.00	3.00	3.00	100.00	24.00	96.00	96.00	1.38	71.00	19.00
357.00	4.00	3.00	100.00	24.00	89.25	119.00	1.43	67.00	20.00
820.00	10.00	10.00	100.00	24.00	82.00	82.00	2.00	50.00	12.00
1020.00	15.00	10.00	100.00	24.00	68.00	102.00	2.61	30.00	17.00
1120.00	20.00	10.00	100.00	24.00	56.00	112.00	3.24	10.00	22.00
1120.00	25.00	10.00	100.00	24.00	44.80	112.00	3.24	-10.00	27.00
1090.00	15.00	17.00	100.00	24.00	72.67	64.12	3.01	37.00	3.00
1183.00	18.00	17.00	100.00	24.00	65.72	69.59	4.00	25.00	6.00
1251.00	22.00	17.00	100.00	24.00	56.86	73.59	6.04	9.00	10.00
1255.00	26.00	17.00	100.00	24.00	48.27	73.82	6.29	-7.00	14.00

35. If this firm is a price taker and maximizes profit, which input combination should it choose?
    a. $x_1 = 10, x_2 = 10$
    b. $x_1 = 2, x_2 = 3$
    c. $x_1 = 22, x_2 = 17$
    d. $x_1 = 18, x_2 = 17$
    e. $x_1 = 20, x_2 = 10$

36. Consider a perfectly price discriminating monopolist with the following inverse demand, cost, and marginal cost functions:

$$p = 34 - 4q$$
$$C(q) = 5 + 4q + q^2$$
$$MC(q) = 4 + 2q$$

What would be the **profits** of this price discriminating monopolist if it had to sell all units of output in integer values?

a. 40
b. 60
c. 110
d. 52
e. 20

37. Consider a firm with the following long run cost function.

$$cost(y) = 500 + 20y + 0.2y^2$$

Marginal cost is given by

$$MC(y) = 20 + 0.4y$$

Of the $500 of fixed costs, $255 are sunk.

What is the short run supply function for this firm?

a. $y = 0$ if $p \leq 34$, $y = 2.5p - 50$ if $p \geq 34$
b. $y = 0$ if $p \leq 35$, $y = 0.4p - 8$ if $p \geq 35$
c. $y = 0$ if $p \leq 50$, $y = 0.4p - 8$ if $p \geq 50$
d. $y = 0$ if $p \leq 50$, $y = 2.5p - 50$ if $p \geq 50$
e. $y = 0$ if $p \leq 35$, $y = 2.5p - 50$ if $p \geq 35$

38. Consider a group of firms having the same technology. The cost and marginal cost functions are as follows.

$$cost(q) = 100 + 10q + q^2$$

$$MC(q) = 10 + 2q$$

Assume that there are 34 such price-taking firms in the industry. What is the supply function for this industry assuming prices are high enough for all of them to produce?

a. $Q^S = \frac{1}{2} p - 5$
b. $Q^S = 17p - 170$
c. $Q^S = 2p - 20$
d. $Q^S = 68p - 340$
e. $Q^S = 17p - 340$

39. Consider a competitive market with the 34 firms from problem 38 and a market with demand curve given by $Q^D = 400 - 2p$. What is the market equilibrium price?

a. 32
b. 74/7
c. 740/19
d. 30
e. 105

40. Consider a group of firms having the same technology. The cost and marginal cost functions are as follows.

$$cost(q) = 256 + 16q + q^2$$

$$MC(q) = 16 + 2q$$

There are 14 such price-taking firms in the industry. Assume a monopolist buys out all 14 firms and then operates them as individual plants within the overall operation. What is the marginal cost function for this monopolist?

a. MC = 1/10 Q + 115
b. MC = 1/7 Q + 16
c. MC = 1/7 Q - 112
d. MC = 1/7 Q - 16
e. MC = 1/7 Q + 112

41. Now assume that this monopolist participates in a market with demand curve given by $Q^D = 464 - 2p$. How much will this monopolist produce?

a. 217
b. 189
c. 224
d. 336
e. Cannot tell

42. Consider two price setting firms who are the only firms in a given market. Firm 1 has short and long run supply functions given by

$$y_1[long\ run] = \begin{cases} 0, & p \le 16 \\ p - 8 & p \ge 16 \end{cases}$$

$$y_1[short\ run] = \begin{cases} 0, & p \le 12 \\ p - 8 & p \ge 12 \end{cases}$$

Firm 2 has short and long run supply functions given by

$$y_2[long\ run] = \begin{cases} 0, & p \le 18 \\ \frac{1}{2}p - 5 & p \ge 18 \end{cases}$$

$$y_2[short\ run] = \begin{cases} 0, & p \le 16 \\ \frac{1}{2}p - 5 & p \ge 16 \end{cases}$$

Demand in this market is given by $Q^D = 27 - p$. How much will firm 1 supply in a short-run equilibrium in this market?

a. 11
b. 8
c. 3
d. 9.5
e. 6 1/3

43. Consider the table on the next page for this question where y is output, LRAC is long run average total cost, LRMC is long run marginal cost, SRAC is short run average total cost, SRMC is short run marginal cost, and the numbers after SRAC and SRMC denote plant size.

    Which of the following statements is true?

    a. A size 13 plant is optimal for the firm if price is $287.
    b. If the firm has a size 16 plant and price is $227, the firm should produce 16 units of output.
    c. If the price in this industry is $183, some firms will still be able to make a profit as long as only a few of them are in the market.
    d. The long run equilibrium price in this industry is $200.
    e. a and d are correct.

y	C	LRAC	LRMC	SRAC 4	SRMC 4	SRAC 13	SRMC 13	SRAC 16	SRMC 16
0.00	0.00								
1.00	281.00	281.00	263.00	371.00	203.00	1721.00	23.00	2531.00	
2.00	528.00	264.00	232.00	284.00	192.00	869.00	12.00	1244.00	
3.00	747.00	249.00	207.00	252.33	187.00	582.33	7.00	812.33	
4.00	944.00	236.00	188.00	236.00	188.00	438.50	8.00	596.00	
5.00	1125.00	225.00	175.00	227.00	195.00	353.00	15.00	467.00	
6.00	1296.00	216.00	168.00	222.67	208.00	297.67	28.00	382.67	
7.00	1463.00	209.00	167.00	221.86	227.00	260.43	47.00	324.71	
8.00	1632.00	204.00	172.00	224	252.00	235.25	72.00	284.00	12.00
9.00	1809.00	201.00	183.00	228.78	283.00	218.78	103.00	255.44	43.00
10.00	2000.00	200.00	200.00	236.00	320.00	209.00	140.00	236.00	80.00
11.00	2211.00	201.00	223.00	245.55	363.00	204.64	183.00	223.73	123.00
12.00	2448.00	204.00	252.00	257.33	412.00	204.83	232.00	217.33	172.00
13.00	2717.00	209.00	287.00	271.31	467.00	209.00	287.00	215.92	227.00
14.00	3024.00	216.00	328.00	287.43	528.00	216.71	348.00	218.86	288.00
15.00	3375.00	225.00	375.00	305.67	595.00	227.67	415.00	225.67	355.00
16.00	3776.00	236.00	428.00	326.00	668.00	241.63	488.00	236.00	428.00
17.00	4233.00	249.00	487.00	348.41	747.00	258.41	567.00	249.59	507.00
18.00	4752.00	264.00	552.00	372.89	832.00	277.89	652.00	266.22	592.00
19.00	5339.00	281.00	623.00	399.42	923.00	299.95	743.00	285.74	683.00
20.00	6000.00	300.00	700.00	428.00	1020.00	324.50	840.00	308.00	780.00

Economics 101
Final Exam A - Blue
Spring 2001

Question	Correct Answer	Question	Correct Answer	Question	Correct Answer
1	a	18	c	35	d
2	c	19	b	36	b
3	e	20	e	37	a
4	a	21	e	38	b
5	e	22	a	39	d
6	d	23	c	40	b
7	d	24	e	41	b
8	c	25	c	42	b
9	d	26	a	43	e
10	d	27	b		
11	b	28	c		
12	e	29	b		
13	b	30	c		
14	a	31	c		
15	e	32	b		
16	e	33	d		
17	e	34	a		