

Economics 101
Fall 1998
Section 3 - Hallam
Final Exam

1. Marginal revenue measures
 - a. the change in cost required to produce one more unit of output.
 - b. the change in revenue from the utilization of one more unit of an input.
 - c. the change in output that can be obtained from one more dollar of expenditure.
 - 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.

2. If a single price monopolist lowers the price of a product in order to sell one more unit, then
 - a. total revenue will rise by the amount of the price.
 - b. marginal revenue will be higher than the price.
 - c. the net effect on total revenue is usually negative because price is falling.
 - d. some revenue is lost due to the lower price for all previous units, but the unit brings in some new revenue.
 - e. revenue stays the same.

3. The marginal rate of substitution measures
 - a. the slope of the production possibility frontier.
 - b. the slope of an isoquant.
 - c. the slope of the isocost line.
 - d. 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.
 - e. both b and d.

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

5. Consider the following supply and demand curves. The equilibrium price and quantity are given by
 $D = 40 - 2P$ $S = 4P - 8$
 - a. $P = 5 \frac{1}{3}$, $Q = 29 \frac{1}{3}$
 - b. $P = 24$, $Q = 4$
 - c. $P = 6$, $Q = 28$
 - d. $P = 8$, $Q = 24$
 - e. $P = 10$, $Q = 20$

For questions 6 and 7, consider the following data on oil and soybean in Venezuela and Brazil where the data is production per time period. Assume that the production possibility frontier is linear. With no soybean production, Venezuela can produce 100,000 barrels of oil. With 2,000 tons of soybean, Venezuela has no oil production, etc.

	Oil	Soybean
Venezuela	100,000	0
Venezuela	0	2,000
Brazil	20,000	0
Brazil	0	40,000

6. Which of the following statements is true?
 - a. Brazil has an absolute advantage in oil production.
 - b. Venezuela an absolute and comparative advantage in oil production.
 - c. Brazil has a comparative advantage in oil production.
 - d. Cannot say which country has an absolute advantage in either product.
 - e. Both c and d are correct.

7. If Venezuela produced 40,000 barrels of oil and Brazil produced 10,000 barrels of oil and each used their remaining resources for soybean production, what would total soybean production be?
 - a. 20,800 tons
 - b. 18,800 tons
 - c. 51,200 tons
 - d. 21,200 tons
 - e. 53,200 tons

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

9. 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 ugly.
 - e. selling the same product to different customers at different prices for reasons unrelated to production costs

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

11. Marginal revenue product measures
- the change in cost required to produce one more unit of output.
 - the change in output that can be obtained from one more dollar of expenditure.
 - the change in output that results from one more unit of an input.
 - the change in revenue from the utilization of one more unit of an input.
 - the change in revenue from the production of one more unit of output.
12. Opportunity cost is best described as
- the cost of the time needed to make a choice.
 - the cost of the accountant hired to track of expenditures.
 - the cost of the alternative opportunity given up when a choice is made.
 - the cost of finding an opportunity
13. 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.
- pick a level of the two outputs and then find all levels of inputs that are able to produce this specific output combination.
 - 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.
 - 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.
 - pick a level of the two 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.
14. Which of the following is a correct statement concerning expendables, capital and capital services?
- Expendable factors of production are completely used up or consumed during a single production period. Capital is machinery, buildings and equipment. Capital services are the flows of financial assets and other services provided by the banking sector.
 - Expendable factors of production are inputs that are purchased outside the firm. Capital is machinery, buildings and equipment along with human capital. Capital services are the flows of financial assets and other services provided by the banking sector.
 - Expendable factors of production are completely used up or consumed during a single production period. Capital is a stock that is not used up during a single production period, and provides services over time. Capital services are the flow of productive services that can be obtained from a given capital stock during a production period.
 - Expendable factors of production are inputs that are purchased outside the firm. Capital is a stock that is not used up during a single production period, and provides services over time. Capital services are the flow of productive services that can be obtained from a given capital stock during a production period.

For questions 15-17, consider the following data on output (Q), fixed cost (FC), variable cost (VC), total cost (C), average fixed (AFC), variable (AVC), and total cost (ATC), marginal cost (MC), marginal revenue (MR), etc. The column labeled MC Δ is the change in cost computed as a difference, similarly for MR Δ . MC and MR are exact marginal cost and marginal revenue respectively.

Q	FC	VC	C	AFC	AVC	ATC	MC Δ	MC	Price	TR	MR Δ	MR
0.00	100	0.00	100.00					140.00	392	0		392
							119.00				372.00	
1.00	100	119.00	219.00	100.00	119.00	219.00		100.00	372	372		352
							85.00				332.00	
2.00	100	204.00	304.00	50.00	102.00	152.00		72.00	352	704		312
							63.00				292.00	
3.00	100	267.00	367.00	33.33	89.00	122.33		56.00	332	996		272
							53.00				252.00	
4.00	100	320.00	420.00	25.00	80.00	105.00		52.00	312	1248		232
							55.00				212.00	
5.00	100	375.00	475.00	20.00	75.00	95.00		60.00	292	1460		192
							69.00				172.00	
6.00	100	444.00	544.00	16.67	74.00	90.67		80.00	272	1632		152
							95.00				132.00	
7.00	100	539.00	639.00	14.29	77.00	91.29		112.00	252	1764		112
							133.00				92.00	
8.00	100	672.00	772.00	12.50	84.00	96.50		156.00	232	1856		72
							183.00				52.00	
9.00	100	855.00	955.00	11.11	95.00	106.11		212.00	212	1908		32
							245.00				12.00	
10.00	100	1100.00	1200.00	10.00	110.00	120.00		280.00	192	1920		-8
							319.00				-28.00	
11.00	100	1419.00	1519.00	9.09	129.00	138.09		360.00	172	1892		-48
							405.00				-68.00	
12.00	100	1824.00	1924.00	8.33	152.00	160.33		452.00	152	1824		-88
							558.00				-128.00	
14.00	100	2940.00	3040.00	7.14	210.00	217.14		672.00	112	1568		-168
							802.00				-208.00	
16.00	100	4544.00	4644.00	6.25	284.00	290.25		940.00	72	1152		-248

15. If this data represents a monopoly, what level output should they produce?

- 9
- 8
- 7
- 10
- 6

16. What price should a monopolist charge?

- 292
- 272
- 252
- 232
- 212

17. In a competitive industry, price will be equal to
- a. 272
 - b. 252
 - c. 232
 - d. 212
 - e. 192

Consider the table on the next page for questions 18-20 where y is output, TR is total revenue, MR is marginal revenue, LRTC is long run total cost, LRATC 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 number after SRAC denotes plant size.

18. If the price was permanently \$198, what size plant should the firm build?
- a. 6
 - b. 10
 - c. 12
 - d. 14
 - e. 18
19. What will be the long run price and marginal cost in this industry if there is free entry and exit and all firms have the same cost structure?
- a. 12
 - b. 14
 - c. 6
 - d. 8
 - e. 10
20. If the price is \$214 and the current plant is size 10, how much output should the firm produce?
- a. 10
 - b. 11
 - c. 14
 - d. 13
 - e. 12

Long Run															
y	Price	TR	MR	LRTC	LRATC	LRMC	Profit	SRAC 6	SRMC 6	SRAC 10	SRMC 10	SRAC 14	SRMC 14	SRAC 18	SRMC 18
0	130	0	130	0.00			0.00								
1	130	130	130	135.00	135.00	121.00	-5.00	235.00	81.00	459.00	49.00	811.00		1291.00	
2	130	260	130	244.00	122.00	98.00	16.00	154.00	66.00	250.00	34.00	410.00		634.00	
3	130	390	130	333.00	111.00	81.00	57.00	123.00	57.00	176.33	25.00	272.33		411.00	
4	130	520	130	408.00	102.00	70.00	112.00	106.00	54.00	138.00	22.00	202.00		298.00	
5	130	650	130	475.00	95.00	65.00	175.00	95.80	57.00	115.00	25.00	159.80		230.20	
6	130	780	130	540.00	90.00	66.00	240.00	90.00	66.00	100.67	34.00	132.67	2.00	186.00	
7	130	910	130	609.00	87.00	73.00	301.00	87.57	81.00	92.14	49.00	115.00	17.00	156.14	
8	130	1040	130	688.00	86.00	86.00	352.00	88	102.00	88.00	70.00	104.00	38.00	136.00	6.00
9	130	1170	130	783.00	87.00	105.00	387.00	91.00	129.00	87.44	97.00	98.11	65.00	123.00	33.00
10	130	1300	130	900.00	90.00	130.00	400.00	96.40	162.00	90.00	130.00	96.40	98.00	115.60	66.00
11	130	1430	130	1045.00	95.00	161.00	385.00	104.09	201.00	95.36	169.00	98.27	137.00	112.82	105.00
12	130	1560	130	1224.00	102.00	198.00	336.00	114.00	246.00	103.33	214.00	103.33	182.00	114.00	150.00
13	130	1690	130	1443.00	111.00	241.00	247.00	126.08	297.00	113.77	265.00	111.31	233.00	118.69	201.00
14	130	1820	130	1708.00	122.00	290.00	112.00	140.29	354.00	126.57	322.00	122.00	290.00	126.57	258.00
15	130	1950	130	2025.00	135.00	345.00	-75.00	156.60	417.00	141.67	385.00	135.27	353.00	137.40	321.00
16	130	2080	130	2400.00	150.00	406.00	-320.00	175.00	486.00	159.00	454.00	151.00	422.00	151.00	390.00
17	130	2210	130	2839.00	167.00	473.00	-629.00	195.47	561.00	178.53	529.00	169.12	497.00	167.24	465.00
18	130	2340	130	3348.00	186.00	546.00	-1008.00	218.00	642.00	200.22	610.00	189.56	578.00	186.00	546.00
19	130	2470	130	3933.00	207.00	625.00	-1463.00	242.58	729.00	224.05	697.00	212.26	665.00	207.21	633.00
20	130	2600	130	4600.00	230.00	710.00	-2000.00	269.20	822.00	250.00	790.00	237.20	758.00	230.80	726.00
22	130	2860	130	6204.00	282.00	898.00	-3344.00	328.55	1026.00	308.18	994.00	293.64	962.00	284.91	930.00

For questions 21-23, consider two perfectly competitive firms with the following marginal cost functions

$$MC(y_1) = 12 + 2y_1$$

$$MC(y_2) = 12 + 0.5y_2$$

where y_i is the output of the i th firm?

21. What is the supply equation for firm 2?

a. $y_2 = \frac{1}{4}p - 12$

b. $y_2 = \frac{1}{2}p - 6$

c. $y_2 = p - 12$

d. $y_2 = 2.5p - 30$

e. $y_2 = 2p - 24$

22. For the industry made up of the two firms in question 21, what is the industry supply equation?

a. $Q = y_1 + y_2 = 2p - 24$

b. $Q = y_1 + y_2 = 2.5p - 30$

c. $Q = y_1 + y_2 = p - 12$

d. $Q = y_1 + y_2 = 2.25p - 16.5$

e. $Q = y_1 + y_2 = \frac{3}{2}p - 18$

23. If industry demand is given by $Q^D = 60 - 2p$, and both firms are price takers, what will be the industry equilibrium price?

a. 22

b. 24

c. 18

d. 20

e. 21

For questions 24-26, consider a monopolist with the following demand, cost, and marginal cost functions:

$$q = D(p) = 43 - \frac{1}{3}p$$

$$C(q) = 500 + 9q + q^2$$

$$MC(q) = 9 + 2q$$

24. What is the inverse demand function?

a. $q = -43 + \frac{1}{3}p$

b. $p = 14.33 - \frac{1}{9}q$

c. $p = 129 - 3q$

d. $q = 129 + 3p$

e. $p = 3p - 129$

25. What is marginal revenue for this monopolist?

a. $MR = 129 - 1.5q$

b. $MR = -43 + \frac{2}{3}p$

c. $MR = 129 + 6q$

d. $MR = 258 - 3q$

e. $MR = 129 - 6q$

26. How much output should the monopolist produce?

a. 34.28

b. 15

c. 49.8

d. 17

e. 20

Arkansas and Missouri can both produce corn and cotton . The following table represents yield per acre for the two states. Corn is measured in bushels while cotton is measured in pounds.

	Corn	Cotton
Arkansas	100	800
Missouri	80	720

27. Which state has the absolute advantage in corn production?

a. Arkansas

b. Missouri

c. Cannot tell

28. Which of the following statements is true?

a. Arkansas has an absolute advantage in both products and a comparative advantage in corn

b. Arkansas has an absolute advantage in both products and a comparative advantage in cotton

c. Arkansas has an absolute advantage in corn while Missouri has a comparative advantage in corn

d. Nebraska has a comparative advantage in beef

e. Missouri has an absolute advantage in both products and a comparative advantage in cotton

Use the following table to answer questions 29 and 30 where the data in the table gives the cost per unit for each item.

	Per bushel wheat	Per kilo cocaine
Columbia	60 pesos	120 pesos
U.S.	\$4.00	\$100.00

29. What is the opportunity cost of producing one kilo of cocaine in Columbia?
- 60 pesos
 - 1.2 pesos
 - ½ bushel wheat
 - 12 bushels wheat
 - 2 bushels wheat
30. Which of the following is true?
- Columbia has an absolute advantage in wheat production
 - Columbia has an absolute and a comparative advantage in producing cocaine
 - Columbia has a comparative advantage in producing cocaine
 - The U.S. has a comparative advantage in cocaine production.
31. The government has determined the cost of the average consumption bundle in a number of different price situations. This represents the price level in the economy. In which of the following situations would a consumer be most satisfied?
- An annual income of \$33,000 when the standard bundle costs \$3,000.
 - An annual income of \$40,000 when the standard bundle costs \$4,000.
 - An annual income of \$72,000 when the standard bundle costs \$6,000.
 - An annual income of \$80,000 when the standard bundle costs \$8,000.
 - An annual income of \$99,000 when the standard bundle costs \$9,000

For questions 32-33, use the table below. The table contains data on demand for 2 goods slips, (S) and camisoles (C). The notation is as follows: PS = price of slips, PC = price of camisoles, I = income, DS = demand for slips, DC = demand for camisoles. There are four situations shown.

			DS, I = 400		DC, I=400					DS, I = 600		DC, I=600		
PS	PC	I	DS, PC = 5	DC, PC = 5	PS	PC	I	DS, PC = 5	DC, PC = 5	PS	PC	I	DS, PC = 5	DC, PC = 5
10.00	5.00	400.00	14.60	50.80	10.00	5.00	600.00	22.60	74.80					
15.00	5.00	400.00	9.14	52.60	15.00	5.00	600.00	14.47	76.60					
20.00	5.00	400.00	6.40	54.40	20.00	5.00	600.00	10.40	78.40					
25.00	5.00	400.00	4.76	56.20	25.00	5.00	600.00	7.96	80.20					
30.00	5.00	400.00	3.67	58.00	30.00	5.00	600.00	6.34	82.00					
35.00	5.00	400.00	2.89	59.80	35.00	5.00	600.00	5.18	83.80					
40.00	5.00	400.00	2.30	61.60	40.00	5.00	600.00	4.30	85.60					
45.00	5.00	400.00	1.85	63.40	45.00	5.00	600.00	3.63	87.40					
			DS, I = 400		DC, I=400					DS, I = 600		DC, I=600		
PS	PC	I	DS, PC = 20	DC, PC = 20	PS	PC	I	DS, PC = 20	DC, PC = 20	PS	PC	I	DS, PC = 20	DC, PC = 20
20.00	20.00	400.00	7.00	13.00	20.00	20.00	600.00	11.00	19.00					
25.00	20.00	400.00	5.24	13.45	25.00	20.00	600.00	8.44	19.45					
30.00	20.00	400.00	4.07	13.90	30.00	20.00	600.00	6.74	19.90					

32. What is the price elasticity of demand for slips with an income of \$400 when the price of camisoles is \$5.00 as the price of slips goes from \$20 to \$25?
- 1.234
 - 1.323
 - 1.422
 - 1.196
 - 1.294
33. What is the income elasticity of demand for slips when the price of camisoles is \$5.00, the price of slips is \$30.00 and income goes from \$400 to \$600?
- 1.350
 - 1.334
 - 1.419
 - 1.258
 - 1.170

Consider the following production function

$$y = 30x_1 + 20x_2 - 2x_1^2 - x_2^2$$

The price of x_1 is \$3.00 and the price of x_2 is \$2.00. You are trying to find the cost minimizing way to produce 136 units of output. The following data will be useful to you in the task.

x_1	x_2	MPP_1	MPP_2
2.250	5.000	21.000	10.000
2.691	4.500	19.235	11.000
3.000	4.000	18.000	12.000
3.250	3.500	17.000	13.000
3.792	3.000	14.832	14.000
3.362	3.500	16.553	13.000
5.000	2.000	10.000	16.000
6.042	1.500	5.831	17.000

34. What is the marginal rate of substitution of x_1 for x_2 when x_1 is 3.250 and x_2 is 3.500?
- 1.3077
 - 0.7647
 - 2.168
 - 4
 - 0.666
35. What is the least cost way to produce 136 units of output?
- $x_1 = 3.250$ and $x_2 = 3.5000$
 - $x_1 = 2.500$ and $x_2 = 5.000$
 - $x_1 = 3.000$ and $x_2 = 4.000$
 - $x_1 = 3.792$ and $x_2 = 3.000$
 - $x_1 = 5.000$ and $x_2 = 2.000$

36. A farmer signs a 12-month contract to rent a piece of land for \$10,000. If he decides not to farm the land, he can release it for \$10,000, but, in order to find a sub-tenant, he must hire a realtor for \$1000. He also buys seed, fertilizer, and other supplies for another \$8,000, and he spends \$2000 to ship the goods to his farm. If he decides not to use these supplies, he can ship it (the entire amount) back, at his own expense (\$2000) and, if he does so, he will receive a full refund for the value of the goods. Shipping charges are nonrefundable. Assume for simplicity that partial merchandise returns are not possible. The cost of a farm laborer is \$15,000 for the season. For every laborer he hires, he can produce two tons of corn (up to a maximum of 10 tons). He has not yet signed any contracts with laborers.

What is the sunk cost of production?

- a. \$1,000
 - b. \$16,000
 - c. \$6,000
 - d. \$5,000
 - e. \$8,000
37. Consider the following game between Farmer Slack and Freddy Foreclose. The game involves the two rural residents deciding where to spend the morning. They both leave their homes at the same time. Freddy's payoffs are higher if he ends up at the same place as Farmer Slack since he can then deliver the foreclosure papers on the farm. Farmer Slack is better off if she can avoid Freddy. Both of them prefer the Coffee Shop to the Corn Silage Pit. Consider then the matrix of payoffs for this game where the first payoff is that of Freddy.

Outcomes for Farmer Slack and Freddy Foreclose from the decision of where to spend the morning.			
		Farmer Slack	
		Silage Pit	Coffee Shop
Freddy Foreclose	Silage Pit	400 0	0 500
	Coffee Shop	100 200	1000 50

What is the Nash equilibrium for this game where a couplet lists Freddy's decision first.

- a. (Silage Pit Silage Pit)
- b. (Silage Pit, Coffee Shop)
- c. (Coffee Shop, Silage Pitt)
- d. (Coffee Shop, Coffee Shop)
- e. none of the above

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

$$\begin{aligned}p &= 28 - 4q \\C(q) &= 8q \\MC(q) &= 8\end{aligned}$$

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

- a. 18
b. 24
c. 40
d. 28
e. 50
39. In monopolistic competition in the long run, each firm will produce
- a. such that marginal revenue is equal to marginal cost
b. in such a way that price is equal to average total cost
c. on the downward sloping portion of the average total cost curve
d. such that profits are equal to zero
e. all of the above
40. Below is some data on use of an input and total product (y). What is the marginal product in going from 20 to 24 units of input where input is x and output is y.

x	y
0	0
2	9.6
4	18.4
6	26.4
8	33.6
10	40
12	45.6
14	50.4
16	54.4
18	57.6
20	60
22	61.6
24	62.4
26	62.4
28	61.6
30	60

- a. 1.2
b. 0.6
c. 2.4
d. 3
e. 2.6

41. Consider an industry with two firms each producing output q_i . The industry inverse demand function is given by

$$p = 144 - 4Q$$

The two firms in the industry produce with constant average and marginal costs. Costs per unit for the first firm are \$8.00 while costs per unit for the second firm are \$16.00. What is conjectural marginal revenue for the first firm?

- a. $144 - 8Q$
 - b. $144 - 8q_1 - 4q_2$
 - c. $288 - 4q_1 - 8q_2$
 - d. $144 - 4q_1 - 4q_2$
 - e. $144 - 4q_1 - 8q_2$
42. What is the best response function for firm 1?

- a. $q_1 = 16 - \frac{1}{2}q_2$
- b. $q_1 = 15 - \frac{1}{2}q_2$
- c. $q_1 = 15 - q_2$
- d. $q_1 = 17 - \frac{1}{2}q_2$
- e. $q_1 = 17 - q_2$

43. What is the equilibrium price in this market?

- a. 48
- b. 56
- c. 58
- d. 60
- e. 50

**Economics 101
Final**

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