"I have neither given nor received aid on this exam"_____
(signature)

The following formula might be useful: $E_p = (P/Q)*(1/\text{slope})$

I. Discussion Questions (12.5 points each…50 points total):

1. The Rolling Stones face the following demand curve for lawn seats at the upcoming show at Walnut Creek: $Q = 1{,}800 - 20P$, where P is the price of lawn seats (in dollars) and Q is the number of lawn seats sold.

    a. If the price per ticket is $50, how much revenue does the Rolling Stones receive?

    b. What is the price elasticity of demand for handbags at this point? (hint: calculate a number)

    c. In words, precisely interpret the price elasticity number that you found in (b).

    d. Based on the information above, what should the Rolling Stones do if they want to increase their revenues?

2.

East Lake		West Lake	
# of Boats	Average # Fish	# of Boats	Average # of Fish
1	40	1	50
2	40	2	46
3	40	3	42
4	40	4	38
5	40	5	34

a. Using the above chart, suppose Madison has 6 fishing boats. What is the optimal method of allocating 6 fishing boats between these two lakes? [*No credit given if you don't show your work*] (6.5 points)

b. Based on your answer from (a), how many fish will be caught from the East Lake? (2 points)

c. Based on your answer from (a), how many fish will be caught from the West Lake? (2 points)

d. How many total fish are caught? Show your work. (2 point)

3. Suppose you own two plants: one plant in Atlanta and the other in Boston with the following marginal cost and average total cost curves (subscripts A & B denote Atlanta and Boston):

$$MC_A = 8Q_A, \; ATC_A = 4Q_A$$
$$MC_B = 24Q_B, \; ATC_B = 12Q_B$$

    a.   What is the least costly way of producing 60 units of output? (6.5 points)

    b.   How much did it cost to produce the output selected in (a) from plant #1? (2 points)

    c.   How much did it cost to produce the output selected in (a) from plant #2? (2 points)

    d.   What is the total cost to produce 60 units of output? (2 point)

4. Complete the following table for the short-run cost curves for the production function: $Q = 3KL$ where in the short-run K is fixed at 2 units, with the rental price of capital = $2 and the wage rate = $3.

Workers	Output	TC	VC	FC	ATC	AVC	AFC	MC
0					--	--	--	--
1								
2								

Extra Credit (+3): Use a graph to illustrate the law of diminishing returns. Make sure you label on your graph the region in which the law of diminishing returns occurs. *No credit given if you fail to label your axes and curves!*

_____

II. Multiple Choice: (25 questions, worth 2 points each…50 points total)
Use the following table to answer the next two questions:

Labor	Output	Marginal Product	Average Product
0	0	--	--
1		10	
2			12
3	33		
4	40		
5		5	

1. How many laborers should you hire if the goal is to maximize marginal product?
A) 1
B) 2
C) 3
D) 4
E) 5

2. How many laborers should you hire if the goal is to maximize average product?
A) 1
B) 2
C) 3
D) 4
E) 5

3. Find the returns to scale in the following function: $Q = KL$
A) increasing returns to scale
B) decreasing returns to scale
C) constant returns to scale
D) returns to scale cannot be determined

Use the table below to answer the next two questions:

Q	Fixed Cost	Variable Cost	Total Cost	Marginal Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost
0			16	--	--	--	--
1				18			
2		31					
3			57				
4						12.25	

4. What is the marginal cost of producing the fourth quantity?
A) 10
B) 13
C) 9
D) 50
E) 8

5. What is the average variable cost of making a quantity of three?
A) 3.33
B) 5.33
C) 19
D) 13.67
E) 12.75

6. Income elasticity of demand measures how
A) the quantity demanded changes as consumer income changes.
B) consumer purchasing power is affected by a change in the price of a good.
C) the price of a good is affected when there is a change in consumer income.
D) many units of a good a consumer can buy given a certain income level.

7. The defining characteristic of a natural monopoly is:
A) constant marginal cost over the relevant range of output.
B) economies of scale over the relevant range of output.
C) constant returns to scale over the relevant range of output.
D) diseconomies of scale over the relevant range of output.

8. Minimum efficient scale of production occurs where:
A) marginal revenue = marginal cost
B) marginal revenue is minimized
C) average fixed cost is minimized
D) marginal cost is minimized
E) long-run average cost is minimized

9. If a consumer has an inelastic price elasticity of demand for good X this means:
A) the consumer is very responsive to a price change of good X
B) the consumer is very responsive to an income change
C) the consumer is not very responsive to a price change of good X
D) the consumer is not very responsive to an income change

10. If the long-run average cost curve is increasing, then we know that the production function exhibits:
A) constant returns to scale
B) decreasing returns to scale
C) increasing returns to scale

Use the following information to answer the next two questions: EZ-Cleaning can hire workers to pressure wash houses for $20 per day and can rent pressure-washing machines for $40 per day. Currently EZ-Cleaning spends $160 per day.

K

_____L

11. In the space above, draw an isocost curve for EZ-Cleaning's spending $160. What is the slope of this isocost curve?
A) -1/2
B) -1/4
C) -1
D) -2
E) -4

12. At a wage of $20 per day to hire workers and rental prices of $40 per day for pressure-washing machines, EZ-Cleaning hires 2 workers and rents 3 machines. The marginal product of workers = 20 and the marginal product of machines=30. Given this information, what recommendation would you give EZ-Cleaning?
A) Rent more machines and fire workers.
B) Rent fewer machines and hire workers.
C) Don't change anything, since EZ-Cleaning is already optimally using its inputs.

13. If Jerry and Ben's demand curves are: $P = 4 - Q_J$ and $P = 4 - 2Q_B$, respectively. Find the market demand curve.
A) $P = 8 - 3Q$
B) $P = 8 - (2/3)Q$
C) $P = 8 - (3/2)Q$
D) $P = 4 - (2/3)Q$
E) $P = 4 - (3/2)Q$

14. At a price of $200, 300 tickets are purchased per week to fly from Greenville to Philadelphia. If the price rises to $300, 280 tickets are purchased per week to fly from Greenville to Philadelphia. Assume that the demand for airline tickets is linear. What is the slope of this demand curve?
A) -1/2
B) -4
C) -5
D) -2/5
E) -1/5

15. At a price of $200, 300 tickets are purchased per week to fly from Greenville to Philadelphia. If the price rises to $300, 280 tickets are purchased per week to fly from Greenville to Philadelphia. Assume that the demand for airline tickets is linear. What is the price elasticity of demand at a price of $300?
A) -0.214
B) -5.357
C) -0.933
D) -2.679
E) -0.268

16. Peanut butter and jelly have a cross-price elasticity of demand number that is:
A) zero.
B) positive.
C) negative.

17. When the price of a music download is $1 per download, Julia downloads five songs month. If the price of downloads drops to $0.90 per download, Julia will download ten songs per month. Julia's demand for music is:
A) elastic
B) inelastic
C) unit elastic

18. If demand is $P = 10 - 2Q$, find the price elasticity of demand if $P = 8$.
A) -2
B) -4
C) -1
D) -6
E) -8

Use the graph below to answer questions 19-22.
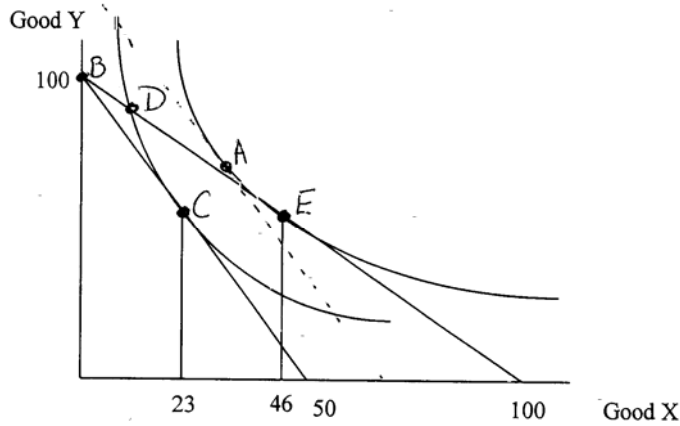
19. If M = $100, P_Y = $1, and P_X = $1. Find the best affordable bundle.
   A) A
   B) B
   C) C
   D) D
   E) E

16%

20. Suppose the price of X increases from P_X = $1 to P_X = $2. Everything else is unchanged (M = $100 & P_Y = $1). The total effect is represented by moving from point____ to point____.
   A) A to E
   B) E to A
   C) C to E
   D) D to C
   E) E to C

3 66

21. The substitution effect due to the price of X increasing is represented as moving from point____ to point____.
   A) E to D
   B) E to A
   C) C to D
   D) C to A
   E) E to C

49%

22. The income effect due to the price of X increasing is represented as moving from point_____ to point_
   A) A to D
   B) A to E
   C) D to C
   D) E to C
   E) A to C

64%

23. (Fill in the blank) Input costs that do not require an outlay of money by the firm are called _____.
  A) Marginal costs
  B) Sunk costs
  C) Fixed costs
  D) Explicit costs
  E) Implicit costs

24. True/False: if the marginal cost curve is below the average variable cost curve then the average variable cost curve must be falling.
  A. True
  B. False

25. Milk is classified as a "necessary good", this means that
  A) if the price of milk goes up 1%, quantity demanded for milk decreases by more than 1%.
  B) if the price of milk goes up 1%, quantity demanded for milk decreases by less than 1%.
  C) if the price of milk goes up 1%, quantity demanded for milk increases by less than 1%.
  D) if income goes up 1%, quantity demanded for milk increases by less than 1%.
  E) if income goes up 1%, quantity demanded for milk increases by more than 1%.

Extra credit (+2 points)
26. The author of the text book tells us in Chapter 10 (the cost chapter) that he once worked doing what?
A) as a janitor cleaning bathrooms
B) as a math and science teacher in Nepal
C) as a dishwasher in Paris
D) as a white water rafting guide in Colorado
E) as a free lance photographer for Time magazine

Answer Key

Question	Test 2
1	B
2	B
3	A
4	E
5	D
6	A
7	B
8	E
9	C
10	B
11	A
12	B
13	D
14	C
15	A
16	C
17	A
18	B
19	E
20	E
21	B
22	E
23	E
24	A
25	D
26	B