"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 (10 points each…50 points total):

1. Coach has the following demand for their new Suede Gallery Tote handbag: $Q = 14{,}800 - 15P$, where P is the price of the handbag (in dollars) and Q is the number of handbags sold.

   a. If the price the handbag is $298, how much revenue does Coach 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 Coach do if they want to increase their revenues?

2. Fill in all of the blanks in the table below:

Q	Fixed Cost	Variable Cost	Total Cost	Marginal Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost
0			24	--	--	--	--
1				16			
2		50					
3			108				
4						34	

3.

East Lake		West Lake	
# of Boats	Average # Fish	# of Boats	Average # of Fish
1	101	1	120
2	101	2	115
3	101	3	110
4	100	4	105
5	99	5	100

    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? Show your work. (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. (1 point)

4. Suppose you own two rum 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):

$$MC_A = 12Q_A, \; ATC_A = (16/Q_A) + 6Q_A$$
$$MC_B = 4Q_B, \; ATC_B = (240/Q_B) + 2Q_B$$

    a.   What is the least costly way of producing 40 units of output? (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 40 units of output? (1 point)

5. 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 = $3 and the wage rate = $2.

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

Extra Credit (+3): Greenville Utilities Corporation (GUC) has a "natural monopoly" in the electricity business in Greenville. Draw a graph below that illustrates the natural monopoly for GUC. *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. Diminishing returns start to occur after which worker is hired?
A) Diminishing returns never occur
B) 1
C) 2
D) 3
E) 4

2. What is the average product when 5 workers are hired?
A) 12
B) 10
C) 9
D) 8
E) 5

3. Find the returns to scale in the following function: $Q = 2KL$
A) increasing returns to scale
B) decreasing returns to scale
C) constant returns to scale
D) returns to scale cannot be determined

4. Maureen spends $6 per week on orange juice and apple juice. The price of orange juice is $2 per cup while apple juice costs $1 per cup. Maureen views 1 cup of orange juice and 1 cup of apple juice as perfect complements. Find Maureen's optimal bundle.
A) 2 orange juices and 2 apple juices.
B) 3 orange juices and 0 apple juices.
C) 3 orange juices and 6 apple juices.
D) 0 orange juices and 3 apple juices.
E) 0 orange juices and 6 apple juices.

5. Sam also spends $6 per week on orange juice and apple juice. The price of orange juice is $2 per cup while apple juice costs $1 per cup. Sam, however, views 1 cup of apple juice as a perfect substitute for 2 cups of orange juice. Find Sam's optimal bundle.
A) 2 orange juices and 2 apple juices.
B) 3 orange juices and 0 apple juices.
C) 3 orange juices and 6 apple juices.
D) 0 orange juices and 3 apple juices.
E) 0 orange juices and 6 apple juices.

6. True or False: If marginal product is smaller than the average product, than the average product must be decreasing.
A) True.
B) False.

7. What is the difference between the short run and the long run?
A) in the short run, all inputs are fixed
B) in the short run, all inputs are variable
C) in the long run, all inputs are fixed
D) in the long run, all inputs are variable

8. What is the minimum efficient scale of production?
A) the smallest amount of a good that needs to be produced for a firm to break-even.
B) the smallest amount of a good that needs to be produced for a firm to make a profit.
C) the amount of production that minimizes the average fixed cost
D) the amount of production that minimizes marginal cost
E) the amount of production that minimizes the long-run average cost

9. In words, marginal cost is
A) the additional costs incurred when one more worker is hired.
B) the additional costs from producing one more unit
C) the additional costs incurred when one more unit of capital is used.
D) the change in fixed costs when a new plant is built
E) the cost of one large pepperoni pizza at Papa John's

10. If the long-run average cost curve is decreasing, 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 $40 per day and can rent pressure-washing machines for $20 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. If EZ-Cleaning hires 3 workers and rents 2 machines, then the marginal product of workers = 20 and the marginal product of machines=10. 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: $P = 16 – Q_J$ and $P = 16 – 3Q_B$, respectively. Find the market demand curve.
   A) $P = 16 – 4Q$
   B) $P = 32 – 3/4Q$
   C) $P = 16 – (4/3)Q$
   D) $P = 32 – 4Q$
   E) $P = 16 – (3/4)Q$

14. At a price of $200, 300 tickets are purchased per week to fly from Greenville to Philadelphia. If the price rises to $300, 240 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) -2/3
   B) -3/2
   C) -5/3
   D) -2/5
   E) -1/3

15. At a price of $200, 300 tickets are purchased per week to fly from Greenville to Philadelphia. If the price rises to $300, 240 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 $200?
   A) -0.4
   B) -0.667
   C) -1
   D) -0.6
   E) -1.111

16. Bagels and cream cheese have a cross-price elasticity of demand number that is:
A) zero.
B) positive.
C) negative.

17. When the price of foot-long subs is $4, Howie eats five per month. When the price of foot-long subs is $3, he eats ten per month. Howie's demand for foot-long subs is:
A) elastic
B) inelastic
C) unit elastic

18. If demand is $P = 10 - 2Q$, find the price elasticity of demand if $P = 4$.
A) -3/8
B) -4/3
C) -8/3
D) -5/2
E) -2/3

Use the graph below to answer questions 19-22.
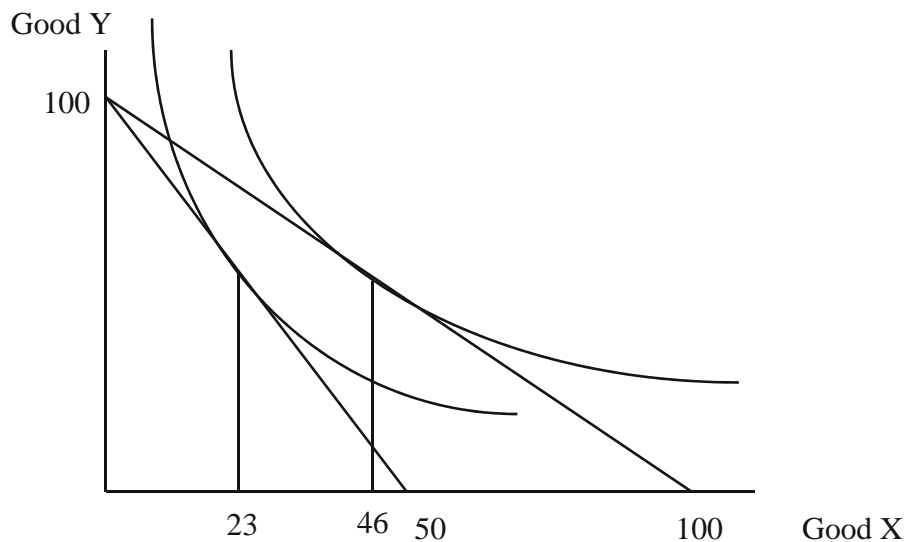
19. If M = $100, P_Y = $1, and P_X = $2. Find the best affordable bundle.
   A) A
   B) B
   C) C
   D) D
   E) E

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

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

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

23. The slope of the Engel curve for Nike shoes is:
   A) Infinity (i.e., a vertical line)
   B) Negative (i.e., downward sloping)
   C) Zero (i.e., a horizontal line)
   D) Positive (i.e., upward sloping)

24. What is the name of the type of good that violates the law of demand, i.e., people buy more of it as the price rises?
   A. Normal good
   B. Inferior good
   C. Luxury good
   D. Necessary good
   E. Giffen good

25. Automobiles are classified as a luxury good. This means that
   A) if the price of automobiles goes up 1%, quantity demanded for automobiles decreases by more than 1%.
   B) if the price of automobiles goes up 1%, quantity demanded for automobiles decreases by less than 1%.
   C) if the price of automobiles goes up 1%, quantity demanded for automobiles increases by less than 1%.
   D) if income goes up 1%, quantity demanded for automobiles increases by less than 1%.
   E) if income goes up 1%, quantity demanded for automobiles increases by more than 1%.

Extra credit (+2 points)
26. According to the text book, which airport facility was rated as having the cleanest restrooms? (Hint, this is the same airport that installed a housefly baked imagine onto the center of the ceramic urinals…I am not making this story up, it appeared in the text book on page 343-44).

A) New York La Guardia Airport
B) London Heathrow Airport
C) Paris Charles De Gaulle Airport
D) Amsterdam Schiphol Airport
E) Los Angeles LAX Airport

Test #2 – Key
   1. C
   2. C
   3. A
   4. A
   5. E
   6. A
   7. D
   8. E

9. B
10. C
11. D
12. C
13. E
14. C
15. A
16. C
17. A
18. E
19. B
20. D
21. A
22. E
23. D
24. E
25. E
26. D