ECON 002 - Principles of Microeconomics Signature: _____
Drake University, Fall 2019
William M. Boal Printed name: _____

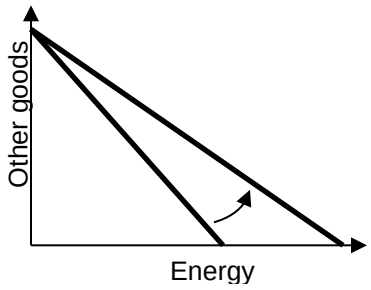
EXAMINATION 3 VERSION B
"Choices Underlying Supply and Demand"
November 1, 2019

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators, calculators with alphabetical keyboards, cell phones, and wireless devices are NOT permitted. Numerical answers, if rounded, must be correct to at least 3 significant digits. Point values for each question are noted in brackets. Maximum total points are 100.

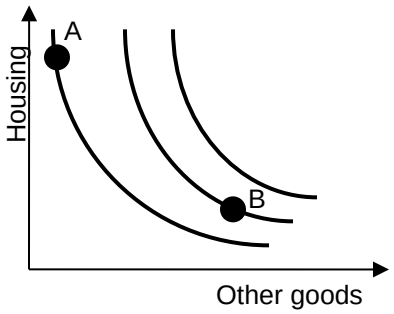
I. Multiple choice: Please circle the one best answer to each question. [1 pt each, 17 pts total]

(1) A change in the amount of bottled water each person buys is called a change at the
a. extensive margin.
b. intensive margin.
c. marginal product.
d. marginal revenue.

(2) In the graph below, the rotation of the budget line could be caused by
a. an increase in income.
b. a decrease in income.
c. an increase in the price of energy.
d. a decrease in the price of energy.
e. an increase in the price of other goods.
f. a decrease in the price of other goods.



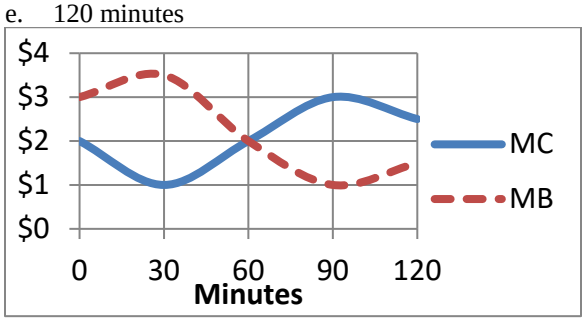
(3) The graph below shows Aaron's indifference curves and two possible combinations or bundles of goods. According to this graph, Aaron prefers
a. bundle A to bundle B.
b. bundle B to bundle A.
c. bundles A and B equally.
d. Cannot be determined from information given.



(4) The shape and position of a person's indifference curves depend on
a. the prices they face in the market.
b. their preferences for different bundles.
c. their income.
d. all of the above.

(5) The price of water is approximately equal to
a. the average value to the consumer of all gallons of water that a consumer buys.
b. the value to the consumer of the last gallon of water that a consumer buys.
c. the value to the consumer of the first gallon of water that a consumer buys.
d. none of the above.

(6) The graph below shows Amy's marginal cost (MC) and marginal benefit (MB) from exercise. If Amy is rational, she will choose to exercise
a. zero minutes.
b. 30 minutes.
c. 60 minutes.
d. 90 minutes.
e. 120 minutes



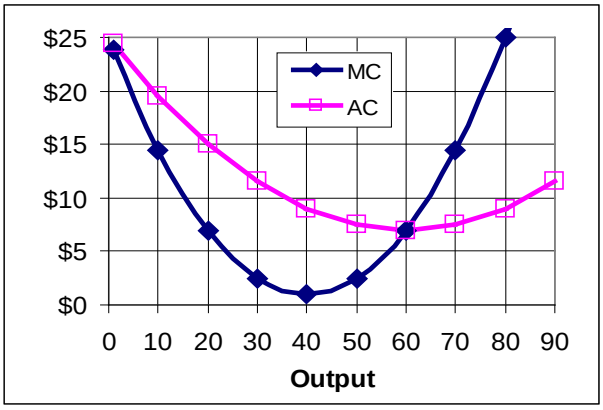
(7) Which is *not* a good reason to believe that business firms maximize profit?
a. Firms which do not maximize profit are often pushed out of the market by firms that do.
b. Firms whose managers resist maximizing profit are likely to be taken over by new owners who appoint managers more willing and able to maximize profit.
c. The owners of firms get to keep the profits so they have an incentive to keep profits high.
d. Maximizing profit is good for society and firms wish to maximize social welfare.

(8) Which of the following is an economic cost but not an accounting cost?
a. The opportunity cost of the business owner's time spent running the business.
b. Wages paid to workers.
c. Payments for electricity, raw materials, and supplies.
d. Lease payments for equipment and buildings.
e. All of the above.

(9) Zippy Lube currently changes oil on 100 cars a day, and its daily cost of operation is $4000. If it expands its business to 200 cars a day, its daily cost will rise to $10,000. Its marginal cost over this range is therefore about
a. $30 per oil change.
b. $40 per oil change.
c. $50 per oil change.
d. $60 per oil change.
e. $100 per oil change.
f. Cannot be determined from information given.

(10) If a firm takes the market price as given, its *total revenue* curve is
a. a downward-sloping line.
b. a horizontal line.
c. an upward-sloping line through the origin.
d. a downward-sloping curve with increasing slope.
e. an upward-sloping curve with decreasing slope.

(11) ABC Company is a small firm in a big market and therefore takes the market price as given. Its marginal cost (MC) and average cost (AC) curves are shown below. To maximize profit, ABC Company should set its output at
a. 40 units.
b. 50 units.
c. 60 units.
d. 70 units.
e. 80 units.
f. Cannot be determined without knowing market price.



(12) A firm is *breaking even* if
a. its total cost equals its total revenue.
b. it is going out of business.
c. it is increasing its output.
d. it is enjoying an economic profit.

(13) In the *short run*, which kind of cost does *not* depend on the level of output?
a. Marginal cost
b. Total cost.
c. Fixed cost.
d. Variable cost.

(14) In the *short run*, a firm should continue operating if its revenue is sufficient to pay at least its
a. accounting cost.
b. fixed cost.
c. variable cost.
d. total cost.

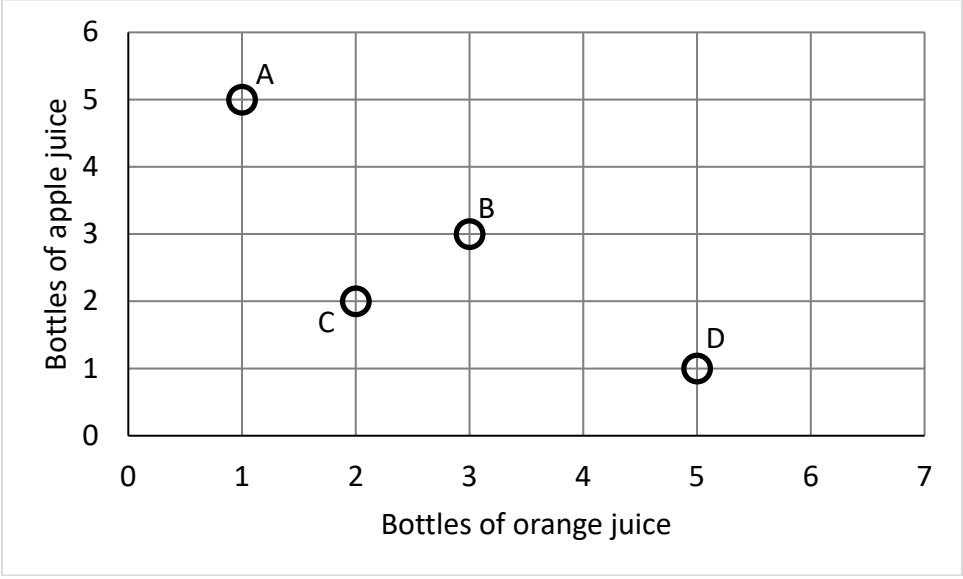
(15) Acme Corporation expects that customer A will pay it $100 next year and that customer B will pay it $100 five years from today. Acme's interest rate is positive. Which payment has smaller present discounted value?
a. Customer A's payment.
b. Customer B's payment.
c. The present discounted values of two payments are equal.
d. cannot be determined from the information given.

(16) Firms are currently entering the electric car industry because in so doing they hope to
a. lower the market price.
b. lower the profits of existing electric car producers.
c. enjoy economic profits.
d. increase the total quantity produced in the market.
e. All of the above.

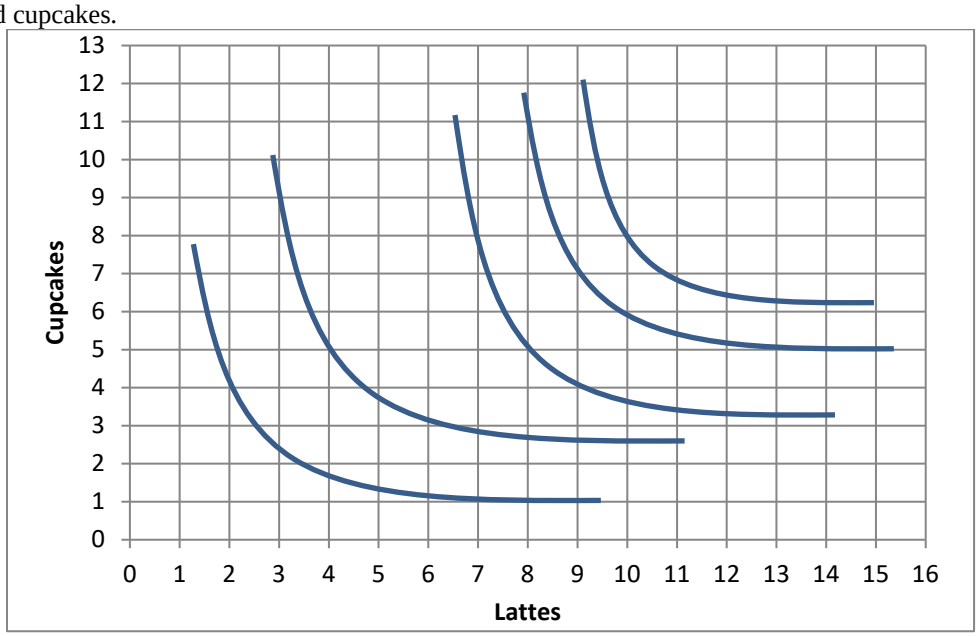
(17) *Price equals marginal cost* in a competitive industry in both short-run and long-run equilibrium because
a. business owners have a sense of fairness.
b. individual firms adjust their output levels to maximize profit.
c. consumers refuse to pay more than what is reasonable.
d. positive profits encourage entry of new firms while negative profits encourage existing firms to leave the industry.
e. the threat of government regulation causes firms to hold prices down.

II. Problems: Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Special indifference curves: 4 pts] Brianna likes apple juice and orange juice equally. For her, a bottle of apple juice is just as good as a bottle of orange juice, regardless of how many she already has of each. Draw Brianna's indifference curves through combinations A, B, C, and D in the graph below.



(2) [Consumer choice and demand: 14 pts] The indifference curves in the graph below represent Jason's preferences for lattes and cupcakes.



a. Would Jason rather have 5 cupcakes and 15 lattes, or 8 cupcakes and 10 lattes?

cupcakes and	lattes

b. Would Jason rather have 1 cupcake and 9 lattes, or 5 cupcakes and 4 lattes?

cupcakes and	lattes

Suppose Jason has a budget of $30 to spend on cupcakes and lattes. The price of lattes is $2.

c. **Using a straightedge**, carefully draw Jason's budget line when the price of cupcakes is $6. Label this budget line "A".

d. How many cupcakes will Jason buy if the price of cupcakes is $6?

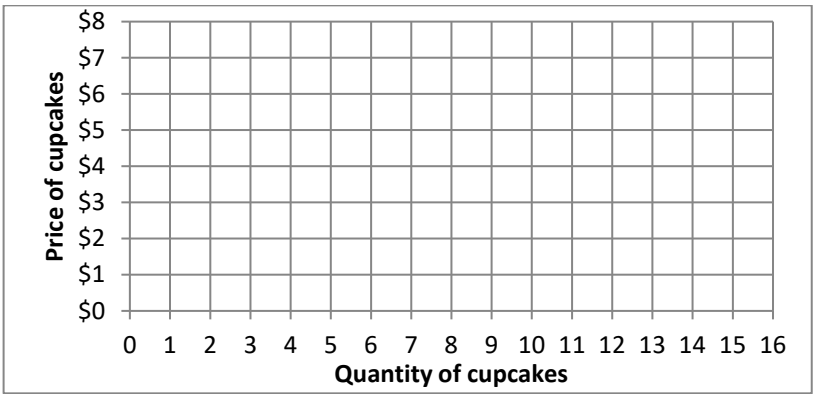
cupcakes

e. **Using a straightedge**, carefully draw Jason's budget line when the price of cupcakes is $3. Label this budget line "B".

f. How many cupcakes will Jason buy if the price of cupcakes is $3?

cupcakes

g. Plot two points on Jason's demand curve for cupcakes, and sketch Jason's demand curve at right.



(3) [Rational choice: 10 pts] The city government for a rapidly growing city needs to build new fire stations. The following are cost and benefit estimates.

Fire stations	Total cost	Total benefit	Marginal cost per station	Marginal benefit per station
0	$ 0	$0		
			$ million	$ million
2	$10 million	$14 million		
			$ million	$ million
4	$18 million	$24 million		
			$ million	$ million
6	$24 million	$28 million		
			$ million	$ million
8	$28 million	$29 million		

a. [4 pts] Compute the marginal cost schedule. Insert your answers above.
b. [4 pts] Compute the marginal benefit schedule. Insert your answers above.
c. [2 pts] How many fire stations should the city build? (Answer must be 0, 2, 4, 6, or 8). ____ stations

(4) [Business revenue and cost—definitions: 3 pts] Insert the appropriate term from the list below in each box. The same term may be entered in more than one box.

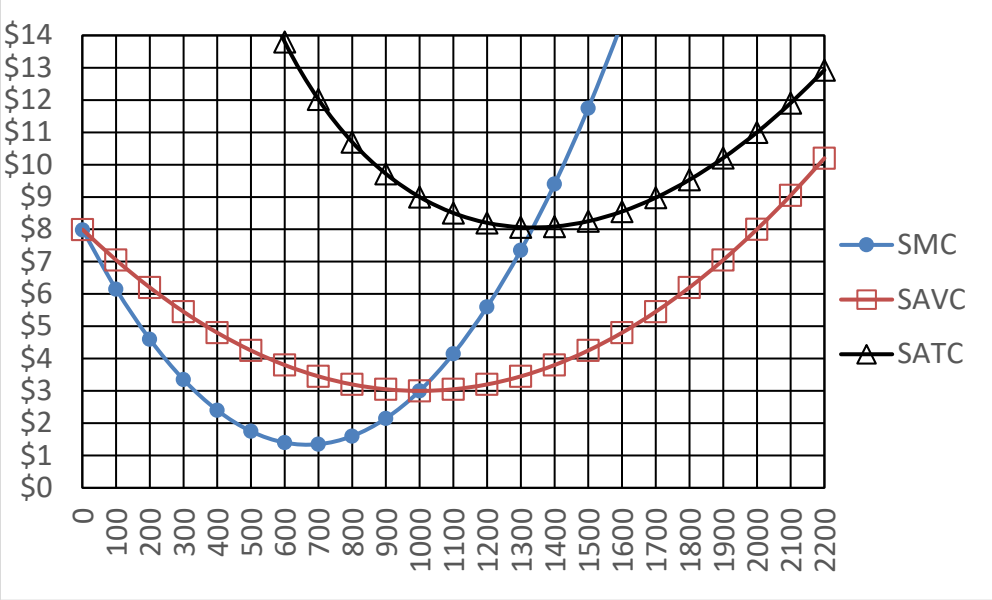
Total revenue *Average revenue* *Marginal revenue*
Total cost *Average cost* *Marginal cost*

a. Slope of total cost curve. ____
b. Price times quantity of output. ____
c. Increase in total cost from producing one more unit of output. ____

(5) [Discounting: 4 pts] Answer the following questions, assuming the interest rate is **4 %.**

a. Suppose a particular project will *cost* a firm $5000 today, but will bring $2000 in revenue one year from today, and $4000 in revenue two years from today. Compute the *net present value* of this project to the nearest whole dollar. $ ____
b. Suppose a firm is expected to enjoy $1 million in profit every year, perpetually, beginning a year from today. Compute the value of the firm. $ ____ million

(6) [Short-run cost curves and supply: 20 pts] ABC Manufacturing Company makes a small part used in automobiles. ABC is a small company in a big market, and therefore takes its output price as given. In the short run, the company faces daily cost curves as shown in the following diagram. Here, SMC denotes short-run marginal cost, SAVC denotes short-run average variable cost, and SATC denotes short-run average total cost.



Suppose the company were currently producing 2000 parts for some unknown reason.

a. Compute the company's short-run total cost, to the nearest thousand dollars. $ thousand

b. Compute the company's short-run variable cost, to the nearest thousand dollars. $ thousand

c. Compute the company's short-run fixed cost, to the nearest thousand dollars. $ thousand

d. Suppose the company were currently producing 100 parts for some unknown reason. If the company produced one more part, by how much would its total cost increase? That is, what would be the *change in total cost* as the company increased output from 100 to 101 parts? (Give an answer to the nearest dollar.) $

e. What is the company's break-even price—that is, the lowest price at which the company can avoid losses? (Give an answer to the nearest dollar.) $

f. What is the company's shut-down price—that is, the lowest price at which it will remain in operation in the short run? (Give an answer to the nearest dollar.) $

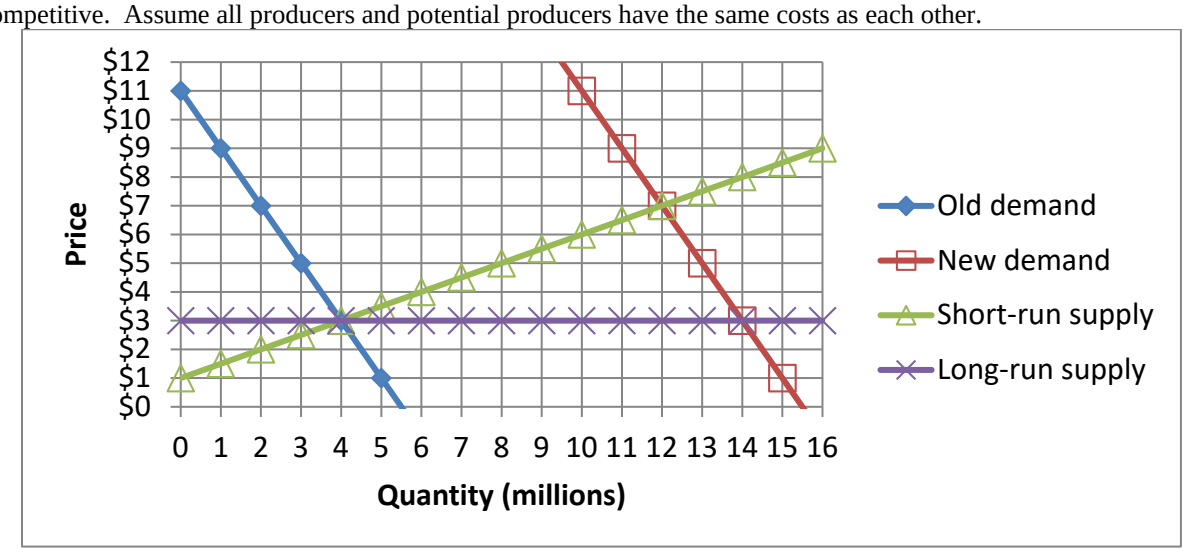
g. Suppose the price of parts is $4. How many parts should the company produce? (Give an answer to the nearest hundred.) parts

h. Will the company make a *profit* or a *loss* at a price of $4?

i. Suppose the price of parts is $2. How many parts should the company produce? (Give an answer to the nearest hundred.) parts

j. Will the company make a *profit* or a *loss* at a price of $2?

(7) [Long-run competitive equilibrium: 24 pts] The graph below shows the market for neck gaters, which is competitive. Assume all producers and potential producers have the same costs as each other.



Initially the market is in long-run equilibrium, with the demand curve given by "old demand" and the short-run supply curve given by "short-run supply" as shown in the graph.

a. What is the initial equilibrium price?	$
b. What is the initial equilibrium quantity?	million
c. What is the average cost of production for firms in this industry?	$

Suppose that neck gaters become suddenly popular, and the demand shifts to "new demand." Consider the **short-run** market response to this demand shift.

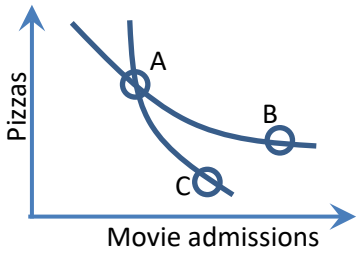
d. What is the new equilibrium price in the short run?	$
e. What is the new equilibrium quantity in the short run?	million
f. Are firms in this industry making economic *profits*, *losses*, or just *breaking even*?	

Now, consider the **long-run** market response to this demand shift.

g. Given your answer to (f) above, will existing firms try to *exit* the industry or will new firms try to *enter* the industry?	
h. What is the new equilibrium price in the long run?	$
i. What is the new equilibrium quantity in the long run?	million
j. What is the new long-run average cost of production for firms in this industry?	$
k. Has the number of firms in this industry *increased*, *decreased*, or remained *constant*?	
l. Should this industry be called a *constant-cost* industry, an *increasing-cost* industry, or a *decreasing-cost* industry?	

III. Critical thinking: Write a one-paragraph essay answering *one* question below (your choice). [4 pts]

(1) The diagram at right shows two indifference curves for a particular consumer. What is wrong with this diagram? What assumption about consumer preferences does it violate? Explain your reasoning.



(2) Firm A is one of dozens of companies that make spark plugs. Firm B is the only seller of a certain kind of computer software. Which firm is more likely to take the price of its product as given? Why?

Please circle the question you are answering. Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]