ECON 010 - Principles of Macroeconomics
Drake University, Spring 2022
William M. Boal

Signature: _____

Printed name: _____

EXAMINATION 1 VERSION B
"Competitive Supply and Demand"
February 15, 2022

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.

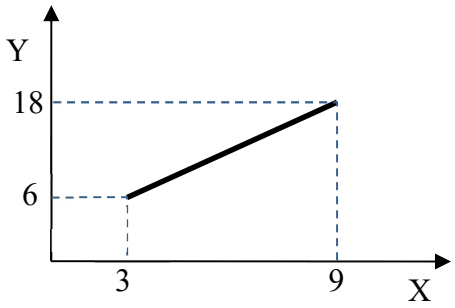
I. Multiple choice: Please circle the one best answer to each question. [1 pt each, 20 pts total]

(1) The assumption in economics that people are *rational* implies that people
a. maximize their income.
b. use math to make decisions.
c. ignore "soft" concerns like friendships and charity.
d. do the best they can with what they have.
e. make sacrifices today for a better future.

(2) Aaron buys a ticket to a concert for $100. When he arrives at the venue, he discovers that scalpers are willing to pay $150 for his ticket. His *opportunity cost* of attending the concern is
a. $0.
b. $50.
c. $100.
d. $150.

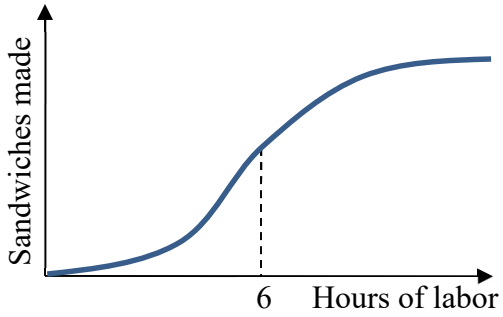
(3) "GDP has increased this year" is an example of
a. a positive statement.
b. a normative statement.
c. both of the above.
d. none of the above.

(4) According to the graph below, the slope of the line segment equals
a. 1.
b. 2.
c. 3.
d. 4.
e. 5.
f. 6.

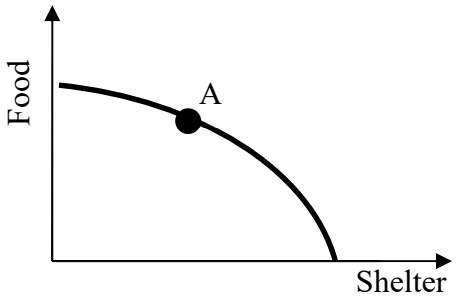


(5) A production function shows the relationship between the
a. quantity of input and the quantity of output.
b. current level of output and the past level of output.
c. level of output and the level of demand for output.
d. price of output and the quantity produced.

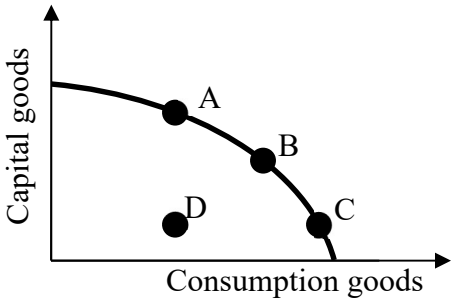
(6) Is the production function below characterized by diminishing returns to labor input?
a. Yes, for all levels of labor input.
b. No, not for any levels of labor input.
c. Yes, but only after 6 hours of labor input.
d. Yes, but only before 6 hours of labor input.



(7) The graph below shows the production possibility curve for some country. The combination of outputs represented by point A
a. is feasible and efficient.
b. is feasible but not efficient.
c. is infeasible.
d. cannot be determined from information given.



(8) The graph below shows the production possibility curve for Country Y. Which combination of outputs, chosen today, will cause the country's productive capacity to grow fastest in the future?
a. Combination A.
b. Combination B.
c. Combination C.
d. Combination D.



(9) Suppose Farmer A's opportunity cost of producing a bushel of soybeans is 5 bushels of corn, but Farmer B's opportunity cost of producing a bushel of soybeans is 3 bushels of corn. Which farmer has a comparative advantage in producing soybeans?
a. Farmer A.
b. Farmer B.
c. both farmers.
d. neither farmer.

(10) Barter is an unpopular method of trading because it
a. is often illegal.
b. causes both parties to lose.
c. is subject to higher taxes.
d. requires that each party be able to offer a good that the other wants.
e. all of the above.

(11) The *law of one price* means that
a. all buyers will pay roughly the same price.
b. the prices of different goods—like cell phones and bicycles—will gradually converge to each other.
c. each buyer will pay her or his own price.
d. each buyer will pay only once for a good.

(12) The *law of demand* means that
a. demand curves are necessarily straight lines.
b. buyers will pay whatever price is necessary to purchase the good.
c. the number of buyers must equal the number of sellers.
d. the quantity that buyers want to buy is negatively related to the price.

(13) The gradual fall in the price of mobile (cellular) phone service has shifted the demand for landline phones to the left because mobile phones and landline phones are, in economic terms,
a. inferior goods.
b. complementary goods.
c. substitute goods.
d. normal goods.

(14) A rise in people's incomes will shift the demand for Ramen noodles to the left, if Ramen noodles are
a. a complementary good.
b. a substitute good.
c. a normal good.
d. an inferior good.

(15) The *law of supply* means
a. legal regulation of sellers.
b. there is always someone willing to sell a product.
c. the quantity that sellers want to produce and sell is positively related to the price.
d. sellers can charge whatever price they want.

(16) Most plastic is made from petroleum. If the price of petroleum falls, then the
a. demand for plastic will shift left.
b. demand for plastic will shift right.
c. supply of plastic will shift left.
d. supply of plastic will shift right.

(17) If a new, more efficient method for growing rice is developed, then
a. demand for rice will shift left.
b. demand for rice will shift right.
c. supply of rice will shift left.
d. supply of rice will shift right.

(18) Equilibrium in a competitive market occurs when
a. the price is affordable to most people.
b. the revenue received by sellers is maximized.
c. the price is zero.
d. the quantity demanded equals the quantity supplied.

(19) Excess demand in the market for wheat would cause the price of wheat to
a. increase.
b. decrease.
c. oscillate up and down.
d. remain constant.

(20) In February, the price of roses rises and the quantity sold increases. This could be caused by a
a. rightward shift in the demand for roses.
b. rightward shift in the supply of roses.
c. leftward shift in the demand for roses.
d. leftward shift in the supply of roses.

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) [Using slopes: 2 pts] Suppose that the slope of the curve relating X and Y, with X on the horizontal axis and Y on the vertical axis, is -3. That is $\Delta Y/\Delta X = -3$. Now suppose that X increases by 4 units.

a. Does Y increase or decrease?

b. By how much?

units

(2) [Percent changes: 2 pts] The total value of cars produced equals the number of cars produced times the average price. Suppose the number of cars increases by 5 percent and average price increases by 2 percent.

a. Does the total value of cars produced *increase* or *decrease*?

b. By approximately how much?

%

(3) [Percent change: 2 pts] Suppose that total output in a country is initially $15 trillion. Then suppose output increases by 20 percent. Compute the new level of output.
Compute the new level of output.

$ _____ trillion

(4) [Marginal cost: 6 pts] The picture at right shows prices of ice cream cones at Baskin-Robbins. (Ignore the "KIDS" cone.)

a. Compute the marginal cost of the first scoop of ice cream. $

b. Compute the marginal cost of the second scoop of ice cream. $

c. Compute the marginal cost of the third scoop of ice cream. $

(5) [Economic capital: 6 pts] Which of the following are examples of *economic capital* ? Answer YES or NO.

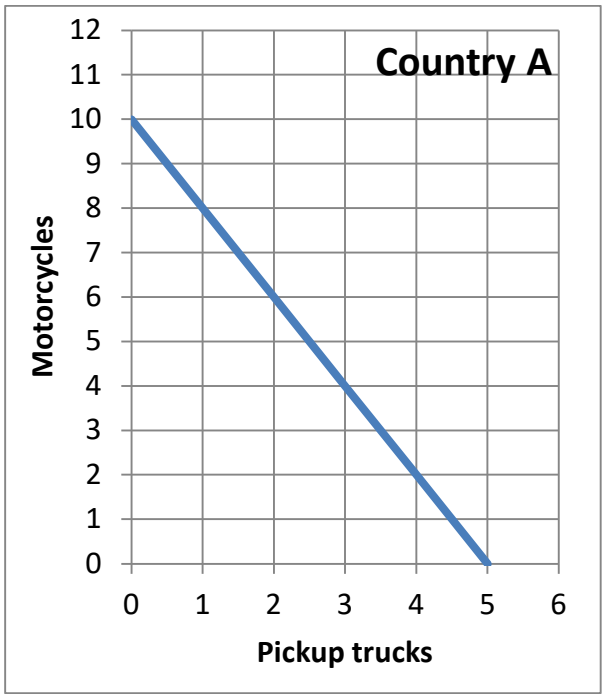
a. Cell phone towers. _____
b. Tractor-trailer trucks. _____
c. Shares of stock in corporations. _____
d. Federal government bonds. _____
e. Railroad track. _____
f. Container ships. _____

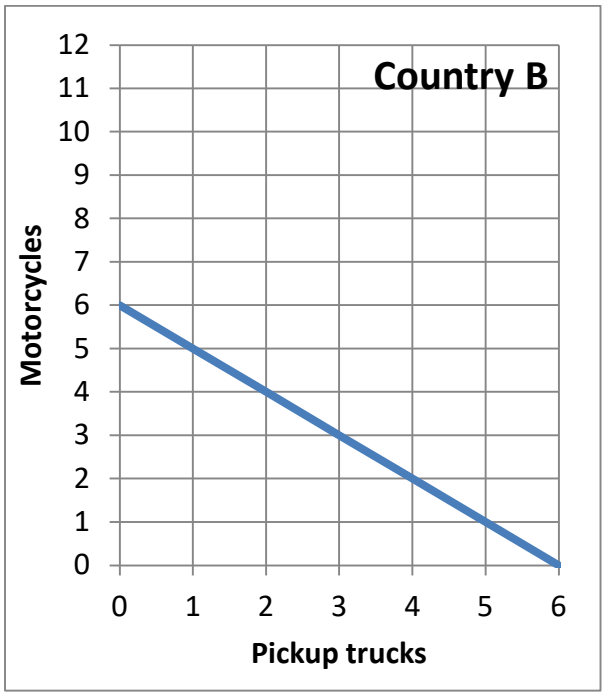
(6) [Production functions: 14 pts] A work crew plants trees. Complete the table by computing the work crew's average product and marginal product and placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question below.

Number of workers	*Number of trees planted*	*Average Product*	*Marginal Product*
0 workers	0 trees		
			_____ trees per worker
2 workers	4 trees	_____ trees per worker	
			_____ trees per worker
4 workers	12 trees	_____ trees per worker	
			_____ trees per worker
6 workers	24 trees	_____ trees per worker	

Is the work crew's production function characterized by *diminishing returns* to labor input? Answer YES or NO. _____

(7) [Comparative advantage, gains from trade: 17 pts] Country A and Country B can each produce motorcycles and pickup trucks. They each face a tradeoff between these two products because of limited workforces. Their production possibility curves are shown below.





a. What is Country A's opportunity cost of producing a pickup truck? motorcycles

b. What is Country B's opportunity cost of producing a pickup truck? motorcycles

c. What is Country A's opportunity cost of producing a motorcycle? pickup trucks

d. What is Country B's opportunity cost of producing a motorcycle? pickup trucks

e. Which country has a comparative advantage in producing pickup trucks?

f. Which country has a comparative advantage in producing motorcycles?

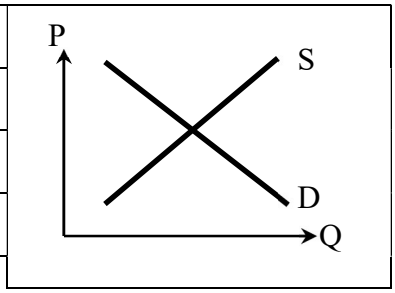
g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of products *outside* their individual production possibility curves if _____ exports *three* motorcycles to _____, which exports _____ pickup trucks in return.

h. **Plot** the trade that you propose in part (g) on the graphs above. For each country, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(8) [Shifts in demand and supply: 15 pts] Analyze each of the following markets according to the accompanying imaginary scenario.

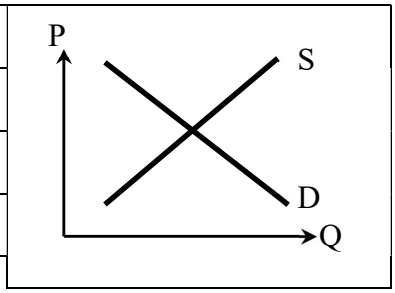
a. Consider the market for ***chicken***: The price of feed for chickens rises.

Does demand shift *left*, shift *right*, or remain *unchanged* ?
Does supply shift *left*, shift *right*, or remain *unchanged* ?
Does the equilibrium price *increase, decrease,* or *cannot be determined* ?
Does the equilibrium quantity *increase, decrease,* or *cannot be determined* ?
Sketch a graph of this scenario at right, showing which curve(s) shift(s).



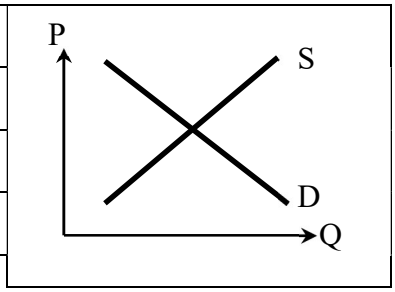
b. Consider the market for ***sodapop***: Consumers become more interested in avoiding junk food.

Does demand shift *left*, shift *right*, or remain *unchanged* ?
Does supply shift *left*, shift *right*, or remain *unchanged* ?
Does the equilibrium price *increase, decrease,* or *cannot be determined* ?
Does the equilibrium quantity *increase, decrease,* or *cannot be determined* ?
Sketch a graph of this scenario at right, showing which curve(s) shift(s).

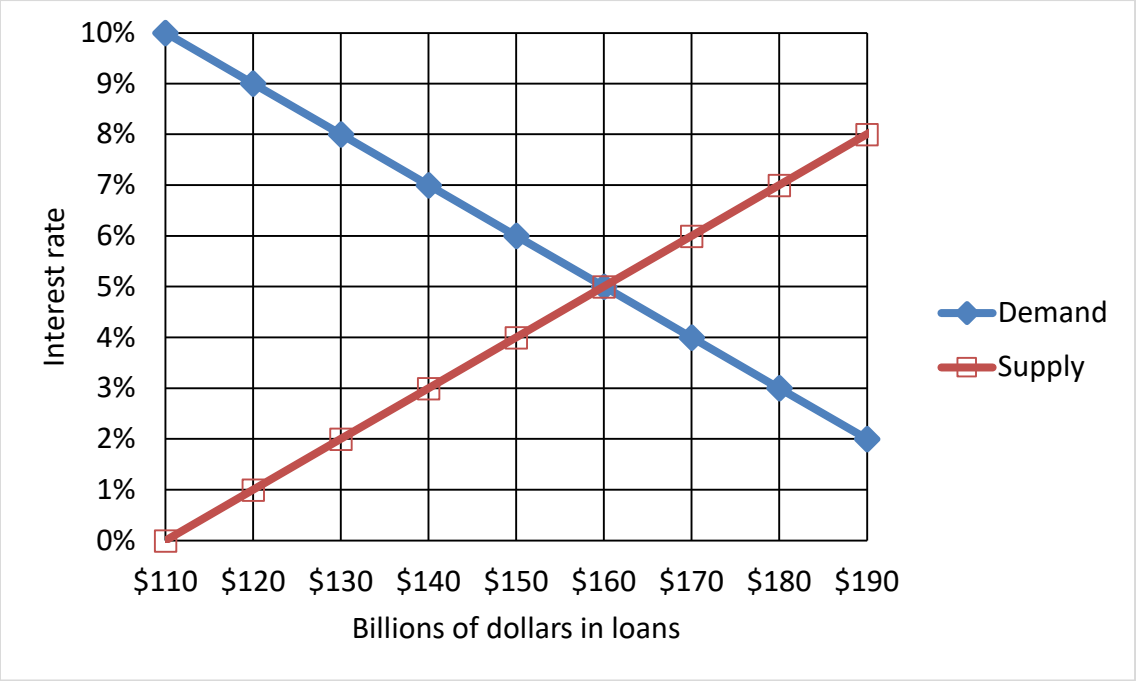


c. Consider the market for ***gasoline***: Consumers' incomes fall due to a recession. Simultaneously, the price of petroleum rises. (Gasoline is made from petroleum.)

Does demand shift *left*, shift *right*, or remain *unchanged* ?
Does supply shift *left*, shift *right*, or remain *unchanged* ?
Does the equilibrium price *increase, decrease,* or *cannot be determined* ?
Does the equilibrium quantity *increase, decrease,* or *cannot be determined* ?
Sketch a graph of this scenario at right, showing which curve(s) shift(s).



(9) [Market equilibrium, price controls: 12 pts] The following graph shows the credit market—that is, the market for loans. Note that the interest rate is the price of a loan.



First, find the unregulated market equilibrium.

a. Find the equilibrium price. ____ %

b. Find the equilibrium quantity. $ ____ billion

Second, suppose the government imposes a maximum interest rate (a type of price ceiling) of 4%. No loan may be given for any higher interest rate.

c. Compute the quantity of loans demanded at this interest rate. $ ____ billion

d. Compute the quantity of loans supplied at interest rate. $ ____ billion

e. Will there be *excess supply* or *excess demand* with this price ceiling? ____

f. How much? $ ____ billion

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

(1) Consider the campus dining hall as a production process. What is the output of this production process? What are the labor inputs? What are the economic (or physical) capital inputs? What are the materials inputs (or intermediate inputs)? (Ignore the graph below.)

(2) Why are restaurant meals expensive on Valentine's Day and cheap the day after? Justify your answer using a supply-and-demand graph, labeling all axes and curves.

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]