# EXAMINATION 1  VERSION C
## "Competitive Supply and Demand"
## February 18, 2013

INSTRUCTIONS:  This exam is closed-book, closed-notes.  Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards 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 write your *name* and the *version* (A, B, or C) of this exam on the AccuScan sheet provided.  Mark the one best answer to each question on the AccuScan sheet using a #2 pencil (not pen).  [2 pts each, 30 pts total]

(1) Rational choice implies pursuing an activity until the marginal benefit of the last unit
a.   begins to exceed it cost.
b.   is much greater than its marginal cost.
c.   begins to fall below its cost.
d.   is much less than its marginal cost.

(2) "Unemployment has remained high for four years" is an example of
a.   a positive statement.
b.   a normative statement.
c.   both of the above.
d.   none of the above.

(3) Suppose the local post office finds that when it increases the number of mail sorters from 3 to 4, the number of pieces of mail that can be sorted in an hour increases from 300 to 480.  The marginal product of the fourth mail sorter is thus
a.   100 pieces of mail.
b.   120 pieces of mail.
c.   180 pieces of mail.
d.   300 pieces of mail.
e.   480 pieces of mail.

(4) 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 10 hours of labor input.
d.   Yes, but only before 10 hours of labor input.
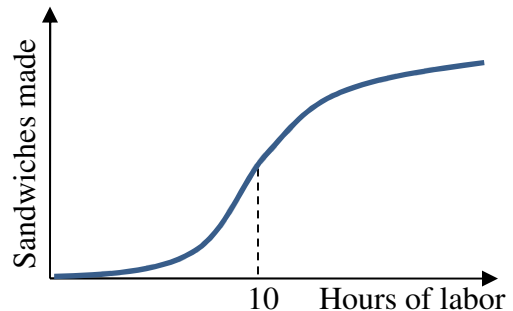


(5) The graph below shows the production possibility curve for some country.  The combination of outputs represented by point A
a.   is feasible and efficient.
b.   is feasible but not efficient.
c.   is infeasible.
d.   cannot be determined from information given.
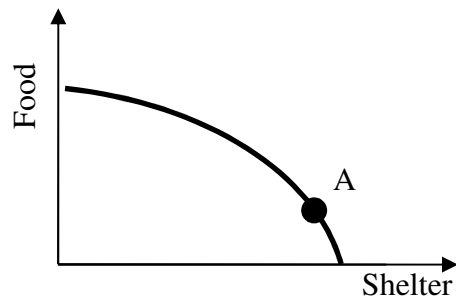
(6) Consider Factory X's production possibility curve shown below. As more automobiles are produced, the opportunity cost of the last automobile
a. decreases.
b. increases.
c. first increases, then decreases.
d. remains constant.
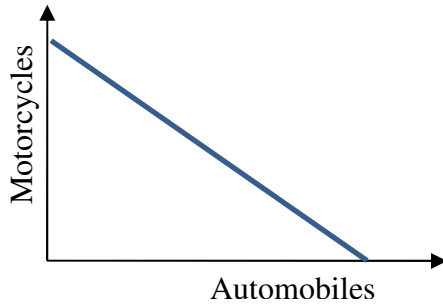


(7) Farm A can produce 200 units of corn per acre or 100 units of soybeans per acre. Farm B can produce 50 units of corn per acre or 50 units of soybeans per acre. Which farm has a comparative advantage in soybeans?
a. Farm A.
b. Farm B.
c. Both farms.
d. Neither farm.

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

(9) The *Law of One Price* means
a. the buyer and the seller in each transaction must agree on a price.
b. efficient markets eliminate price dispersion.
c. the total quantity buyers want to buy is negatively related to the price.
d. a good cannot be resold.
e. all sellers are required by law to quote the same price.

(10) The "substitution effect" causes consumers to buy more when the price of a good falls because consumers
a. shift their purchases from alternative goods that have not fallen in price.
b. can afford to buy more of everything due to the drop in price of this good.
c. want to substitute goods for money.
d. want to reward sellers for lowering the price by increasing sellers' incomes.

(11) If the price of donuts falls, and nothing else affecting the demand for donuts changes, then this will cause
a. the demand curve for donuts to shift left.
b. the demand curve for donuts to shift right.
c. a movement along the demand curve for donuts.
d. the demand curve for donuts to rotate clockwise until it becomes upward-sloping.

(12) A rise in consumers' income will shift the demand for hotel rooms to the right, because hotel rooms are
a. inferior goods.
b. complementary goods.
c. substitute goods.
d. normal goods.

(13) Polyester fiber is made from petroleum. If the price of petroleum rises, then the
a. demand for polyester fiber will shift left.
b. demand for polyester fiber will shift right.
c. supply of polyester fiber will shift left.
d. supply of polyester fiber will shift right.

(14) In autumn, the price of watermelon rises and the quantity sold decreases. This could be caused by
a. a rightward shift in the demand.
b. a rightward shift in the supply.
c. a leftward shift in the demand.
d. a leftward shift in the supply.

(15) The graph below shows the demand for movie tickets. If the market price of movie tickets falls from $8 to $4, then total consumer surplus
a. increases by $1000.
b. increases by $2000.
c. increases by $4000.
d. increases by $6000.
e. increases by $8000.
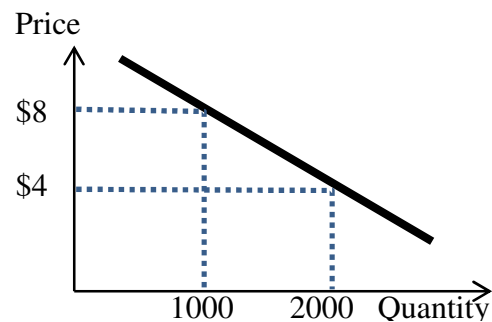
**II. Problems:** Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Comparative advantage, gains from trade: 17 pts] Jennifer and Ken each have gardens where they grow tomatoes and zucchini. They each face a tradeoff between these two crops because their space is limited. Their production possibility curves are shown below.
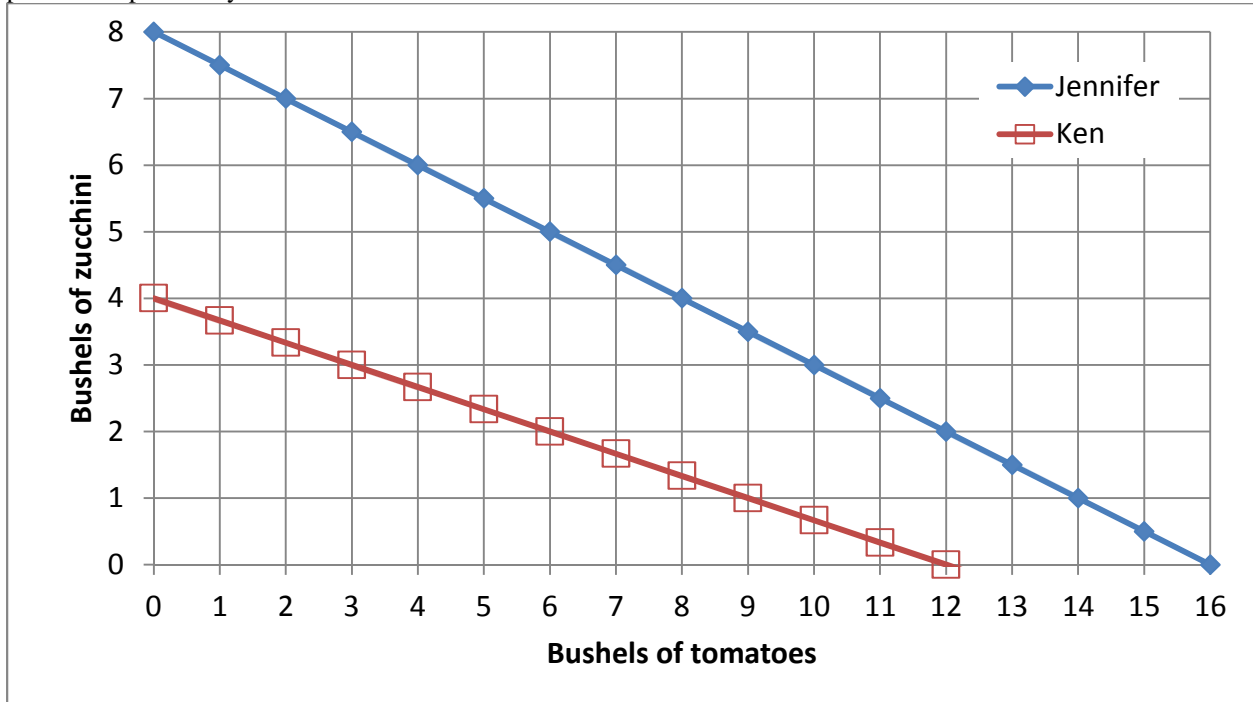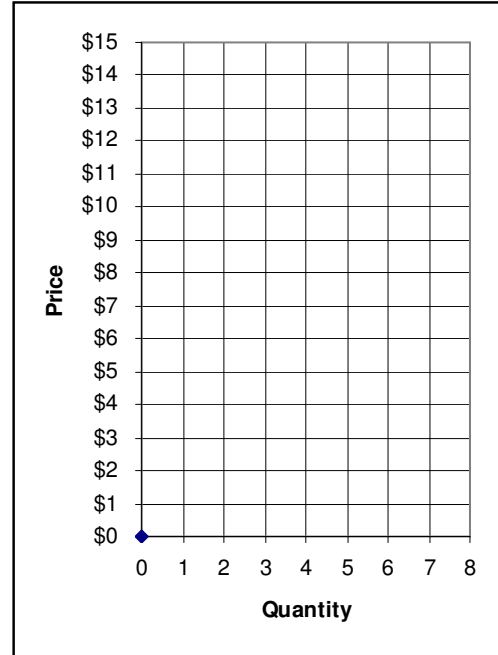


a.  [2 pts] What is Jennifer's opportunity cost of a bushel of zucchini?

b.  [2 pts] What is Ken's opportunity cost of a bushel of zucchini?

c.  [2 pts] What is Jennifer's opportunity cost of a bushel of tomatoes?

d.  [2 pts] What is Ken's opportunity cost of a bushel of tomatoes?

e.  [2 pts] Who has a comparative advantage in producing zucchini?

f.  [2 pts] Who has a comparative advantage in producing tomatoes?

| |
|---|
| bushels of tomatoes |
| bushels of tomatoes |
| bushels of zucchini |
| bushels of zucchini |
| |
| |

g. [3 pts] Fill in the blanks: *Both* people can consume combinations of zucchini and tomatoes *outside* their

individual production possibility curves if _____ gives **two** bushels of zucchini to

_____, who gives _____ bushels of tomatoes in return.

h. [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each producer, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(2) [Market equilibrium: 12 pts]  Suppose seven buyers and seven sellers engage in a market similar to the exercise we did in class. Each buyer may buy at most one unit and each seller may sell at most one unit, but no one is forced to trade.  Assume that buyers and sellers are each trying to maximize their personal surplus (or "gains from trade").  Surplus for each buyer equals the buyer's value of the good minus the price paid.  Surplus for each seller equals the price received minus the seller's cost of the good.  Surplus of persons who do not trade are zero.  Buyers' values and sellers' costs are given in the following table.

| Buyer | Value | Seller | Cost |
|-------|-------|--------|------|
| Bob | $12 | Sue | $ 1 |
| Barb | $10 | Steve | $ 2 |
| Ben | $ 8 | Sam | $ 3 |
| Bailey | $ 6 | Sven | $ 4 |
| Brian | $ 4 | Sarina | $ 6 |
| Brittany | $ 2 | Sam | $ 8 |
| Brandon | $ 1 | Sophia | $10 |

*Price* (vertical axis: $0 to $15)   *Quantity* (horizontal axis: 0 to 8)

Suppose with some experience, the market settles on a single price. All trades are made at that price.  (You can use the graph at right for scratch work.)

a. If the price were $7, would there by *excess demand, excess supply*, or *neither*?

b. What is the equilibrium price?  Give an answer to the nearest whole dollar.  $ _____

c. How many units of the good will be sold in this market?  _____ units

d. Compute the total revenue received by sellers (which equals the total spending by buyers).  $ _____

e. Compute the combined total surplus (or gains from trade) of all buyers and sellers.  (Check your answer carefully!  No partial credit for being "close"!)  $ _____

f. Who enjoys higher surplus in this particular market, the *buyers* or the *sellers?*  Or is buyers' total surplus *equal* to sellers' total surplus?

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

a. Consider the market for *high-efficiency light bulbs*.  Suppose new technology allows these bulbs to be manufactured at much lower cost.

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* ?
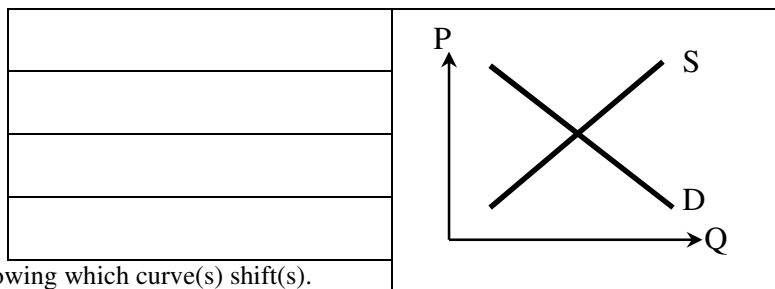Sketch a graph of this scenario at right, showing which curve(s) shift(s).
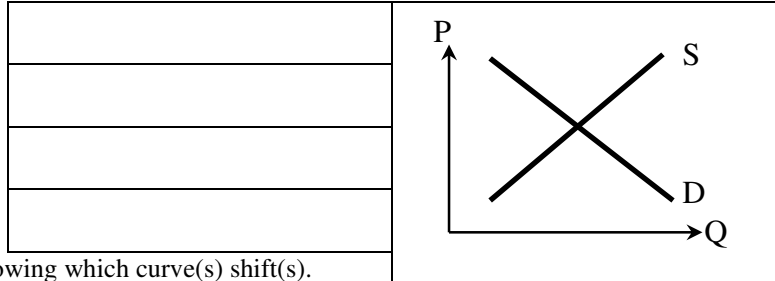
b. Consider the market for *natural gas*.  Suppose we have an unusually cold winter.  (Most homes in the Midwest are heated with natural gas.)

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).
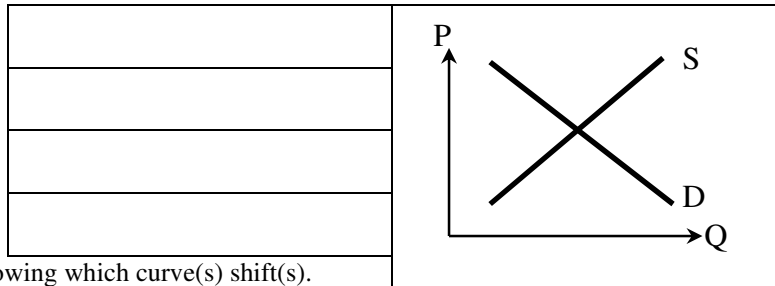
c. Consider the market for *cars*:  A recession causes consumers' incomes to fall.  Simultaneously, car companies discover new ways to make cars more cheaply.
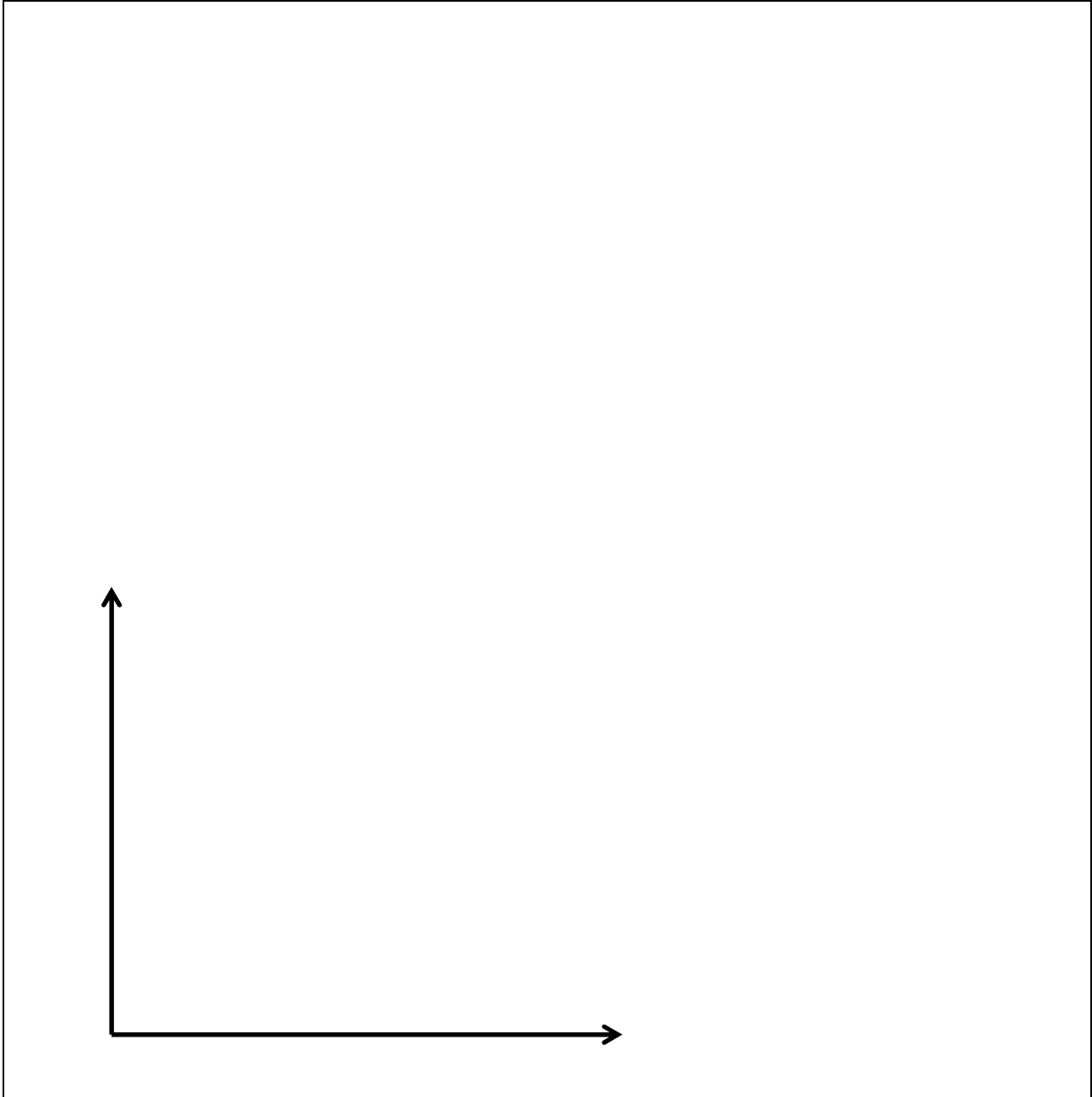
Does demand shift *left*, shift *right*, or remain *unchanged* ?
Does supply shift *left*, shift *right*, or remain *unchanged* ?
Does the equilibrium price *increase, decrease,* or *cannot be determined* ?
Does the equilibrium quantity *increase, decrease,* or *cannot be determined* ?
Sketch a graph of this scenario at right, showing which curve(s) shift(s).

(4) [Consumer surplus, producer surplus: 22 pts]  The market for papayas  is depicted in the graph below.



Suppose the price in this market were $6 for some reason.
  a. Would there be *excess demand, excess supply*, or *neither*?

  b. How much?

  c. Would the price tend to *rise, fall*, or remain *constant*?

Now suppose the market is in equilibrium.
  d. Give the equilibrium price.

  e. Give the equilibrium quantity.

  f. How much are consumers willing to pay for the 2 millionth papaya?

  g. How much consumer surplus do they enjoy for the  2 millionth papaya?

  h. What is the marginal cost to producers of the 3 millionth papaya?

  i. How much producer surplus do they enjoy for the 3 millionth papaya?

  j. Compute total consumer surplus.

  k. Compute total producer surplus.

|  |
| --- |
|  |
| million |
|  |

| $ |
| --- |
| million |
| $ |
| $ |
| $ |
| $ |
| $     million |
| $     million |

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

(1)  Why are restaurant meals expensive on Valentine's Day and cheap the day after?  Justify your answer with a supply-and-demand diagram.

(2)  "The United States produces more cars and more corn than Mexico.  Therefore, the United States cannot benefit from trade with Mexico in these goods."  Assume the first sentence is correct.  Do you agree or disagree with the second sentence?  Justify your answer.

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]