Midterm 2
60 minutes
Econ 1101: Principles of Microeconomics
November 12, 2018

Exam Form A

Name _____ Student ID number _____

Signature_____

Teaching Assistant_____ Section _____

The answer form (the bubble sheet) **and** this question form will both be collected at the end of the exam. Fill in the information above and then on the answer form, please write the following information

- **NAME**
- **X.500 username** (= email without "@umn.edu")
- **Identification Number**,
- **Section (recitation number)**
- **Exam Form** (This is given above and can be A, B, D, C, or E.
  Fill this in under "Form/Version.")

Fill in the corresponding bubbles. Sign your name on back of answer form.

You will be awarded 1.5 bonus points for filling the correct name, x500, ID, and form number on the answer form.

There are 34 questions. All questions are multiple choice. Each question has a single answer. Select the **best** answer for each question and fill in the corresponding bubble on the answer sheet.

Use a **Number 2** pencil to fill in your answer.
You are not permitted to use calculators or to open books or notes.

1. For question 1, please fill in (a) on your bubble sheet, as this is exam form A. (We are using this question to verify the exam form.)
   a) Form A
2. Under what assumptions will the long-run supply curve for the widget industry be perfectly elastic (i.e. perfectly flat)?

   (i) The same technology is available to all firms.

   (ii) One firm has a patent on a technology that is superior to what other firms have access to.

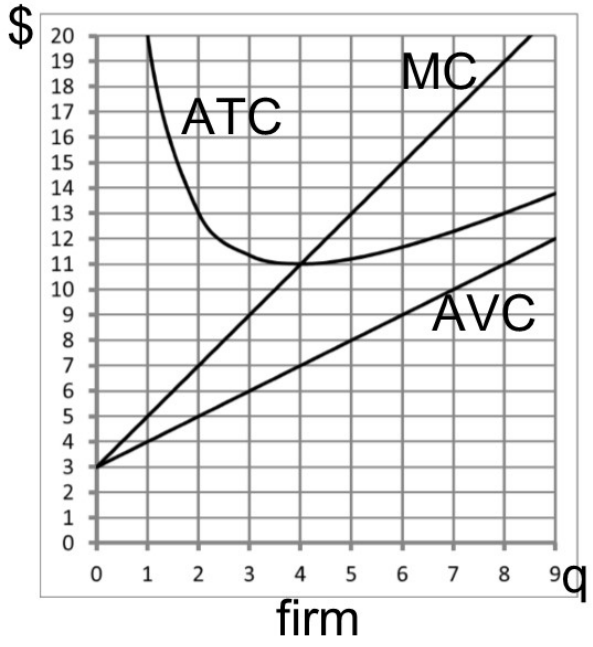
   (iii) There is a legal limit on the number of firms that can be in the industry.

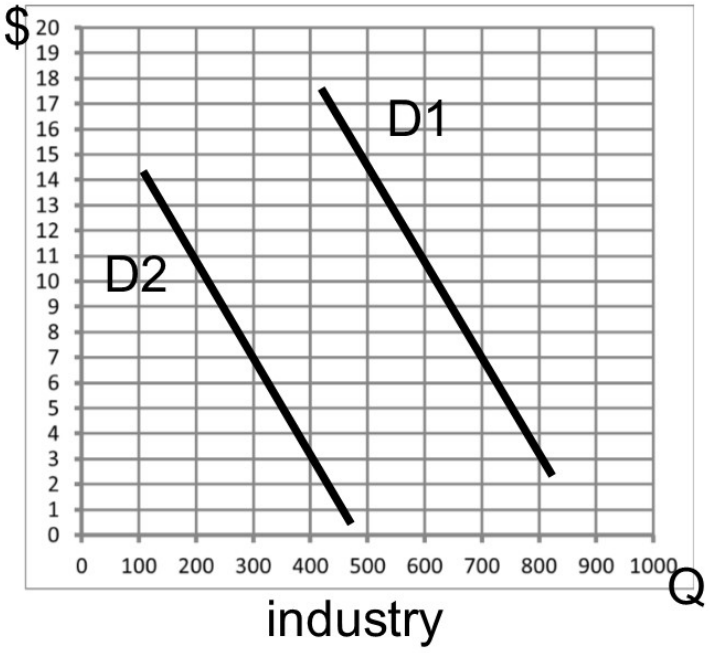
   (iv) There are no barriers to entry in the industry.

   (v) Input prices do not change as the industry expands

   a) (i), (iii), and (v)
   b) (ii) and (iii)
   c) (ii), (iii), and (v)
   d) (v)
   e) (i), (iv), and (v)

Suppose the required assumptions from the previous question hold for the widget industry. Each widget firm has the cost structure illustrated in the left graph below. The right graph illustrates two different possible demand curves, D1 and D2.





3. Fixed cost equals
   a) 9
   b) 4
   c) 8
   d) 12
   e) 16

For the next four questions, assume demand is given by **D1,** and the industry is in **long-run** equilibrium. (Note D1 is the demand curve on the **right**.)

4. The price P^{LR} is
   a) 8
   b) 11
   c) 7
   d) 10
   e) 9

5. Long-run output per firm q^{LR} equals
   a) 2
   b) 3
   c) 4
   d) 5
   e) 6

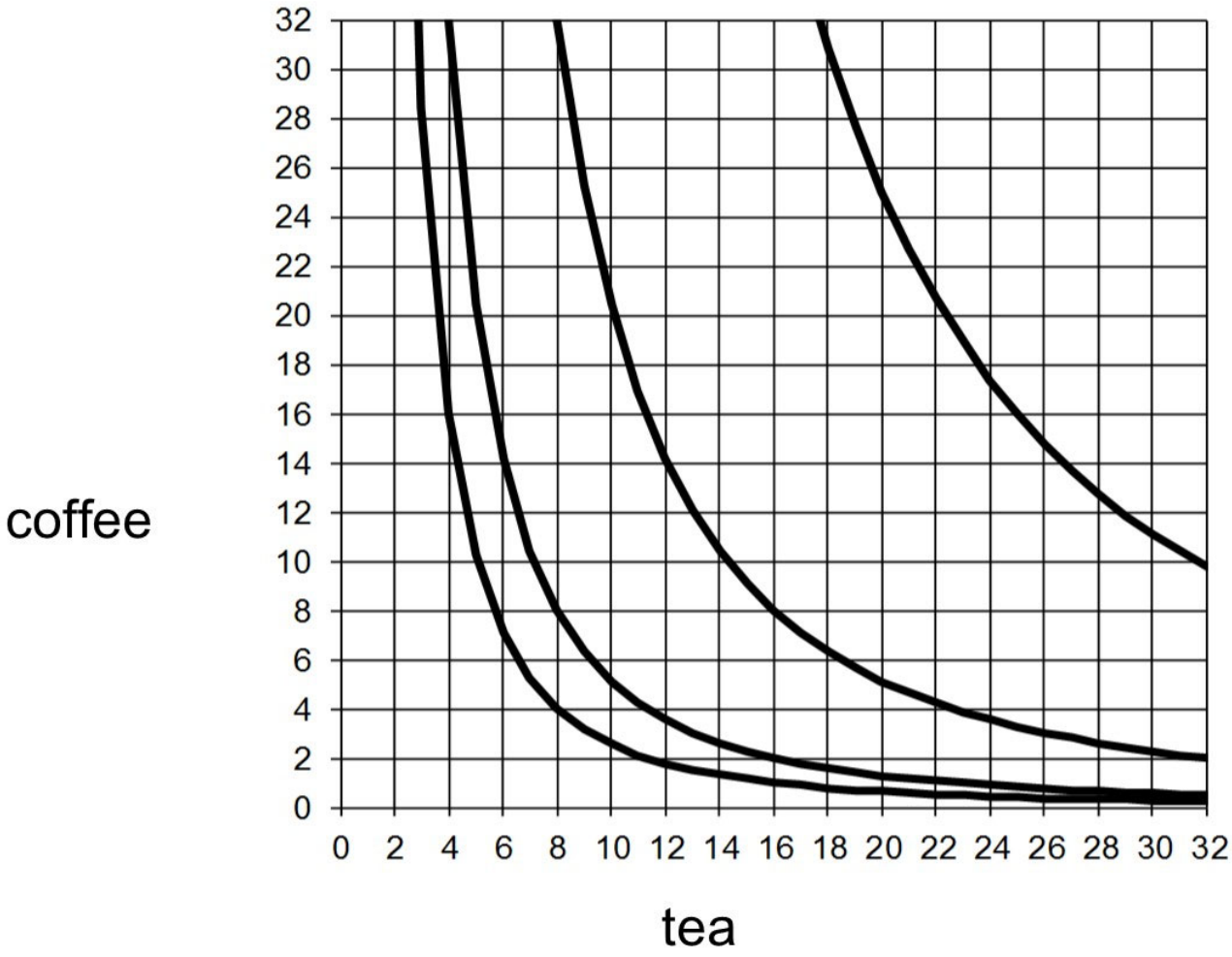
6. Long-run industry quantity Q^{LR} equals
   a) 400
   b) 600
   c) 800
   d) 500
   e) 900

7. Long-run number of firms N^{LR} equals
   a) 50
   b) 100
   c) 150
   d) 200
   e) 300

8. Suppose the industry is initially in long-run equilibrium at demand D1 and the number of firms equals the number in the previous question. Demand then shifts to D2. In the **short-run**, the equilibrium price will be
   a) 11
   b) 5
   c) 6
   d) 7
   e) 8

9. Continuing the previous question, after demand shifts to D2, in the short run, the profit of each firm will be
   a) –12
   b) –4
   c) –8
   d) 4
   e) 9

The questions on this page and the next page refer to the graph below. Nittany Lion consumes tea and coffee and the graph illustrates his indifference curves.



10. From Nittany Lion's indifference curves, we can determine that Nittany Lion is indifferent between having (8 tea, 32 coffee) and
    a) (18 tea, 32 coffee)
    b) (6 tea, 14 coffee)
    c) (12 tea, 18 coffee)
    d) (20 tea, 22 coffee)
    e) (16 tea 8 coffee)

11. Suppose Nittany Lion has an income of \$24, that P^{tea}=\$2, and that P^{coffee}=\$1. Draw Nittany Lion's budget constraint in the above figure. From this we can see that the opportunity cost of one unit of tea equals
    a) ½ coffee
    b) 1 coffee
    c) 2 coffee
    d) 3 coffee
    e) 4 coffee

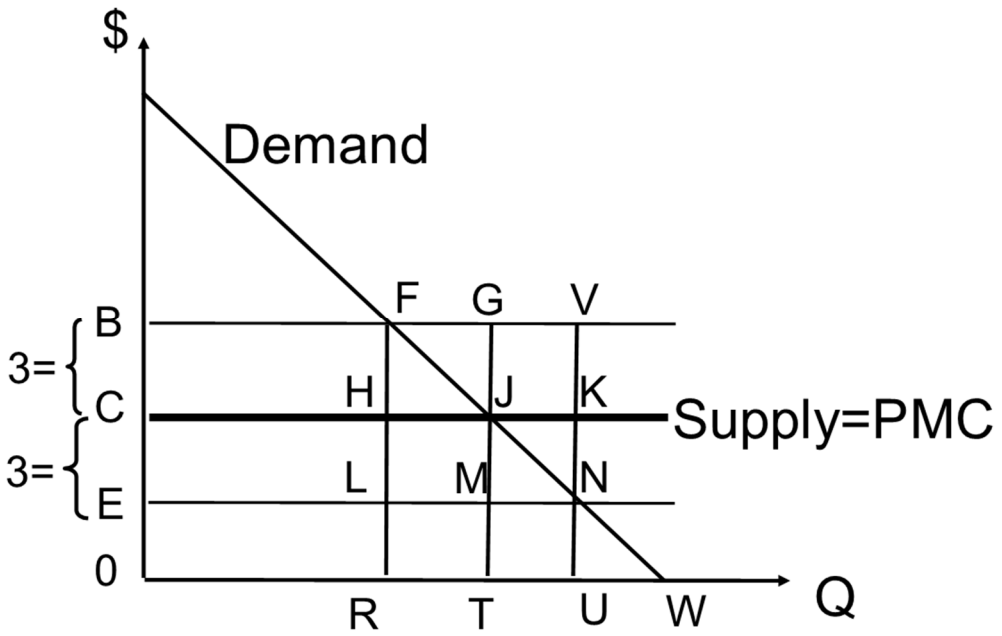
12. At this income and prices of tea and coffee, the optimal consumption bundle for Nittany Lion is
    a) (9 tea, 6 coffee)
    b) (7 tea, 10 coffee)
    c) (10 tea, 10 coffee)
    d) (8 tea, 8 coffee)
    e) (6 tea, 12 coffee)

13. Suppose the price of tea falls from $2 to $1, with income and P^{coffee} staying the same. The **change** in the demand for tea (the **total** effect of the price decrease) equals
    a) 0
    b) 4
    c) 8
    d) 10
    e) 12

14. Again assuming the price of tea falls from $2 to $1, we can see in the graph that the **income** effect of the price decrease on the demand for tea is approximately
    a) 0
    b) 2
    c) 5
    d) 6
    e) 8

15. Nittany Lion's preferences are an example of what type of preferences?
    a) Perfect substitutes (constant marginal rate of substitution)
    b) Perfect complements (or fixed proportions).
    c) Preferences with diminishing marginal rate of substitution
    d) Preferences where tea is an inferior good

16. When a country allows trade and becomes an **exporter** of a good
    a) both domestic producers and domestic consumers become better off.
    b) both domestic producers and domestic consumers become worse off.
    c) domestic producers become worse off, and domestic consumers become better off.
    d) domestic producers become better off, and domestic consumers become worse off.

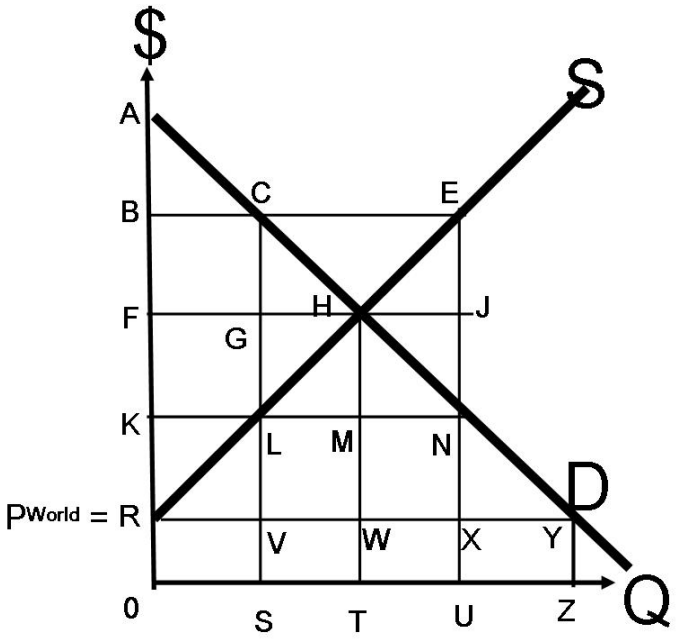


The next three questions refer to the above supply and demand diagram for the wisset industry. Suppose wissets have a negative externality of $3 per unit wisset. In the above figure, the distances between points B and C and between points C and E both equal $3.

17. The deadweight loss in total surplus from the free-market allocation, compared to the socially efficient allocation equals
    a) ─FVN
    b) ─FGJ
    c) ─BGME
    d) ─BFJC
    e) ─BFLE

18. If the optimal Pigouvian tax is imposed on wissets, government revenue equals
    a) BVNE
    b) BFLE
    c) BGME
    d) BFHC
    e) CJME

19. Suppose instead of a tax on wissets, a cap and trade system is set up such that the number of tradable allowances is the same quantity as with the optimal Pigouvian tax. The total market value of allowances will be
    a) BVNE
    b) BFLE
    c) BGME
    d) BFHC
    e) CJME



The above graph illustrates the supply and demand for widgets in Econland. Widgets can be obtained in world markets at a price P^{World} = R as illustrated. Suppose initially Econland is in autarky. Then it opens to free trade with the rest of the world.

20. Relative to autarky, free trade results in a **change** in Econland total surplus (producer plus consumer) equal to
    a) FHR
    b) FHYR
    c) SCEU
    d) RLNY
    e) RHY
21. Suppose that instead of free trade, the government of Econland sets a tariff on widgets equal to KR. Tariff revenue to the government equals
    a) KNXR
    b) KLVR
    c) LNXV
    d) LNUS
    e) CEUS

22. Compared to free trade, the change in Econland total surplus (including producer plus consumer plus government revenue) equals
    a) —LVR
    b) —NYX
    c) —LVR—NYX
    d) —RLNY
    e) —KNYR

23. When trade is based on increasing returns, it is possible for trading partners to both gain from trade, even when production possibility frontiers are the same for both. True or False?
    a) True
    b) False

Name	Willingness to Pay
D1	8
D2	6
D3	3
D4	1

24. Econland, the willingness-to-pay for a national park is given by the table above. Suppose that a national park is nonrivalrous in consumption and nonexcludable. It is socially efficient to build the national park if and only if the cost is no higher than
    a) 8
    b) 6
    c) 14
    d) 18
    e) 24

25. Which of the following are rivalrous in consumption?
    (i) A sandwich
    (ii) A tornado warning siren
    (iii) Online music
    (iv) Over the air radio

    a) (i)
    b) (ii), (iii), and (iv)
    c) (i) and (iii)
    d) (ii) and (iv)
    e) None of them

26. A public good is
    a) rivalrous in consumption and excludable
    b) nonrivalrous in consumption and excludable
    c) rivalrous in consumption and nonexcludable
    d) nonrivalrous in consumption and nonexcludable

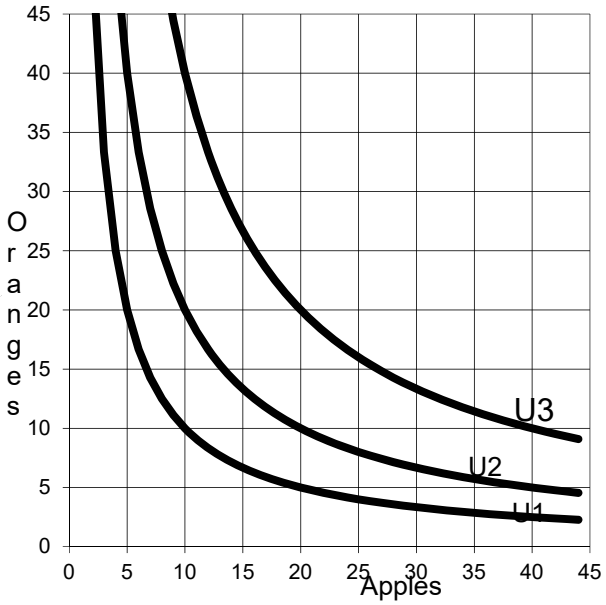
27. At present, the United States uses a system of quotas to limit the amount of sugar imported into the country. Which of the following statements is most likely true?
    a) The quotas are probably the result of lobbying from U.S. consumers of sugar. The quotas increase consumer surplus for the United States, reduce producer surplus for the United States, and harm foreign sugar producers.
    b) The quotas are probably the result of lobbying from U.S. producers of sugar. The quotas increase producer surplus for the United States and reduce consumer surplus for the United States.
    c) The quotas are probably the result of lobbying from foreign producers of sugar. The quotas reduce producer surplus for the United States, increase consumer surplus for the United States, and benefit foreign sugar producers.
    d) U.S. lawmakers did not need to be lobbied to impose the quotas because total surplus for the United States is higher with the quotas than without them.

28. Suppose a widget is an **inferior** good. Suppose the price of a widget falls. Do the substitution and income effects on consumer demand go in the same direction or in opposite directions?
    a) Same direction
    b) Opposite direction

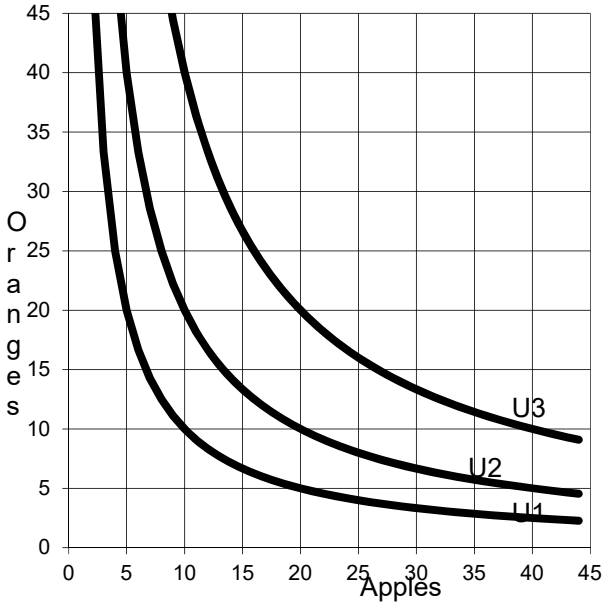
29. Suppose in an industry with unit elastic supply and demand that there is a positive externality and no negative externality. Which of the following statements are true?
    i) Total surplus can be improved if a **subsidy** equal to the amount of the external benefit is enacted
    ii) Imposing a Pigouvian **tax** equal to the amount of the external benefit will increase total surplus
    iii) Social marginal cost is equal to private marginal cost
    iv) The free market equilibrium quantity is below the socially optimal quantity

    a) i, iii
    b) ii
    c) i, iii, iv
    d) ii, iv
    e) i, ii, iv

Ariana works 10 hours a day. She can make 1 apple per hour or 4 oranges per hour. Beyoncé works 5 hours a day. She can make 8 apples per hour or 2 oranges per hour. The figures below show the indifference curves for Ariana and Beyoncé.



Ariana



Beyoncé

Illustrate Ariana's and Beyoncé's production possibility frontiers (ppf) in the graphs above and then answer the following questions.

30. _____ has an **absolute** advantage in making apples and _____ has a comparative advantage in making apples. (Fill in the blanks)
    a) Beyoncé, Beyoncé
    b) Ariana, Ariana
    c) Beyoncé, Ariana
    d) Ariana, Beyoncé

31. Suppose trade is **impossible**, so each is in autarky. For each, production equals consumption. At the utility maximizing choice, Ariana produces and consumes
    a) (10 apples, 0 oranges)
    b) (0 apples, 40 oranges)
    c) (40 apples, 0 oranges)
    d) (20 apples, 10 oranges)
    e) (5 apples, 20 oranges)

32. Suppose trade is **possible** and that the price of **one apple** in terms of oranges equals **one orange**. In this case, Ariana consumes _____ apples and _____ oranges. (Fill in the blanks.)
    a) 5, 20
    b) 10, 20
    c) 20, 20
    d) 20, 10

33. Suppose that a particular good has both a positive externality and a negative externality. Suppose the external benefit is $2 per unit and that the external cost is $4. Assume demand and supply are both unit elastic. Consider the following two statements:

(i) The free-market output will be less than the socially efficient outcome.

(ii) If a tax of $2 per unit is imposed then output will equal the socially efficient outcome.

Which are true?

a) (i) only
b) (ii) only
c) Both (i) and (ii)
d) Neither are true

34. Which of the following statements regarding "cap and trade" policies is **not** true?

a) The policy is more politically feasible than a carbon tax because industry groups that might block a tax can be potentially bought off by being given allowances.
b) The European Union has already adopted such a policy to limit carbon.
c) The policy has been used in the United States to address the problem of sulfur dioxide pollution.
d) It is an example of a "command and control" policy where government regulators make the decision of how a given cutback in carbon production will be achieved rather than through the use of a market mechanism.