

Please Do Not Turn This Page Until Instructed to Do So!

ECON 217

(Prof. Nader Kabbani)

Midterm Exam – Fall 2004

Student's Name: _____

I.D. Number: _____

Instructions – Please Read Carefully!

1. Please write legibly (if I can't read it, I can't grade it.)
2. You may use either pen or pencil.
3. Please check that your exam has 11 pages (including this cover page).
4. Feel free to use the backs of the pages; but make sure that I can follow your work.
5. Use of programmable calculators and cell phones is strictly forbidden.
6. There are 30 multiple choice questions (2 points each) and 2 problems (20 points each).
7. Read exam questions carefully. Don't spend too much time on any one question.
8. Partial credit can be given, so be sure to show all your work.
9. If you think that you found a mistake, comment on it. You may receive extra credit.
10. Check the blackboard periodically. I will post corrections and clarifications there.
11. Keep your eyes on your exam: If I see a student looking at another's exam, I will assume s/he is copying. I will immediately take away their exam and give them a failing grade.

You have 90 minutes to complete the exam.

Good luck!

Multiple Choice Questions: (2 Points Each – 60 Points Total) - No Penalty for Wrong Answers

Please Select the BEST Answer for Each the Following Questions or Statements.

If you spent your entire income, you could afford either 4 units of x and 8 units of y or 8 units of x and 4 units of y. If you spent your entire income on x, how many units of x could you buy?

- a. 20.
- b. 17.
- c. 12.
- d. There is not enough information to determine the amount of x.
- e. None of the above.

Fadia's budget line for x and y depends on all of the following except:

- a. the amount of money she has to spend on x and y.
- b. the price of x.
- c. her preferences between x and y.
- d. the price of y.
- e. none of the above.

Edmund must pay \$6 each for rock video cassettes (V). If Edmund is paid \$24 per sack for accepting garbage (G) and if his relatives send him an allowance (income) of \$192, then his budget line is described by the equation:

- a. $6V=24G$.
- b. $6V+24G=192$.
- c. $6V-24G=192$.
- d. $6V=192-G$.
- e. None of the above.

This weekend, Maria has time to read 40 pages of economics and 30 pages of sociology. Alternatively, she could read 20 pages of economics and 70 pages of sociology. Which of these equations describes all combinations of pages of economics, E, and sociology, S, that she could read over the weekend?

- a. $E+S=70$.
- b. $E/2+S=50$.
- c. $2E+S=110$.
- d. $E+S=90$.
- e. All of the above.

Preferences are said to be monotonic if:

- a. all goods must be consumed in fixed proportions.
- b. all goods are perfect substitutes.
- c. more is always preferred to less.
- d. there is diminishing marginal rate of substitution.
- e. None of the above.

Suha has preferences represented by the utility function $U(x,y)=8x+4y$. She consumes 12 units of good x and 3 units of good y . If her consumption of good x is lowered to 10, how many units of y must she have in order to be exactly as well off as before?

- 12 units of good y .
- 10 units of good y .
- 7 units of good y .
- 5 units of good y .
- None of the above.

Jamal's utility function is $x^2+16xw+64w^2$ where x is his consumption of x and w is his consumption of w .

- Jamal's preferences are nonconvex.
- Jamal's indifference curves are straight lines.
- Jamal has a bliss point.
- Jamal's indifference curves are hyperbolas.
- None of the above.

Maya consumes positive quantities of both jam and juice. The price of jam is 5 cents per unit and the price of juice is 10 cents per unit. Her marginal utility of jam is 10 and her marginal utility of juice is 5.

- Without changing her total expenditures, she could increase her utility by consuming more jam and less juice.
- Without changing her total expenditures, she could increase her utility by consuming more juice and less jam.
- Without changing her total expenditures on jam and juice, she could not increase her utility.
- We can't tell whether any of the other statements are true or false without knowing the quantities she consumes.
- She should spend more money on both jam and juice.

Janet consumes x_1 and x_2 together in fixed proportions. She always consumes 2 units of x_1 for every unit x_2 . One utility function that describes her preferences is:

- $U(x_1,x_2) = 2x_1x_2$
- $U(x_1,x_2) = 2x_1+x_2$
- $U(x_1,x_2) = x_1+2x_2$
- $U(x_1,x_2) = \min(2x_1,x_2)$
- $U(x_1,x_2) = \min(x_1,2x_2)$

Coke and Pepsi are perfect substitutes for Mr. Drinker and the slope of his indifference curves is minus 1. One day he bought 2 cans of Coke and 20 cans of Pepsi. (The cans of both drinks are the same size.)

- Coke is less expensive than Pepsi.
- Coke is more expensive than Pepsi.
- Coke and Pepsi cost the same.
- Mr. Drinker prefers Pepsi to Coke.
- None of the above.

Samer's utility function is $U(A,B)=AB$ where A and B are the numbers of apples and bananas, respectively, that he consumes. When Samer is consuming 15 apples and 90 bananas, if we put apples on the horizontal axis and bananas on the vertical axis, the slope of his indifference curve at his current consumption is:

- a. -15.
- b. -6.
- c. -12.
- d. -1/6.
- e. -1/12.

Ali consumes only apples and bananas. He prefers more apples to less, but he gets tired of bananas. If he consumes fewer than 17 bananas per week, he thinks that one banana is a perfect substitute for one apple. But you would have to pay him one apple for each banana beyond 17 that he consumes. The indifference curve that passes through the consumption bundle with 25 apples and 26 bananas also passes through the bundle with A apples and 11 bananas, where A equals:

- a. 21.
- b. 22.
- c. 24.
- d. 26.
- e. None of the above.

Sara's utility function is $U(X,Y)=(X+2)(Y+1)$. If her marginal rate of substitution is -4 and she is consuming 14 units of Good X, how many units of Good Y must she be consuming?

- a. 30.
- b. 68
- c. 18
- d. 63
- e. 9

Karen has homothetic preferences. When her income was \$1,000, she bought 40 books and 60 newspapers. When her income increased to \$1,500 and prices did not change, she bought:

- a. 60 books and 90 newspapers.
- b. 80 books and 120 newspapers.
- c. 60 books and 60 newspapers.
- d. 40 books and 120 newspapers.
- e. There is not enough information for us to determine what she would buy.

Bernard considers x and y to be perfect substitutes. They originally cost 10 and 9 respectively. His income is 720. One day the price of x drops to 8. Which of the following is true?

- a. The income effect increases the quantity of y by 90.
- b. The substitution effect increases the quantity of y by 80.
- c. The substitution effect increases the quantity of x by 90.
- d. The income effect increases the quantity of x by 80.
- e. None of the above.

Farid consumes chicken and lamb chops and nothing else. When the price of chicken rises with no change in his income or in the price of lamb chops, Fred buys fewer lamb chops and less chicken. From this information we can definitely conclude that:

- a. chicken is a normal good for Fred.
- b. lamb chops are a normal good for Fred.
- c. chicken is an inferior good for Fred.
- d. lamb chops are an inferior good for Fred.
- e. Fred prefers chicken to lamb chops.

Kareem consumes only apples and bananas and bananas are an inferior good for him. The price of apples increases, but there is an increase in his income that keeps him on the same indifference curve as before. (Kareem has convex preferences, and he prefers more to less of either good.)

- a. After the change, Kareem will buy more bananas and less apples.
- b. After the change, Kareem will buy less bananas and more apples.
- c. After the change, Kareem will buy more of both goods.
- d. After the change, Kareem will buy less of both goods.
- e. We would need to know his utility function to determine whether any of the above statements are true.

The following can be said about the income and substitution effects of a price increase on the demand for the good whose price rose:

- a. The former is always positive and the latter is always negative.
- b. Both can be either positive or negative.
- c. While the latter is always negative, the former can be either positive or negative.
- d. While the former is always negative, the latter can be either positive or negative.
- e. The former can at times be negative, but it will never overwhelm the latter.

The inverse demand function for rye is $p=31,200-6q$. Total revenue in this market will be maximized when the quantity of rye produced is:

- a. 3,711.
- b. 5,200.
- c. 1,300.
- d. 2,600.
- e. None of the above.

When the price of bananas is 50 cents a pound, the total demand is 100 pounds. If the price elasticity of demand for bananas is -2, what quantity would be demanded if the price rose to 60 cents a pound?

- a. 50
- b. 90
- c. 60
- d. 80
- e. 70

Ed and Al both consume only bread and cheese. Both of them always choose to have some bread and some cheese, and both have strictly convex preferences. However, Ed likes to have a great deal of bread with a little cheese and Al likes lots of cheese with a little bread. Both face the same prices for both goods and have chosen bundles to maximize their utilities subject to their budgets. Which of the following statements is true?

- a. Al's marginal rate of substitution is larger in absolute value than Ed's.
- b. Ed's marginal rate of substitution is larger in absolute value than Al's.
- c. Their marginal rates of substitution are the same.
- d. Who has the larger marginal rate of substitution depends on income levels.
- e. There is not enough information for us to be able to tell who has the larger marginal rate of substitution.

Yousef is fond of cigars. His utility function is $U(x,c)=x+10c-.5c^2$ where c is the number of cigars he smokes per week and x is the money that he spends on consumption of other goods. Yousef has \$200 a week to spend. Cigars used to cost him \$1 each, but their price went up to \$2 each. This price increase was as bad for him as losing the following amount of income:

- a. \$5.
- b. \$7.25.
- c. \$9.
- d. \$8.
- e. \$8.50.

At the price of 100, tourists demand 587 airplane tickets. At the same price, business travelers demand 527. At the price 120, tourists demand 127 tickets and business travelers demand 127. Assuming that the demand curves of business travelers and tourists are both linear over this price range, what is the price elasticity of demand at the price 100?

- a. -3.86
- b. -43
- c. -4.63
- d. -0.04
- e. None of the above.

Given his current income, Rico's demand for bagels is related to the price of bagels by the equation, $Q=160-20P$. Rico's income elasticity of demand for bagels is known to be equal to 0.5 at all prices and incomes. If Rico's income quadruples, his demand for bagels will be related to the price of bagels by the equation:

- a. $Q=160-20P$.
- b. $Q=640-80P$.
- c. $Q=160-40P$.
- d. $Q=320-40P$.
- e. $Q=320-20P$.

If at current prices, the demand for a good is price-elastic, then for movements along the demand curve:

- a. increasing the price will increase revenue.
- b. decreasing the price will decrease revenue.
- c. increasing the quantity sold will increase revenue.
- d. increasing the quantity sold will decrease revenue.
- e. More than one of the above statements are true.

The demand for pickles is given by $p = 131 - 2q$ and supply is given by $p = 5 + 7q$. What is the equilibrium quantity?

- a. 11
- b. 14
- c. 19
- d. 103
- e. None of the above.

The inverse demand for eggs is $p = 84 - 9q$ where q is the number of cases of eggs. The inverse supply is $p = 7 + 2q$. In the past, eggs were not taxed, but now a tax of 33 dollars per case has been introduced. What is the effect of the tax on the quantity of eggs supplied?

- a. Quantity drops by 2 cases.
- b. Quantity drops by 3 cases.
- c. Quantity drops by 6 cases.
- d. Quantity drops by 4 cases.
- e. None of the above.

The inverse demand function for video games is $p = 240 - 2q$ and the inverse supply is $p = 3 + q$. When the government imposes a \$6 tax on each video game purchased:

- a. consumers' surplus falls by more than producers' surplus.
- b. producers' surplus falls by more than consumers' surplus.
- c. consumers' surplus and producers' surplus fall by the same amount.
- d. consumers' surplus falls and producers' surplus increases.
- e. producers' surplus falls and consumers' surplus increases.

The demand function for corn is $q = 200 - p$ and the supply function is $q = 50 + 0.5p$. The government sets the price of corn at 150 and agrees to purchase and destroy any excess supply of corn at that price. How much money does it cost the government to buy this corn?

- a. 11,250
- b. 18,750
- c. 7,500
- d. 10,750
- e. 14,500

Linda spends her entire budget and consumes 15 units of x and 19 units of y. The price of x is twice the price of y. Her income doubles and the price of y doubles, but the price of x stays the same. If she continues to buy 19 units of y, what is the largest number of units of x that she can afford?

- a. 30.
- b. 15.
- c. 32.
- d. 34.
- e. There is not enough information to say

Problem 1 (20 Points): Consider Tarek's utility function:

$$U(X_1, X_2) = (X_1)^{0.5}(X_2)^{0.5}$$

- a. Show that this utility function exhibits decreasing marginal utility and a diminishing marginal rate of substitution along its indifference curves.

- b. If $P_1 = \$9$ and $P_2 = \$4$ and Tarek's income (M) = \$72, use the Lagrangian method to determine the quantities of X_1 and X_2 that will maximize Fares' utility. *Make sure that you show your work.*

c. Is X_1 a normal or inferior good? *Show how you arrived at your answer.*

d. If P_2 increases to \$9, by how much will Tarek's income have to increase in order to provide her with the same level of utility as before the price increase?

Problem 2 (20 Points): The demand for Kramer's Crunchy Cockroaches at a local grocery store is described by:

$$Q_D = 25 - 4P - I/10 \quad \text{where } I = \$150.$$

a. If supply is perfectly elastic at $P = \$1.50$, what is the income elasticity of demand at this price? What type of good is Crunchy Cockroaches?

b. What is the marginal revenue at this price?

c. At what quantity is revenue maximized?

d. If Kramer raises his prices to $P = \$2.00$, what is the change in consumer surplus as a result of the price change?

Extra Credit (4 points): Legend has it that English economist Robert Giffen observed a paradoxical situation in nineteenth-century Ireland. At the time, Ireland was a rather isolated and poor island. Most people were farmers and potatoes were a major crop and substantial part of the household diet. When the price of potatoes in Ireland increased as a result of a potato disease, Giffen reportedly observed that people consumed even more potatoes. His explanation: not only were potatoes an inferior good, but because they took up such a large share of household income, the higher price substantially reduced real household income, forcing the already poor consumers to consume more of the inferior good. While “Giffen Goods” are a theoretical possibility, based on the information in the story above, give two reasons why it is unlikely the Irish potato was a true example of a Giffen good.



ECON 217

ANSWER KEYS

MIDTERM EXAM (FALL 2004) AND FINAL EXAM (2004-05)

**NOTE: PROBLEM SET QUESTIONS ARE TAKEN FROM THESE TWO EXAMS,
SO THE KEYS ALSO PROVIDE ANSWERS TO THE PROBLEM SETS**

MIDTERM 2004

1. c
2. c
3. c
4. c
5. c
6. c
7. b
8. a
9. e
10. c
11. b
12. b
13. d
14. a
15. c
16. b
17. a
18. c
19. d
20. c
21. c
22. e
23. a
24. d
25. c
26. b
27. b
28. a
29. a
30. a

FINAL 2004-05

1. a
2. c
3. b
4. b
5. d
6. e
7. c
8. c
9. d
10. c
11. d
12. b
13. c
14. c
15. e
16. d
17. b
18. d
19. e
20. b
21. b
22. c
23. d
24. a
25. c
26. b
27. d
28. d
29. c
30. c

