Ecn 100 - Intermediate Microeconomic Theory
University of California - Davis
Instructor: John Parman

August 12, 2009

Midterm 1

You have until 1:50pm to complete this exam. Be certain to put your name, id number and section on both the exam and your scantron sheet and fill in test form A on the scantron. Answer all multiple choice questions on your scantron sheet. Choose the single best answer for each question; if you fill in multiple answers for a question you will be marked wrong. Answer the long answer questions directly on the exam. You must show your work for full credit. Answers may be left as fractions. Please place a box around final answers when appropriate. Good luck!

Name: **ID Number:** **Section:**

SECTION I: MULTIPLE CHOICE (60 points)

1. On a graph with good x on the horizontal axis and good y on the vertical axis, a consumer's indifference curves will be downward sloping when:
   (a) Good x is a bad and good y is a good.
   (b) Good y is a bad and good x is a good.
   (c) Neither (a) nor (b) is true.
   (d) Both (a) and (b) are true.
2. On a graph with apples on the horizontal axis and bananas on the vertical axis, an increase in the price of apples will:
   (a) Make the budget line steeper.
   (b) Make the budget line flatter.
   (c) Shift the budget line away from the origin.
   (d) Shift the budget line toward the origin.
3. If salt and pepper are complements and both are normal, ordinary goods, an increase in the price of pepper will:
   (a) Lead to an increase in the amount consumed of both pepper and salt.
   (b) Lead to a decrease in the amount consumed of both pepper and salt.
   (c) Lead to an increase in the amount of salt consumed and a decrease in the amount of pepper consumed.
   (d) Lead to an increase in the amount of pepper consumed and a decrease in the amount of salt consumed.
4. Adam's preference are transitive and the utility function $U(x, y)$ represents his preferences. Suppose Adam prefers (x_a, y_a) to (x_b, y_b) and he prefers (x_a, y_a) to (x_c, y_c). Which of the following statements is definitely true?
   (a) $U(x_a, y_a) > U(x_c, y_c)$.
   (b) (x_b, y_b) is preferred to (x_c, y_c).
   (c) $U(x_b, y_b) \leq U(x_c, y_c)$
   (d) (a) and (b).

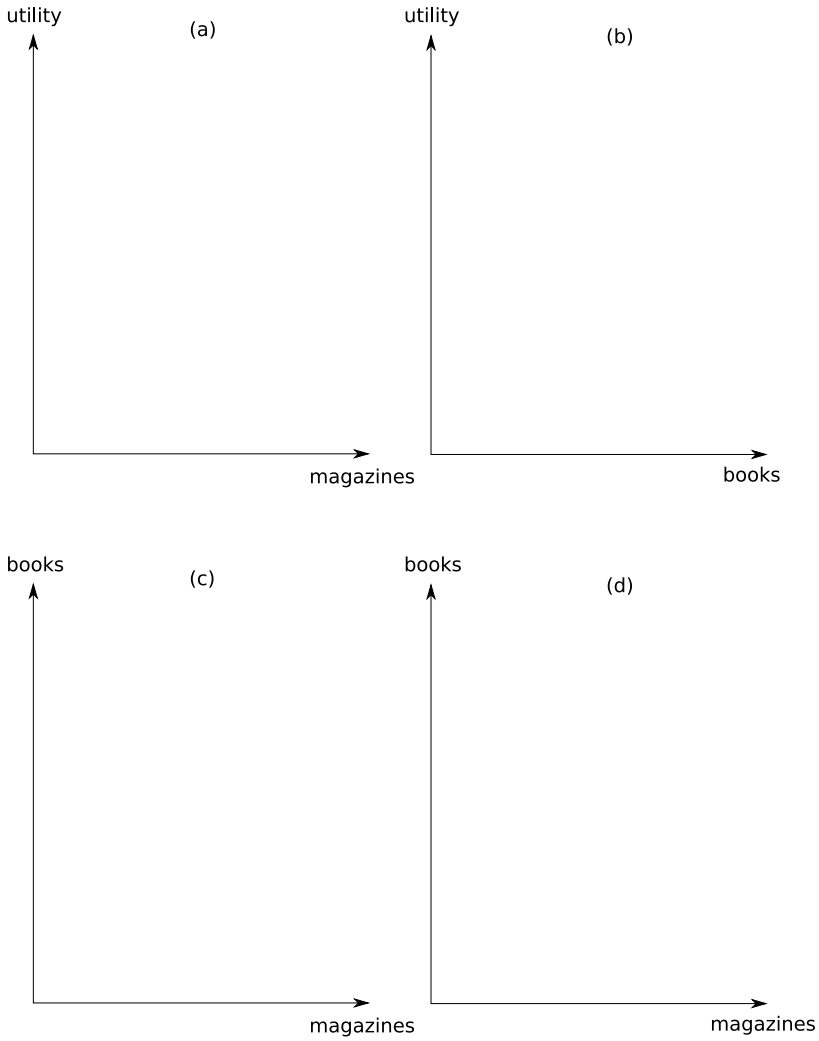
5. If a consumer's preferences for goods x and y exhibit a diminishing marginal rate of substitution, then:
   (a) $\frac{MU_x}{MU_y}$ gets smaller as x gets larger and y gets smaller.
   (b) $\frac{MU_x}{MU_y}$ gets larger as x gets larger and y gets smaller.
   (c) The consumer prefers extremes to averages.
   (d) The consumer's indifference curves will be concave.
6. If Bob spends all of his money on books and shoes and books are an inferior good, a decrease in income will lead Bob to (you can assume Bob is consuming positive quantities of both books and shoes):
   (a) Buy fewer books and fewer shoes.
   (b) Buy more books and fewer shoes.
   (c) Buy fewer books and more shoes.
   (d) Buy more books and more shoes.
7. Hotdogs and buns are perfect complements and always consumed in a one to one ratio. The price of a hotdog is \$2 and the price of a bun is \$1. If a consumer has \$30, how many hotdogs will they consume?
   (a) 15.
   (b) 10.
   (c) 5.
   (d) Not enough information.
8. Debbie spends all of her money on coffee and magazines. Which of the following would not change her budget set?
   (a) A doubling of the price of magazines and a doubling of her income.
   (b) A doubling of the price of magazines and a doubling of the price of coffee.
   (c) The price of magazines, the price of coffee and income all doubling.
   (d) The price of magazines and the price of coffee doubling and income being cut in half.
9. Which of the following utility functions does not exhibit a diminishing marginal rate of substitution?
   (a) $U(x,y) = x^2y^2$.
   (b) $U(x,y) = x^{\frac{1}{3}} + y^{\frac{1}{3}}$.
   (c) $U(x,y) = x^{\frac{1}{2}}y^{\frac{1}{2}}$.
   (d) $U(x,y) = \frac{1}{2}x + \frac{1}{2}y$.
10. If two bundles of goods lie on the same indifference curve, we can say for certain that:
    (a) The two bundles give the same level of utility.
    (b) The two bundles contain equal quantities of the goods.
    (c) The two bundles cost the same amount.
    (d) (a) and (c).

11. Eddie's consumption bundles contain only two goods, x and y. In what situation would Eddie not want to spend his entire income:
    (a) When one of the two goods is a bad.
    (b) When both goods are bads.
    (c) When the prices of the two goods are extremely high.
    (d) None of the above.
12. If the price of white bread goes up and Fiona buys less of it, which of the following is not possible?
    (a) White bread is a normal good.
    (b) White bread is an inferior good.
    (c) White bread is an ordinary good.
    (d) White bread is a Giffen good.
13. Suppose ice cream and candy are normal, ordinary goods. George is currently spending all of his income on a consumption bundle where $\frac{MU_{icecream}}{MU_{candy}}$ is greater than $\frac{p_{icecream}}{p_{candy}}$. George can increase his utility by:
    (a) Spending more money on ice cream and less money on candy.
    (b) Spending less money on ice cream and more money on candy.
    (c) Sending less money on ice cream and less money on candy.
    (d) George can't increase his utility since he is already on his budget line.
14. For which of the following utility functions is the marginal utility of x diminishing as x gets larger?
    (a) $U(x, y) = -2x + y$.
    (b) $U(x, y) = x^2 y^{\frac{1}{2}}$.
    (c) $U(x, y) = x^{\frac{1}{3}} y^2$.
    (d) $U(x, y) = x^3 + 2y$.
15. Suppose that peanut butter and jelly normal, ordinary goods and are complements. If the price of jelly goes down, on a graph with jelly on the vertical axis and peanut butter on the horizontal axis the new optimal bundle will be:
    (a) Above to the right of the original optimal bundle.
    (b) Below and to the left of the original optimal bundle.
    (c) Above and to the left of the original optimal bundle.
    (d) Below and to the right of the original optimal bundle.
16. For perfect substitutes:
    (a) A consumer will always spend all of his or her money on the good with the higher marginal utility.
    (b) A consumer will always buy positive quantities of both goods.
    (c) A consumer will always spend all of his or her money on just one of the goods.
    (d) None of the above.

17. Hannah's marginal utility from pencils (P) is independent of the number of pencils she has and her marginal utility from erasers (E) is decreasing as the number of erasers gets larger. Which of the following utility functions could represent Hannah's preferences?
    (a) $U(P, E) = P + E$.
    (b) $U(P, E) = PE$.
    (c) $U(P, E) = P^{\frac{1}{2}}E$.
    (d) $U(P, E) = PE^{\frac{1}{2}}$.
18. Suppose that Ivan's consumption bundles consist of crackers and cookies and Ivan always chooses the optimal bundle. If the price of cookies goes up, which of the following could be true?
    (a) Ivan's utility will increase.
    (b) Ivan's utility will decrease.
    (c) Ivan's utility will stay the same.
    (d) (b) or (c) could be true.
19. On a graph with eggs on the horizontal axis and pancakes on the vertical axis, the steeper a consumer's indifference curve is:
    (a) The more pancakes the consumer is willing to give up for an additional egg.
    (b) The more eggs the consumer is willing to give up for an additional pancake.
    (c) The more expensive pancakes are relative to eggs.
    (d) The more expensive eggs are relative to pancakes.
20. If goods x and y are both normal goods, the income offer curve will be:
    (a) Upward sloping.
    (b) Downward sloping.
    (c) A horizontal line.
    (d) A vertical line.

SECTION II: SHORT ANSWER (40 points)

1. (14 points) Suppose that magazines and books are normal, ordinary goods and are substitutes. For each extra magazine James reads, his utility goes up by a constant amount. The additional utility he gets from reading an extra book gets smaller as the number of books he already has gets larger.
   (a) On graph (a), draw a curve showing utility as a function of the number of magazines holding the number of books constant.
   (b) On graph (b), draw a curve showing utility as a function of the number of books holding the number of magazines constant.
   (c) On graph (c), use three sets of indifference curves and budget lines to show three points on the income offer curve.
   (d) On graph (d), use three sets of indifference curves and budget lines to show three points on the price offer curve when the price of magazines is varied.



2. (12 points) Suppose that your total income is \$200. Cans of soda (C) cost \$1. Bottles of soda (B) cost \$2. Suppose that you are always will to trade 3 cans of soda for 2 bottles of soda.
   (a) Write down a utility function, $U(C, B)$, that represents these preferences.
   (b) Given the current prices, how many cans of soda and how many bottles of soda will you purchase?
   (c) Assume the price of cans is fixed at \$1. Over what range of prices for bottles will you purchase a positive number of bottles?

3. (14 points) Kimberly's utility from movie tickets (M) and concert tickets (C) is given by:

$$U(M, C) = 20M^{\frac{1}{2}}C^{\frac{1}{2}}$$

   (a) Derive expressions for MU_M, MU_C and the marginal rate of substitution.
   (b) Derive an expression for demand for movie tickets in terms of income (I), the price of a movie ticket (p_M) and the price of a concert ticket (p_C). In other words, derive the function $M(p_M, p_C, I)$ that gives the optimal number of movie tickets for any set of prices and income.
   (c) Based on your expression in part (b), determine whether movie tickets are a normal or inferior good and whether they are an ordinary or Giffen good. Be certain to explain your answers.