Ecn 100 - Intermediate Microeconomics
University of California - Davis July 7, 2010
Instructor: John Parman

Midterm

You have until 3:50pm 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 short 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. Annie's marginal utility from books is positive and her marginal utility from coffee is positive. We can say for certain that:
   (a) Books and coffee are complements.
   (b) Annie's indifference curves have a negative slope.
   (c) Annie's marginal rate of substitution is postive.
   (d) All of the above.
2. Suppose that Bill consumes only water and bread. On a graph with bread on the horizontal axis and water on the vertical axis, the income offer curve has a negative slope. Which of the following is true?
   (a) Bread and water are both normal goods.
   (b) Bread and water are both inferior goods.
   (c) One of the two goods is inferior.
   (d) Not enough information.
3. If a person's preferences exhibit an increasing marginal rate of substitution, which of the following is definitely not true?
   (a) The preferences are monotonic.
   (b) The preferences are convex.
   (c) The preferences are transitive.
   (d) The preferences are complete.

4. At the current prices for bracelets, an increase in the price of bracelets of 2% would lead to a decrease in demand of 1%. This implies that at the current prices:
   (a) Demand for bracelets is inelastic and revenue would increase if prices were increased by a small amount.
   (b) Demand for bracelets is elastic and revenue would increase if prices were increased by a small amount.
   (c) Demand for bracelets is inelastic and revenue would decrease if prices were increased by a small amount.
   (d) Demand for bracelets in elastic and revenue would decrease if prices were increased by a small amount.
5. If pollution is a bad, a graph with utility on the vertical axis and pollution on the horizontal axis:
   (a) Will have a negative slope that gets flatter as pollution gets larger.
   (b) Will have a negative slope that gets steeper as pollution gets larger.
   (c) Either (a) or (b) could be true.
   (d) Neither (a) nor (b) could be true.
6. Suppose that originally, Starbucks was the only kind of coffee available in town. If several new coffee shops enter the market, we would expect the price elasticity of demand for Starbucks coffee:
   (a) To increase in magnitude.
   (b) To decrease in magnitude.
   (c) To change from positive to negative.
   (d) To change from negative to positive.
7. On a graph with pie on the horizontal axis and punch on the vertical axis, Constance is currently at a bundle on her budget line where her indifference curve is steeper than the budget line. Assuming both pie and punch are good, Constance could increase her utility by:
   (a) Moving up and to the left along her indifference curve.
   (b) Moving up and to the left along her budget line.
   (c) Moving down and to the right along her indifference curve.
   (d) Moving down and to the right along her budget line.
8. Which of the following would produce a kinked budget line?
   (a) Giving a person a gift card that can only be spent on one of the two goods she consumes.
   (b) A change in the price of one good after a certain quantity (for example, bagels cost \$1.50 each for the first five and \$1 for every bagel after that).
   (c) Both (a) and (b).
   (d) Neither (a) nor (b).
9. A Giffen good would have:
   (a) A downward sloping demand curve and an upward sloping Engel curve.
   (b) A downward sloping demand curve and a downward sloping Engel curve.
   (c) An upward sloping demand curve and an upward sloping Engel curve.
   (d) An upward sloping demand curve and a downward sloping Engel curve.

10. Suppose that two utility function, $U^a(x, y)$ and $U^b(x, y)$, represent the same preferences and that $U^a(x, y) = xy$. We can say for certain that:
    (a) $U^b(x, y)$ exhibits a diminishing marginal utility for x.
    (b) $U^b(x, y)$ exhibits a diminishing marginal rate of substitution.
    (c) Neither (a) nor (b) is definitely true.
    (d) Both (a) and (b) are definitely true.
11. Both chips and salsa have positive marginal utilities. If the demand for chips does not depend on the price of salsa, an increase in the price of salsa will lead to:
    (a) A positive income effect for chips equal in magnitude to the substitution effect for chips.
    (b) A negative income effect for chips equal in magnitude to the substitution effect for chips.
    (c) No income effect and no substitution for chips.
    (d) None of the above.
12. If Ellen has a downward sloping demand curve and is currently buying a positive quantity of magazines:
    (a) Her consumer surplus from magazines is exactly zero.
    (b) Her marginal benefit from the last magazine she purchased is equal to zero.
    (c) Her marginal benefit from the last magazine she purchased is less than the price of a magazine.
    (d) Her marginal benefit from the next to last magazine she purchased is greater than the price of a magazine.
13. If puppies and kittens are substitutes, then the price offer curve when the price of puppies is varied will be:
    (a) Downward sloping.
    (b) Upward sloping.
    (c) A horizontal line.
    (d) A vertical line.
14. Fred consumes only pizza and beer and both are ordinary goods. The income elasticity for beer is -0.75. We can say for certain that:
    (a) Beer is an inferior good.
    (b) Pizza is a normal good.
    (c) Both (a) and (b).
    (d) Neither (a) nor (b).
15. Which of the following would lead to a steeper budget line on a graph with food on the horizontal axis and clothing on the vertical axis?
    (a) A change in preferences that increases the marginal utility of food at every level of food.
    (b) A change in preferences that increases the marginal utility of clothing at every level of clothing.
    (c) A change in prices that increases the price of food relative to clothing.
    (d) A change in prices that increases the price of clothing relative to food.

SECTION II: SHORT ANSWER (40 points)

1. (15 points) Suppose that you go to an amusement park that has a roller coaster and a ferris wheel. A ride on the roller coaster costs 4 tickets and a ride on the ferris wheel costs 2 tickets. You have a total of 30 tickets. Your utility from roller coaster rides (R) and ferris wheel rides (F) is given by the following utility function:

$$U(R, F) = 10RF \tag{1}$$

   (a) Write down an appropriate budget equation given the information above. Include actual numbers whenever possible.
   (b) Derive expressions for the marginal utility of roller coaster rides, the marginal utility of ferris wheel rides, and the marginal rate of substitution.
   (c) Assuming that you can consume fractions of rides, what is your optimal combination of roller coaster rides and ferris wheel rides?
   (d) If you can only consume integer numbers of rides (no fractions), what is your optimal combination of roller coaster rides and ferris wheel rides? Be certain to show work that justifies your answer.

2. (10 points) Suppose that a consumer's demand functions for newspapers (N) and magazines (M) are:

$$N = \frac{I}{p_N + \frac{p_N^2}{p_M}} \tag{2}$$

$$M = \frac{I}{p_M + \frac{p_M^2}{p_N}} \tag{3}$$

where p_N is the price of a newspaper, p_M is the price of a magazine and I is income.

   (a) Are newspapers and magazines complements, substitutes or neutral goods? Be certain to justify your answer.
   (b) Are newspapers an ordinary or Giffen good? Be certain to justify your answer.
   (c) Assume income is equal to \$100, the original price of a newspaper is \$1 and the original price of a magazine is \$1. Suppose that the price of a newspaper increases to \$3. Calculate the change in demand for magazines due to the income effect and the change in demand for magazines due to the substitution effect.

3. (15 points) There are two consumers in the market for sandwiches, Greg and Harry. The inverse demand curves for Greg and Harry are given by:

$$p(S_g) = 100 - \frac{1}{2}S_g \tag{4}$$

$$p(S_h) = 50 - S_h \tag{5}$$

where S_g is the number of sandwiches demanded by Greg and S_h is the number of sandwiches demanded by Harry.

   (a) Graph the market demand curve for sandwiches labeling all slopes, intercepts and kinks with their numerical values.
   (b) Suppose that both Greg and Harry consider sandwiches and potato chips complements. If the price of potato chips increases, how would you expect the graph you made in part (a) to change?
   (c) At what price would a small increase in the price of sandwich have no effect on the sandwich shop's revenue? (Assume the sandwich shop is operating in a price range where both Greg and Harry are buying positive quantities of sandwiches.)