

Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I cannot give extra time because some students have a class after your class.

1) (14 points each) For TWO of the following, calculate the elasticity using the formula requested and the data to the right. **Show all work.** Then tell me what information that tells you about the product, explaining your logic. (You may want to read Question #2A before answering this question.)

- A) Income elasticity of demand for coffee using the arc formula.  
 B) Own-price elasticity of demand for coffee using the point formula.  
 C) Cross-price elasticity of demand between coffee and tea using the point formula.

$P_{\text{Tea}}$	$P_{\text{Coffee}}$	Income	$Q_{\text{Coffee}}$
\$2.50/cup	\$1/cup	\$600	100 cups
\$2.00/cup	\$2/cup	\$400	110 cups
\$2.50/cup	\$2/cup	\$600	80 cups
\$2.00/cup	\$2/cup	\$600	90 cups

2) (12 points) Answer EITHER Part A OR Part B.

- A) For the part of Question #1 you did NOT answer, what number would you feel that elasticity would be in the real world? Explain your logic.  
 B) It is possible for the income elasticity of demand to give very different results depending upon the person. Give an example of a product which might be inferior for one person, but a luxury to another person. Explain how it can fit both categories.

3) (12 points) Answer EITHER Part A OR Part B.

- A) What is the equation for the equi-marginal principle? Explain why it should hold.  
 B) We don't move the indifference curves in this class. What would move them? Explain your logic.

4) (18 points) Answer EITHER part A OR Part B.

- A) Suppose the demand curve for bananas ( $Q_B$ ) as a function of income ( $I$ ), the price of bananas ( $P_B$ ), and the price of oranges ( $P_O$ ) is given by  $Q_B = 3 + 0.1*I - 2*P_B - 0.2*P_O$ . Further, assume that your income is \$100, the price of bananas is \$1/lb, and the price of oranges is \$5/lb. Calculate the quantity bought and ONE of the elasticities of demand. Show all work. Briefly explain what you did. What information does that elasticity tell you about the demand for the good? Briefly explain your logic.  
 B) Suppose the own-price elasticity of demand for salt is  $-2$  and the selling price is \$5/lb. What information does that elasticity tell you about the demand of the good? Briefly explain your logic. Calculate the marginal revenue. Show all work. Briefly explain what you did. If you were to lower your price by 5%, how much more would you expect your sales to increase?

5) (30 points) Answer EITHER Part A OR Part B.

- A) Draw an indifference curve/budget constraint diagram for hammers and carpets where the price of a carpet is two times the price of a hammer. Explain how you know your diagram shows that two-to-one price ratio. Draw a decrease in the price of carpets. Draw an additional budget constraint to enable you to find the income and substitution effects. Explain why the curve(s) moved as drawn. Explain how you found the income and substitution effects. Given your diagram, are either carpets or hammers inferior? Explain your logic.  
 B) Draw an indifference curve/budget constraint diagram for computers and roses. Have the initial budget constraint represent an income of \$72, a price of a computer is of \$12/computer, and a price of rose of \$8/rose. Draw an additional budget constraint for a price of a computer of \$4/computer. Explain how you got the two constraints. Draw an additional budget constraint to enable you to find the income and substitution effects. Explain why the curve(s) moved as drawn. Explain how you found the income and substitution effects. Given your diagram, are computers and roses substitutes or complements? Explain your logic.