

Last Name: _____

First Name: _____

Student Number: _____

Economics 203: Intermediate Microeconomics I

Practice Midterm 1

Instructor: Paul Schure¹

Instructions:

- Make sure you write your name and student number at the top of this page.
- You have 50 minutes to complete the actual exam. In order to minimize distractions to others, **you are not permitted to leave in the last 10 minutes of the exam.** **THIS EXAM IS LONGER THAN AN ACTUAL EXAM.**
- You should answer all questions.
- Write your answers in the space provided. Use the backside of your exam for scrap paper if you wish, but only information written in the space provided will be considered for grading. You may also tear off the last page of the exam and use it for scrap paper.
- Use your time wisely. If you get stuck on a question move onto the next question and return if time permits.
- There are three sections to the exam:

Section A Consists of five multiple choice questions. Circle 1 (ONE) letter corresponding to the correct answer for each question. Make sure your answer choice is clearly indicated. You will receive five points for a correct answer, and zero for an incorrect answer. It is possible to get part marks if you clearly demonstrate some correct knowledge of the material.

Section B Consists of 2 True/False/Uncertain statements. Make sure to justify your answer.

Section C Consists of two long problems of varying length.

¹ Thanks to Dr Donna Feir for making the questions for this practice MT available.

SECTION A: MULTIPLE CHOICE

Section A: will consist of **FIVE** MC questions. Below are 11 example MC questions

1. If the demand for widgets is inelastic, then when the price of widgets increases, revenues will:
 - a. decrease
 - b. remain the same
 - c. increase**
 - d. increase, unless there are substitutes for widgets
 - e. decrease because of the law of demand holds for widgets

2. Which of the following shifts the supply curve leftward?
 - a. An improvement in technology that decreases the cost of production.
 - b. An increase in the number of suppliers.
 - c. An anticipated drought that will make inputs more expensive.**
 - d. A decrease in the wage rate.

3. Diminishing marginal rate of substitution necessarily implies that the marginal rate of substitution
 - a. falls as one travels down (eastward) along an indifference curve.**
 - b. falls as one travels up (westward) along an indifference curve.
 - c. stays the same as one travels up (westward) along an indifference curve.
 - d. decreases as the quantities of both goods increase.
 - e. we get less utility when we have higher incomes

4. Perfect complements will have indifference curves that are
 - a. concave to the origin.
 - b. vertical.
 - c. straight lines.
 - d. L-shaped.**
 - e. horizontal.

5. A consumer's MRS of y for x equals 2. Y is on the vertical axis and X is on the horizontal axis. Which of the following statements is TRUE?
- He will be strictly better off if he purchases an additional unit of x if the price ratio is less than 2.
 - He should purchase an additional unit of x as long as the price ratio is greater than 2.
 - He is willing to give up 2 x for one additional y .
- I only**
 - II only
 - III only
 - II and III only
 - I and III only
6. Uma and Valerie live in the same town where they both face the same prices. Uma has preferences that can be represented by the utility function $U(X,Y)=X+Y$ Valerie has preferences that can be represented by the utility function $V(X,Y)=3X+3Y$. Which of the following statement is true?
- Valerie gets greater satisfaction from her consumption than Uma
 - The quantity of X purchased by Uma PLUS the quantity of X purchased by Valerie will equal the total quantity of Y they purchase.
 - Valerie and Uma will always purchase the same quantity of X with the same income**
 - A tax on X would have a greater welfare effect on Valerie than on Uma
 - None of the above is true
7. After graduating from high school, Steve had three choices, listed in order of preference: (1) matriculate at our campus, (2) work in a printed circuit board factory, or (3) attend a rival college. His opportunity cost of going to college here includes which of the following?
- the cost of books and supplies at the rival college
 - the income he could have earned at the factory plus the direct cost of attending college here (tuition, textbooks, etc.)**
 - the benefits he could have received from going to the rival college
 - only the tuition and fees paid taking classes here
 - cannot be determined from the given information
8. The income effect is
- in the opposite direction from the substitution effect.
 - always in the same direction as the substitution effect.
 - always greater than the substitution effect.
 - Always less than the substitution effect.
 - could be in the same or in the opposite direction from the substitution effect.**

9. If markets for some addictive drugs are found to have a higher price-elasticity of demand than was often thought, and if many addicts have difficulty holding down steady, well-paying jobs, we might speculate that the most likely reason for the surprising elasticity estimates is that
- a. the substitution effect is smaller than expected.
 - b. the income effect is larger than expected.**
 - c. addictive drugs are inferior goods.
 - d. the income and substitution effects work in opposite directions.
 - e. Addictive drugs are luxury goods.
10. Paul likes two scoops of vanilla ice cream for every chocolate scoop. He gets no extra utility for an additional chocolate scoop if He doesn't have two additional vanilla scoops and no extra utility for extra vanilla scoops without the appropriate amount of chocolate. His utility function can be represented by:
- a. $U(c, v) = c + 2v$
 - b. $U(c, v) = \min\{2c, v\}$**
 - c. $U(c, v) = \min\{c, 2v\}$
 - d. $U(c, v) = 2c + v$
 - e. *All of the above*
11. Assume $U(x, y) = 4(xy)^{0.5} + 10$. What is the Marginal Rate of Substitution of y for x when $x=2$ and $y=4$?
- a. 2**
 - b. $\frac{1}{2}$
 - c. -2
 - d. -1/2

SECTION B: TWO TRUE/FALSE/UNCERTAIN statements. Justify why.

The total effect of a price increase on its demand is smaller than the substitution effect

1. The government puts a price ceiling on the cost of a large pizza. Consumers will lose from this policy.

Uncertain- Assuming the pizza market is perfectly competitive, there will be deadweight loss to society. As part of this deadweight loss there will be less pizza produced and the pizza that is produced so some consumers could have benefited from the existence of more pizza and would have been willing to pay amount producers would have accepted to produce it. However, there is also a transfer from producer's profits to consumers relative to the perfectly competitive outcome (consumers pay a lower price on all units). Whether consumers benefit depends on the size of the transfer and the size of the deadweight loss. <alternatively, present two graphs, one in which the consumers win and one where they lose surplus>

2. All goods, normal or inferior, satisfy the Law of Demand.

<smart start: start by explaining what is the Law of Demand. Only then answer the question.> False – Giffen goods are special inferior goods. These Giffen goods do not satisfy the law of demand.

SECTION C: LONG ANSWER <note: the answers given below often contain are essentially just a partial justification. In your actual answers to test questions make little remarks that indicate which steps you are taking and why.>

3. Rahul and Juan are the only consumers in the market for root beer in a small town in Nova Scotia. Their demand curves are given by $P=30-2Q_i$ and $P=60-2Q_j$, where Q_i and Q_j are the quantities demanded by Rahul and Juan, respectively. What is the market demand curve for root beer in their town?

$$P = 45 - Q^* \text{ for } P \geq 30, \text{ and } P = 60 - 2Q \text{ if } P < 30$$

4. Nadia likes pork Ribs (R) and Chicken wings (C). Her utility function is $U(R, C) = 10R^2C$. Her weekly income is \$90 which she spends exclusively on R and C. The price for a slab of ribs is \$10 and \$5 for a piece chicken. (Answer parts a to f).

- a. State in words and in math Nadia's consumer problem

Nadia want to choose the bundle (R, C) that maximizes her utility subject to her budget constraint.

$$\text{Max}_{R,C} \{10R^2C\} \text{ s.t. } 90 \geq 10R + 5C$$

- b. What is Nadia's optimal bundle?

As the U-function is of the Cobb-Douglas type we know that the ICs are "nice and convex". Hence, the optimum bundle satisfies the slope condition and is also on the budget line.

$$\text{Slope condition: } \frac{MU_R}{MU_C} = \frac{P_R}{P_C} \rightarrow \frac{2C}{R} = 2 \rightarrow R = C$$

$$\text{Budget line: } 90 = 10R + 5C \rightarrow 10R + 5R = 90 \rightarrow 15R = 90 \rightarrow R^* = 6, C^* = 6$$

- c. What is her demand function for ribs?

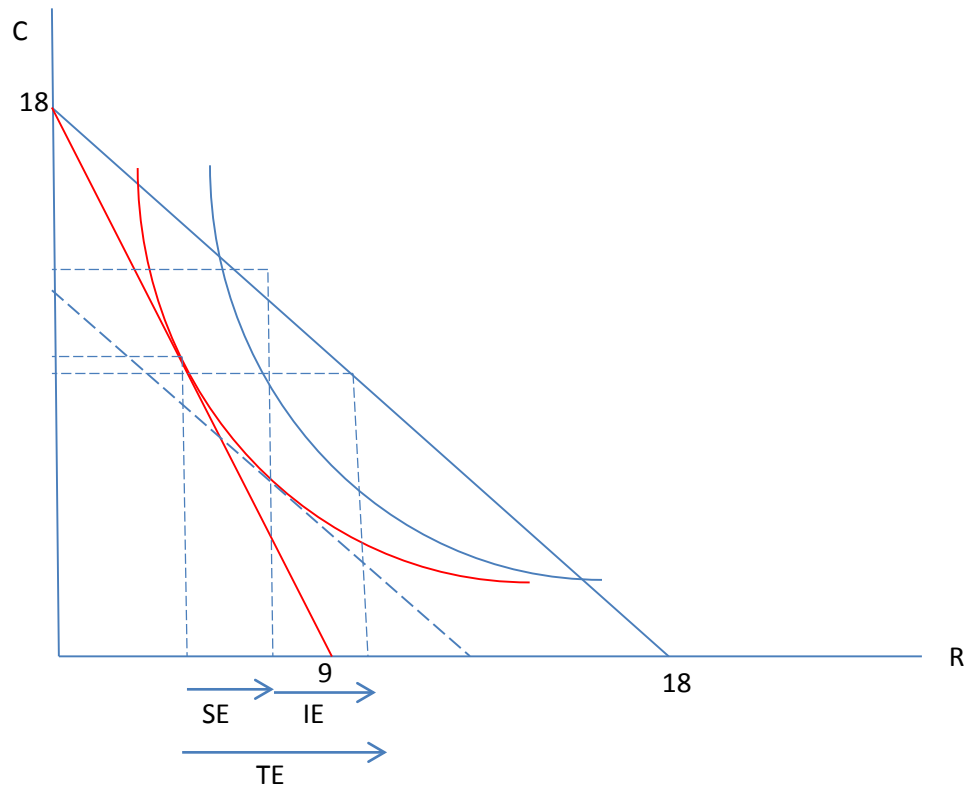
$$\frac{2C}{R} = \frac{P_R}{5} \rightarrow C = \frac{P_R R}{10}$$

$$90 = P_R R + 5 \left(\frac{P_R R}{10} \right) \rightarrow P_R R + \frac{1}{2} P_R R = 90 \rightarrow \frac{3}{2} P_R R = 90 \rightarrow R(P_R) = \frac{60}{P_R}$$

- d. Are ribs a normal or inferior good?

Normal (because demand increases as income increases)

- e. The price of ribs falls to 5\$. Draw the income and substitution effects of this price change graphically. Assume ribs are on the horizontal axis.



- f. What would Nadia's optimal bundle be if her utility function was given by $U = \sqrt{R} + \sqrt{C}$? Assume the price for a slab of ribs is \$10 and \$5 for chicken

$$MRS = \frac{\frac{1}{2}R^{-\frac{1}{2}}}{\frac{1}{2}C^{-\frac{1}{2}}} = \left(\frac{C}{R}\right)^{\frac{1}{2}} = 2 \rightarrow \frac{C}{R} = 4 \rightarrow C = 4R$$

$$90 = 10R + 5(4R) \rightarrow 90 = 30R \rightarrow R^* = 3, C^* = 12$$