Monmouth COLLEGE

- Name: _____
- Date: _____
- Section: _____

ECON 300: Intermediate Price Theory

Practice Final Exam

Fall 2024

INSTRUCTIONS:

- Please read all questions carefully before you begin answering.
- Answer all questions in the spaces provided on the question sheet.
- This quiz consists of 7 pages, including this one. There are a total of 5 problems with a total of 23 subquestions.
- This is a closed-book quiz. Please remove all materials from the top of the desk and take any necessary items from your bags before the exam begins.

This page is intentionally left blank

Problem 1. Definitions

Select FIVE items on the list of items below, and provide a definition of the items that you chose.

- Normal Goods
- Marginal Revenue
- Deadweight Loss
- Perfect Competition
- Nash Equilibrium
- Indifference Curve
- Marginal Rate of Substitution
- Budget Line
- Ordinal Preferences

1.A Item #1: _____

1.B Item #2: _____

1.C Item #3: _____

1.D Item #4: _____

1.E Item #5: _____

Problem 2. True / False

Determine whether the following statements are `TRUE` or `FALSE`. If you conclude that a statement is `TRUE`, no justification is required. However, if you conclude that a statement is `FALSE`, you MUST provide an explanation to justify your answer.

2.A When a Nash equilibrium is achieved, it is guaranteed that the societal welfare is maximized.

2.B When $MRS_{xy} > \frac{P_x}{P_y}$, the consumer must increase their consumption of good y while decreasing their consumption of good x.

2.C If a certain consumer A reports that they derive 100 utility from consuming good x, and another consumer B reports that they derive 200 utility from consuming the same good x, we can conclude that consumer B appreciates good x by exactly 2 times more than consumer A.

2.D If an output market is in a state of monopoly, both the market price and quantity traded will be greater than that of a perfectly competitive market.

2.E When a consumer reports that two goods x and y are perfect substitutes, we should adopt the Leontief (min) function to model the consumer's preferences.

Problem 3. The Utility Maximization Problem

Consider the a consumer participating in a market with two goods: good x and good y. The consumer's preference relation is represented by the following utility function:

$$u(x, y) = 2x^3y$$

The unit price of good x is P_x, and the unit price of good y is P_y, and the consumer's budget is M.

3.A Formally express the consumer's budget constraint.

3.B Derive the consumer's marginal utility of good x and y, respectively.

- $MU_x =$
- $MU_y =$

3.C Assuming that $MU_x = 3y$ and $MU_y = x$, derive the consumer's marginal rate of substitution between goods x and y. From now on until the last question in Problem 3, use this MRS_{xy} whenever you need to use MRS_{xy}.

- $MRS_{xy} =$

3.D Derive the optimal ratio of goods x and y that the consumer should purchase.

3.E Find the consumer's demand function for good x.

Problem 4. The Cost Minimization Problem

Consider a firm that uses two inputs: labor L and capital K. Wages are given as $w = 10$, and rent is given as $r = 5$. It's production technology can be expressed by the following production function:

$$F(L, K) = 10LK$$

4.A Derive the firm's marginal product of labor and capital, respectively.

- $MP_L =$
- $MP_K =$

4.B Assuming that $MP_L = K$ and $MP_K = L$, derive the producer's marginal rate of technical substitution between labor and capital. From now on until the last question in Problem 4, use this $MRTS_{LK}$ whenever you need to use $MRTS_{LK}$.

- $MRTS_{LK} =$

4.C Derive the optimal ratio of labor and capital that the producer should employ.

4.D Suppose that the producer's target level of output is $Q = 2,000$. What is the optimal units of labor and capital to employ, and what is the cost associated with this level of production?

- $L^* =$
- $K^* =$
- $TC(2,000) =$

Problem 5. Market Structures

Consider a monopoly producer of some good in an output market. The market demand for good is given by the following inverse demand function:

$$P = 100 - 4Q$$

Also, assume that the producer's total cost function is given as:

$$TC(Q) = 35 - 2Q + Q^2$$

5.A Derive the producer's total revenue function, $TR(Q)$.

- $TR(Q) =$

5.B Derive the producer's marginal revenue function, $MR(Q)$.

- $MR(Q) =$

5.C Derive the producer's marginal cost function, $MC(Q)$.

- $MC(Q) =$

5.D Find the producer's profit maximizing quantity and price.

- $Q^M =$
- $P^M =$

- Original Score: _____
- Recovered Score: _____
- Original Date: _____
- Recovered Date: _____