CONCORDIA COLLEGE
MOORHEAD, MINNESOTA

- Name: _____
- Date: _____

BUSN 301: Intermediate Microeconomic Theory

Practice Final Exam

Spring 2026

INSTRUCTIONS:

- This practice final exam is designed to help you review your understanding of the course material.
- The practice final exam is not graded, and its results does not affect your final course grade.

Problem 1. Consumer Theory

Suppose that a consumer has preferences over two goods x_1 and x_2, represented by the utility function:

$$u(x_1, x_2) = x_1^{\frac{1}{2}} x_2^{\frac{1}{2}}$$

The prices of the two goods are $p_1 = 1$ and $p_2 = 2$, respectively, and the consumer's income is $m = 20$.

1.A. Consider the bundle $(x_1, x_2) = (8, 6)$. Is this bundle affordable? Show your work.

1.B. Compute the marginal rate of substitution at the bundle $(x_1, x_2) = (8, 6)$.

1.C. Is the bundle $(x_1, x_2) = (8, 6)$ optimal for the consumer? Explain briefly using the first-order condition.

Problem 1. Consumer Theory (continued)

1.D. If the bundle is not optimal, describe how the consumer would adjust consumption. Should they consume more of good 1 or good 2?

1.E. Find the consumer's optimal bundle (x_1^*, x_2^*).

1.F. Suppose that the price of good 2 decreases from $p_2 = 2$ to $p_2 = 1$, holding other prices and income fixed.

- How does the optimal consumption of good 2 change?
- Illustrate this change in a graph with budget constraints and indifference curves. A rough but clearly labeled sketch is sufficient. Be sure to label both budget constraints, the optimal bundles, the corresponding indifference curves, and the axes.

Problem 2. Producer Theory

Suppose that a firm produces output q using two inputs x_1 and x_2, according to the production function:

$$f(x_1, x_2) = 3x_1 x_2^{\frac{1}{2}}$$

The prices of the two inputs are $w_1 = 2$ and $w_2 = 1$, respectively. Suppose that the firm wishes to produce $\bar{q} = 24$.

2.A. Compute the marginal product of each factor of production.

2.B. Consider the input bundle $(x_1, x_2) = (4, 4)$. Does this bundle produce $\bar{q} = 24$? Show your work.

2.C. Compute the marginal rate of technical substitution of input 1 for input 2.

Problem 2. Producer Theory (continued)

2.D. Evaluate the MRTS at the bundle $(4, 4)$. Is this bundle cost-minimizing? Explain briefly using the first-order condition.

2.E. If the bundle is not cost-minimizing, describe how the firm should adjust its input use.

2.F. Find the firm's cost-minimizing input bundle (x_1^*, x_2^*)

2.G. Suppose that the price of input 1 increases, holding the price of input 2 fixed. How would the firm's optimal input mix change? Explain briefly.

Problem 3. Cost and Firm Behavior

Suppose that a firm has the following total cost function:

$$c(y) = y^2 + 2y + 9$$

3.A. Compute the firm's marginal cost (MC), average variable cost (AVC), and average total cost (ATC) functions.

3.B. At what level of output is the firm's average total cost (ATC) minimized?

3.C. Suppose that the market price of the output is given as $p = 10$. Without computing profit immediately, determine whether the firm is earning positive profit, zero profit, or negative profit. Explain briefly.

3.D. At $p = 10$, solve for the firm's profit-maximizing output level.

Problem 3. Cost and Firm Behavior (continued)

3.E. At price $p = 10$, compute the firm's profit.

3.F. Suppose that the market price decreased to $p = 3$. Should the firm continue producing or shut down in the short run? Explain briefly.

3.G. Suppose firms in this market are free to enter and exit. If firms like this one are earning positive profit in the short run, what would you expect to happen over time in the long run? Briefly explain.

3.H. Comparing the short-run and long-run supply curves, what characteristics would you expect to observe?

Problem 4. Market Equilibrium and Welfare

Suppose that the market demand and supply curves for a good are given by:

$$D(p) = 30 - p$$
$$S(p) = p - 6$$

4.A. Find the competitive equilibrium price and quantity.

4.B. Suppose the government introduces a per-unit subsidy of $s = 4$. Write the equation that relates the price paid by consumers, the price received by sellers, and the subsidy s.

4.C. Find the new equilibrium quantity, the price paid by consumers, and the price received by sellers after the subsidy.

Problem 4. Market Equilibrium and Welfare (continued)

4.D. Illustrate the market before and after the subsidy in a graph. A rough but clearly labeled sketch is sufficient. Label the original equilibrium, the new equilibrium, the price paid by consumers, the price received by sellers, and the subsidy wedge.

4.E. Compute the deadweight loss created by the subsidy, as well as consumer surplus, producer surplus, and government expenditure.

Problem 5. General Equilibrium

Suppose that there are two agents A and B, and two goods, 1 and 2, where the total endowment is fixed at $(\omega^1, \omega^2) = (100, 100)$. Each agent's utility functions are given as:

$$u_A(x_A^1, x_A^2) = (x_A^1)^\alpha (x_A^2)^{1-\alpha}, \qquad 0 < \alpha < 1$$
$$u_B(x_B^1, x_B^2) = (x_B^1)^\beta (x_B^2)^{1-\beta}, \qquad 0 < \beta < 1$$

The economy's initial endowment is given as $(\omega_A^1, \omega_A^2, \omega_B^1, \omega_B^2) = (50, 50, 50, 50)$.

5.A. Write down the marginal rate of substitution (MRS) for each consumer.

5.B. Suppose that $\alpha \neq \beta$. Starting from the initial endowment, would you expect gains from trade to exist? Explain briefly using marginal rates of substitution.

5.C. Explain how differences in preferences (i.e., $\alpha \neq \beta$) affect the direction of trade between the two consumers.

Problem 5. General Equilibrium (continued)

5.D. Suppose the relative price of good 1 is $p_1/p_2 = p$. Describe how each consumer's demand for good 1 depends on p and their preference parameter (α or β).

5.E. In equilibrium, what condition must hold between the two consumers' marginal rates of substitution and the price ratio? Explain briefly.

5.F. Explain how prices adjust if there is excess demand for good 1.

5.G. Would you expect the equilibrium allocation to depend on the initial distribution of endowments? Briefly explain your reasoning.