HE1001 Microeconomics

Final Practice 2 – Problems

Academic Year 2025/2026, Semester 1

Quantitative Research Society @NTU

November 17, 2025

Instructions:

- This practice examination contains **3 questions** worth a total of **100 marks**.
- Answer **all questions**.
- Show all working clearly. Partial credit may be awarded for correct methods.
- Write your answers in the spaces provided or on additional paper as needed.
- Calculators are permitted.
- Time allocation: approximately 2 hours.

Question 1: Multiple Choice Questions [30 marks]

Select the correct option for each of the following questions. Each question is worth 5 marks.

1.1 [Adapted from Tutorial 1, Question 1] **[5 marks]**

Classify the following topics as relating to microeconomics or macroeconomics:

1. A family's decision about how much income to save
2. The impact of higher national saving on economic growth
3. The relationship between inflation and changes in the quantity of money
4. The effect of government regulations on auto emission

(A) 1. Micro, 2. Macro, 3. Macro, 4. Micro

(B) 1. Macro, 2. Micro, 3. Macro, 4. Micro

(C) 1. Micro, 2. Micro, 3. Macro, 4. Macro

(D) 1. Macro, 2. Macro, 3. Micro, 4. Micro

1.2 [Adapted from Tutorial 2, Question 4] **[5 marks]**

Elasticity measures:

(A) the slope of a demand curve.

(B) the inverse of the slope of a demand curve.

(C) the percentage change in one variable in response to a one percent increase in another variable.

(D) sensitivity of price to a change in quantity.

1.3 [Adapted from Tutorial 3, Question 5] **[5 marks]**

The assumption that preferences are complete means:

(A) A consumer will spend her entire income.

(B) Transitivity alone is sufficient.

(C) Some market baskets cannot be compared.

(D) The consumer can always compare any two baskets or be indifferent.

1.4 [Adapted from Tutorial 5, Question 5] **[5 marks]**

The slope of the total product curve is the:

(A) Average product.

(B) Slope of a line from the origin to the point.

(C) Marginal product.

(D) Marginal rate of technical substitution.

1.5 [Adapted from Tutorial 7, Question 4] **[5 marks]**

Which of the following is a key assumption of a perfectly competitive market?

(A) Firms can influence market price.

(B) Commodities have few sellers.

(C) It is difficult for new sellers to enter the market.

(D) Each seller has a very small share of the market.

1.6 [Adapted from Tutorial 9, Question 5] **[5 marks]**

Which is true for a monopoly at output where $P = MC$?

(A) Monopoly maximizing profit

(B) Should increase Q

(C) Should decrease Q

(D) Profit positive

Question 2: Multiple Choice Questions with Justification [30 marks]

Select the correct option and provide a brief justification for your answer. Each question is worth 10 marks (5 marks for correct answer, 5 marks for justification).

2.1 [Adapted from Tutorial 2, Question 6] **[10 marks]**

The cross-price elasticity of demand for peanut butter with respect to the price of jelly is -0.3. If the price of jelly declines by 15%, what is the expected percentage change in the quantity demanded of peanut butter?

(A) +15%

(B) +45%

(C) +4.5%

(D) −4.5%

Justification:

2.2 [Adapted from Tutorial 4, Question 5] **[10 marks]**

A consumer chooses between bubble tea (good X on the x-axis) and fried chicken (good Y on the y-axis). At the current tangency bundle, all income is spent and $\text{MRS}_{X,Y} = MU_X/MU_Y$ is greater than the price ratio p_X/p_Y. To increase utility, the consumer should:

(A) Consume more bubble tea and less fried chicken.

(B) Consume less bubble tea and more fried chicken.

(C) Consume more of both bubble tea and fried chicken.

(D) Stay at the same bundle, since utility is already maximized.

Justification:

2.3 [Adapted from Tutorial 6, Question 1] **[10 marks]**

The production function for hamburgers is $q = 0.1X + 0.1Y$, where X is Canadian ground beef and Y is U.S. ground beef (in pounds). U.S. ground beef is on the vertical axis and Canadian ground beef is on the horizontal axis. Which isoquant diagram best represents this production technology?

(A) Diagram A (L-shaped isoquants, perfect complements)

(B) Diagram B (Convex isoquants, imperfect substitutes)

(C) Diagram C (Linear isoquants, perfect substitutes)

(D) Diagram D (Concave isoquants, increasing MRS)

Justification:

Question 3: Structured Problems [40 marks]

Answer all parts of each question. Show all working clearly.

3.1 [Adapted from Tutorial 7, Question 2] **[13 marks]**

The market demand for KP-7 carpet is $P = 40 - 0.25Q$, where P is price (\$/yard) and Q is quantity (yards per month). Market supply is $P = 5 + 0.05Q$. A representative firm in this perfectly competitive market has total cost $C(q) = 100 - 20q + 2q^2$, where q is the firm's output.

(a) Find the market equilibrium price and quantity. [4 marks]

(b) For the individual firm, find the profit-maximizing output q^*. [4 marks]

(c) Compute the firm's profit at this output. [5 marks]

3.2 [Adapted from Tutorial 9, Question 1] **[14 marks]**

A monopolist faces demand $Q = 100 - 2P$ and cost $TC = 5Q + Q^2$.

(a) Derive the inverse demand function and the marginal revenue function. [3 marks]

(b) Find the profit-maximizing output and price. [4 marks]

(c) Compute consumer surplus (CS), producer surplus (PS), and deadweight loss (DWL) under monopoly pricing, comparing to the competitive outcome. [7 marks]

3.3 [Adapted from Tutorial 4, Question 3] **[13 marks]**

Janice consumes two goods, X and Y, with utility $U(X, Y) = 2X^{0.4}Y^{0.6}$. Prices are $P_X = 25$ and $P_Y = 50$, and income is $I = 750$.

(a) Write Janice's budget constraint. [2 marks]

(b) Find the utility-maximizing quantities X^* and Y^*. [5 marks]

(c) Derive Janice's individual demand function for good X (taking $P_Y = 50$ and $I = 750$ as given). [3 marks]

(d) Suppose Mary and Jennifer have the same demand function as Janice. Derive the market demand for X. [3 marks]

END OF EXAMINATION