

**Problem Set of Final Exam
Microeconomics 2
Undergraduate Program in Economics**

Course : Microeconomics 2 (Advanced Microeconomics)
Instructor : Teguh Dartanto
Time : 180 Minutes

There are four problem sets.

- The first set is for AACSB's assessment. (Closed book and note). (30 points)
- The second, third and fourth sets are freely to use a cheating sheet. (75 points)

Note: Answer the AACSB problem set in the separated sheet.

Cheating Sheet and New Answer Sheet would be distributed after student collected their AACSB assessment.

1. **AACSB Problem Set [30 point]** a firm has the following production technology/function:

$$q = \frac{aZ_1 Z_2^{0.5}}{b}$$

where Z_1 and Z_2 are the input of good-1 and good-2, respectively; w_1 and w_2 are the input price of good-1 and good-2, respectively; a is the technology and b is the corruption index (higher value of b means higher corruption). Both a and b are the positive number. Answer the following question!

- a. Find the conditional input demand function! (8 points)
- b. Find the cost function! (7 points)
- c. If Z_1 is labor and Z_2 is capital, calculate the impact of increasing in technology (a) on the demand of labor (Z_1) and the impact of increasing in corruption (b) on the cost of production? (8 points)
- d. Explain concisely the economic analysis and insight of your findings in 1.c! (7 points)

2. **[30 point] answer the following questions!**

- a. Explain the concept of *increasing return to scale (IRTS)* of production function and what is the implication of IRTS on the average and marginal cost! Why the firm who has IRTS production technology will be a champion in the industry? What the source of IRTS technology? (6 points)
- b. Find the elasticity of substitution and explain the meaning of this elasticity of the following production function: (8 points)

$$q = K^{0.5} + L^{0.5}$$

- c. In the general equilibrium theory, why do consumer and producer interact each other to determine the equilibrium? using the Edgeworth box explain that voluntary exchange can improve the welfare of society! Explain the concept of Feasible Allocation, Pareto Optimal allocation, Core Allocation and Competitive Allocation! (8 points)
- d. If the producer's production function is as below (8 points):
 - e. $f(Z_1, Z_2) = \max(Z_1, Z_2) + \min(Z_1, Z_2)$
where w_1 is a price of input-1 and w_2 is a price of input-2, then find some of possible input demand function, supply function and profit function!

3. **[20 point]** a firm has the following production technology/function:

$$q(Z_1, Z_2) = \sqrt{aZ_1^2 + bZ_2^2}$$

where Z_1 is the input of good-1, Z_2 is the input of good-2, w_1 and w_2 are the input price of good-1 and good-2 respectively and P is a price of product.

- a. Find the input demand function! (5 points)

- b. Find the supply function! (5 points)
- c. Find the profit function! (5 points)
- d. Find the relationship between the price of product (P) and the price of input (w_1) and the supply function and the profit function! (5 points)

4. [25 point] Consider the pure exchange economy $E = (R_+^2, U_1, U_2, w_1, w_2)$ in which

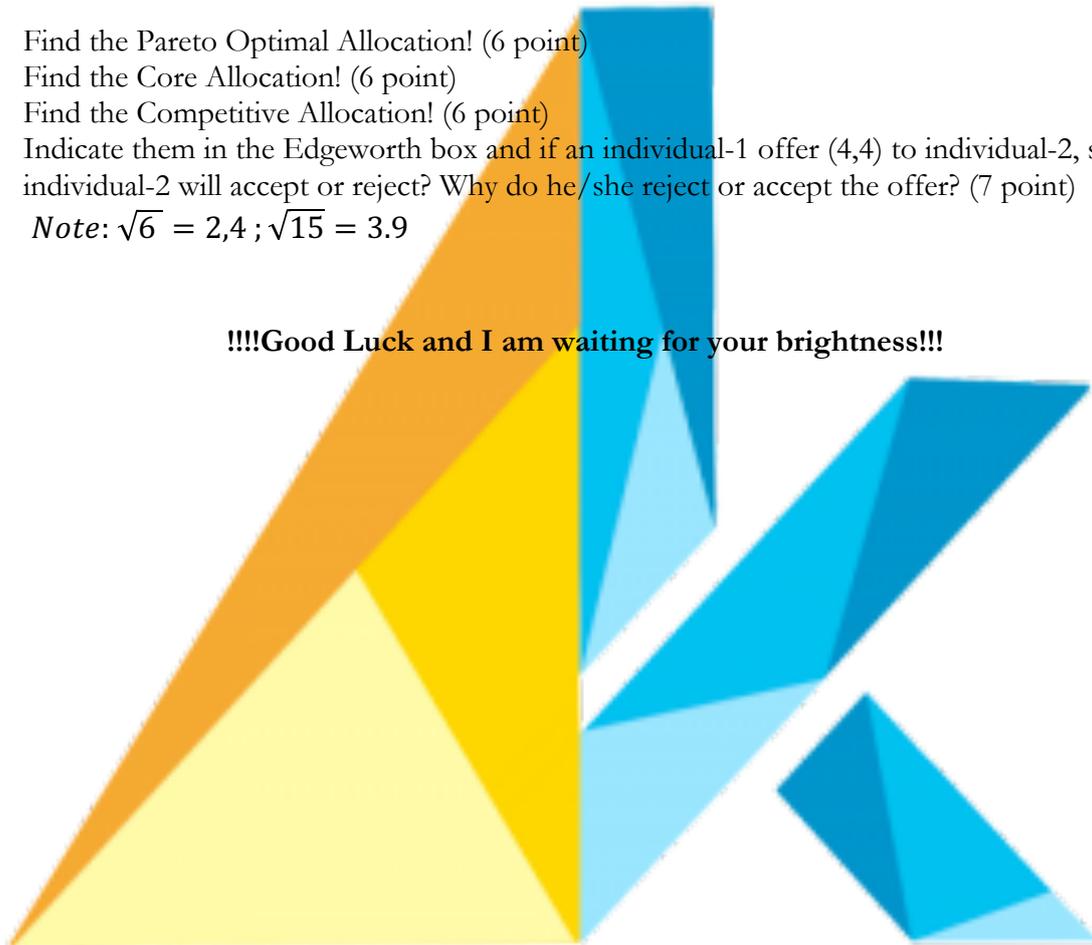
$$w_1 = (3,4); U_1(x_1, y_1) = (X_1 - 1)^{1/2}(Y_1 + 1)^{1/2}$$

$$w_2 = (3,5); U_2(x_2, y_2) = (X_2 + 1)^{1/2}(Y_2 - 1)^{1/2}$$

- a. Find the Pareto Optimal Allocation! (6 point)
- b. Find the Core Allocation! (6 point)
- c. Find the Competitive Allocation! (6 point)
- d. Indicate them in the Edgeworth box and if an individual-1 offer (4,4) to individual-2, should individual-2 will accept or reject? Why do he/she reject or accept the offer? (7 point)

Note: $\sqrt{6} = 2,4$; $\sqrt{15} = 3.9$

!!!!Good Luck and I am waiting for your brightness!!!



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