



Boğaziçi University Department of Economics

Dış Transfer Sınavı

3. Sınıf

*STUDENT'S NAME:* \_\_\_\_\_

*I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.*

*STUDENT'S SIGNATURE:* \_\_\_\_\_

- 1. Please check that you have 7 essay questions. You have 90 minutes to complete the exam.*
- 2. GOOD LUCK**

*1:* \_\_\_\_\_

*2:* \_\_\_\_\_

*3:* \_\_\_\_\_

*Total:* \_\_\_\_\_

1. **(15 points)** Consider a two-good world of X and Y. Y is a normal good in the sense that more Y is better to less Y. However, Ali gets satiated for good X. That is to say, after he reaches a certain amount of X (call it  $X_m$ ), he does not get any additional utility from X. Sketch some of his indifference curves. DRAW CLEARLY please.

2. **(20 points)** In a two good-two person exchange economy, the utility function of each individual is given as:

$$U_1(x, y) = y \quad \text{and} \quad U_2(x, y) = 2x + y.$$

Initially individual 1 is endowed with 2 units of good x and 3 units of good y. On the other hand, individual 2 is endowed with 4 units of good x and 1 unit of good y.

- a. Show the indifference curves and the initial endowment point on an appropriate Edgeworth box.
- b. Show on the same graph the Pareto optimal allocation point(s) in this economy.

3. **(15 points)** An economy has government purchases of 1000. Desired national saving and desired investment are given by

$$S^d = 200 + 5000r + 0.10Y - 0.20G$$

$$I^d = 1000 - 4000r$$

The full-employment level of output equals 5000. What is the real interest rate that clears the goods market? What are the levels of desired national saving and desired investment in the equilibrium?

4. **(20 points)** a) Assume that you are at time  $t$  and inflation rate at time  $t$  is zero. At time  $t$ , the Central Bank is expected to increase money supply at time  $(t+3)$ , analyze the effects of this expectation on (i) price level, (ii) inflation, (iii) nominal exchange rate and (iv) real exchange rate from time  $t$  to time  $t+5$ . Please draw your graphs for each of them.

b) Now, assume that at time  $t+3$ , the Central Bank does not actually increase the money supply. In other words, expectations are not fulfilled at time  $t+3$ . Again analyze the effects of this new scenario on (i) price level, (ii) inflation, (iii) nominal exchange rate and (iv) real exchange rate from time  $t$  to time  $t+5$ . Please draw your graphs for each of them.

**5. (10 points)** For the function given below find the critical points and classify them as local max, local min, saddle point, or “can’t tell”:

$$f(x, y) = x^3 - y^3 + 9xy$$

**6. (10 points)** Evaluate the followings:

(a)  $\int \left( 3e^x + \frac{4}{x} \right) dx \quad (x > 0)$

(b)  $\int_2^4 x^2 \left( \frac{1}{3}x^3 + 1 \right) dx$

7. (10 points) Find the total differential for each of the following functions:

(a)  $U = -5x^3 - 12xy - 6y^5$

(b)  $U = \frac{9y^3}{x-y}$