

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

THIRD YEAR EXAMINATION FOR THE DEGREE
OF SCIENCE IN ECONOMICS & STATISTICS

ECON 313: ADVANCED MICROECONOMIC THEORY I

STREAM: *BSC (ECON STAT)*

TIME: *2 HRS*

DAY: *FRIDAY [11.30 A.M-13.30 P.M]*

DATE: *06/02/2026*

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

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INSTRUCTIONS:

Answer question ONE and any other TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Using a well-labeled diagram demonstrate the deadweight loss of monopoly. **(6 marks)**
- b) Consider the following CES production function $Q = [0.5L^{-2} + 0.5K^{-2}]^{\frac{-1}{2}}$ where Q is output, K and L are input capital and labor respectively
 - i) Interpret the parameters 0.5, -2 and $-\frac{1}{2}$. **(2 marks)**
 - ii) Compute the elasticity of substitution for the above function. **(6 marks)**
- c) Discuss five properties of the profit function. **(10 marks)**
- d) Explain three properties of indirect utility functions. **(6 marks)**

QUESTION TWO (20 MARKS)

- a) Suppose a firm in a perfectly competitive market has cost function given as $C = 50Q - \frac{1}{4}Q^2$. Determine the firm's supply function. **(5 marks)**
- b) Discuss five properties of the production function. **(10 marks)**
- c) The convexity condition of indifference curve ensures a unique solution (interior solution) for the consumer. However, there exists a special case where interior solution is not possible. Discuss these cases. **(5 marks)**

QUESTION THREE (20 MARKS)

- a) Given the indirect utility function $V(P_i, M) = \frac{M^2}{4P_1P_2}$. Using Roy's identity recover the ordinary demand functions. **(10 marks)**
- b) Consider a production function given as $Q = AL^\alpha K^\beta$; prove that α and β are indeed elasticities. **(10 marks)**

QUESTION FOUR (20 MARKS)

- a) Assume a cost function is given as $C = kyw^\alpha r^{1-\alpha}$. Determine the underlying production function using the duality concept. **(10 marks)**
- b) Discuss the features/characteristics of oligopoly market. **(10 marks)**

QUESTION FIVE (20 MARKS)

a) The consumer seeks to maximize utility subject to the budget constraint

$$\begin{aligned} \text{Max } U &= x_1 x_2 \\ \text{s.t. } M &= P_1 x_1 + P_2 x_2 \end{aligned}$$

Derive the ordinary/Marshallian demand functions and show that their slopes are negative.
(10 marks)

b) Define the following concepts

- | | |
|-------------------------------|------------------|
| i) Shepherd's lemma | (2 marks) |
| ii) Hicksian demand functions | (2 marks) |
| iii) Hotellings lemma | (2 marks) |
| iv) Net-put vector | (2 marks) |
| v) Slutsky's compensation | (2 marks) |