

BECC 102

**BACHELOR OF ARTS
ECONOMICS (HONOURS)
(BAECH)**

ASSIGNMENT

2024–25

COURSE CODE: BECC 102

Mathematical Methods in Economics-I



**SCHOOL OF SOCIAL SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI 110068**

BECC 102 Mathematical Methods in Economics-I

Tutor Marked Assignment

Dear Student,

As we have informed you in the Programme Guide, evaluation at IGNOU consists of two parts: i) continuous evaluation through assignments, and ii) term-end examination. In the final result, assignments of a course carry 30% weightage while 70% weightage is given for term-end examination.

You will have to do three Tutor Marked Assignments (TMA) for a six-credit course, and two TMAs for a four credit course. This Assignment booklet has TMAs for the core course **BECC- 102 Mathematical Methods in Economics- I** which is a six credit course. The booklet therefore has one TMA whose total marks add up to 100 and carry a weight of 30 % in overall evaluation.

Before you attempt the assignments, please read the instructions carefully provided in the Programme Guide. It is important that you write the answers to all the TMA questions in your own words. Your answers should be within the approximate range of the word-limit set for a particular section. Remember, writing answers to assignment questions will improve your writing skills and prepare you for the term-end examination.

As mentioned in the Programme Guide, you need to submit all the assignments within the stipulated time for being eligible to appear in the term-end examination.

Submission of the completed assignments:

Admission batch	Last date of submission	Place of submission
For the students enrolled in July 2024	31st March 2025	Student's study center
For the students enrolled in January 2025	31 st October 2025	Student's study center

You must obtain a receipt from the Study Centre for the assignments submitted and retain it. If possible, keep a photocopy of the assignments with you.

The Study Centre will have to return the assignments to you after they are evaluated. Please insist on this. The Study Centre has to send the marks to the Student Evaluation Division at IGNOU, New Delhi.

We expect you to answer each question as per guidelines for each category as mentioned in the assignment. You will find it useful to keep the following points in mind:

1) **Planning:** Read the assignments carefully, go through the Units on which they are based. Make some points regarding each question and then rearrange them in a logical order.

2) **Organisation:** Be a little selective and analytic before drawing up a rough outline of your answer. Give adequate attention to your introduction and conclusion.

Make sure that your answer:

a) Is logical and coherent;

b) Has clear connections between sentences and paragraphs, and

c) Is written correctly giving adequate consideration to your expression, style and presentation.

3) **Presentation:** Once you are satisfied with your answer, you can write down the final version for submission, writing each answer neatly and underlining the points you wish to emphasise.

BECC 102: MATHEMATICAL METHODS IN ECONOMICS

Tutor Marked Assignments

Course Code: BECC 102

Assignment Code: ASST BECC 102/TMA/ July 2024 and January 2025

Total Marks: 100

Section A

Answer the following Long Category questions in about 500 words each. Each question carries 20 marks. Word limit will not apply in the case of numerical questions.

2 x 20 = 40

1. A monopolist faces the demand curve $Q = 60 - P/2$. The cost function is $C = Q^2$. Find the output that maximises this monopolist's profits. What are the prices at profits and that output? Find the elasticity of demand at the profit maximising output.

2. Given the demand function $P_D = 27 - Q^2$ and supply function $P_S = 2Q + 3$. Assuming perfect competition, find (i) the consumers' surplus, (ii) the producers' surplus.

Section B

Answer the following Middle Category questions in about 250 words each. Each question carries 10 marks. Word limit will not apply in the case of numerical questions.

3 x 10 = 30

3. Given the aggregate consumption function $C = 0.9Y + 100$ (where C is aggregate consumption and Y is aggregate income)

(a) Find the marginal propensity to consume (MPC) and average propensity to consume (APC)

(b) Find the elasticity of consumption with respect to income, and show that it equals MPC/APC

4 Let $X = \{1, 3, 5\}$ and $Y = \{2, 4, 6\}$

Find, $X \cup Y$ and the Cartesian Product of X and Y .

5. Create a truth table for

(a) $A \leftrightarrow B$

(b) The converse of 'A implies B'.

Section C

Answer the following Short Category questions in about 100 words each

5 X 6 = 30

6. What is a point of inflexion? Does $f(x) = x^3$ have a point of inflexion at $x = 0$?

7. Find the integral of

$$(y^2 - 1) dx - 2dy = 0$$

8. Evaluate the Limits of

$$\frac{X^2 - X - 2}{X(X - 2)} \text{ As } X \rightarrow 2.$$

9. If the demand function for a good is $Q=140 - 5P$, what is the price elasticity of demand at $P = 15$ rupees?

10. How long will it take a given sum of money (Say in Rupees) to increase 4 times its present value when compounded half yearly at 7% rate of interest?