

MEC

**MASTER OF ARTS
(ECONOMICS)**

ASSIGNMENTS 2025-26

First Year Courses

**(For the students who took admission prior to January 2023 or in
January 2023)**



**SCHOOL OF SOCIAL SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY MAIDAN
GARHI-110068**

Master of Arts (Economics)

(TMA)

(2025-26)

Dear Student,

As explained in the programme guide for MEC, assignments carry 30 percent weightage in a course and it is mandatory that you have to secure atleast 40 percent marks in assignments to complete a course successfully. Note that you have to submit the assignments before appearing in Term End Examination of a course.

Before attempting the assignments, please read the instructions provided in the programme guide sent to you separately. In this booklet, we have included the assignments for all the courses pertaining to the **First year**. In each course there is a Tutor Marked Assignment (TMA). You have to do the assignment for those courses for which you have registered. Do remember that you have to prepare and submit the assignments separately for each course. Make sure that you submit the assignments well in time for those courses in which you plan to appear in the Term End Examination.

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.

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 to the **Coordinator of your study centre**.

The assignments should be submitted to the Coordinator of your Study Centre:

1. **By 31st March 2026**, for the students willing to appear in June 2026 term-end examination.
2. **By 30th September 2026**, for the students willing to appear in December 2026 term end examination.

You must obtain a receipt from the Study Centre for the assignments submitted and retain it. If possible, keep a xerox copy 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 emphasize. Make sure that the answer is within the stipulated word limit.

MEC 103: QUANTITATIVE METHODS
Tutor Marked Assignment

Course Code: MEC-103
Assignment Code: Asst /TMA /2025-26
Total Marks: 100

SECTION A

Answer the following questions. Each question carries 20 marks

$2 \times 20 = 40$

- 1) (a) Explain the theorem of second order optimum.
(b) Consider the following utility maximization problem, in which the utility function of the consumer is given by $U(x,y)=x^{0.7}y^{0.3}$. The consumer income is $I=200$ and $p_x=3$ and $p_y=2$. Find the utility maximizing x and y when the budget constraint of the consumer may or may not bind. (Apply Kuhn-Tucker method)
- 2) Given the input matrix and the final demand vector:

$$A = \begin{bmatrix} 0.10 & 0.15 & 0.12 \\ 0.20 & 0 & 0.30 \\ 0.25 & 0.40 & 0.20 \end{bmatrix} d = \begin{bmatrix} 100 \\ 200 \\ 300 \end{bmatrix}$$

- a) Explain the economic meaning of the elements 0.30,0 and 200
- b) Explain the economic meaning of (if any) of the third column sum
- c) Explain the economic meaning of (if any) of the third row sum
- d) Write out the specific input-output matrix equation for this model
- e) Find the solution output levels of the three industries using Cramer's rule.

SECTION B

Answer the following questions. Each question carries 12 marks.

$6 \times 12 = 60$

- 3) Using Simplex method solve the problem:
Maximise $z = 4x + 8y + 2k$

Subject to:

$$\begin{aligned}\frac{1}{2}x + 2y + 4k &\geq 4 \\ x + y - 2k &\geq 6 \\ x \geq 0, y \geq 0, k &\geq 0\end{aligned}$$

Also, minimize the same for z

- 4) a.) Ram and Rahim play for a prize of Rs. 99. The prize is to be won by the player who first throws a 3 with a single die. Ram throws first and if he fails Rahim throws it and if Rahim fails Ram throws it again and this process continues. Find their respective expectations.

b.) If $P(A \cap B \cap C) = 0$, show that $P[(A \cup B)/C] = P(A/C) + P(B/C)$

- 5) a) Discuss the nature of the following time path: $y_t = 3^t + 1$

b) Solve equation: $y_{t+1} - \frac{1}{3}y_t = 6$ for $y_0 = 1$

- 6) Examine the following functions for maxima and minima:

a) $z = -x^2 + xy - y^2 + x + 5y$

b) $y = x^3 - 2x^2 + x - 6$

- 7) Write short notes on following:

- Maximin or Minimax Principle
- Riemann Sum
- Russell's Paradox
- Chi square test of goodness of fit