MAEC

MASTER OF ARTS

(ECONOMICS)

ASSIGNMENTS 2025-26

First Semester Courses

(For July 2025 and January 2026 Sessions)

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 MAEC, assignments carry 30 per cent weightage in a course and it is mandatory that you must secure at least 40 per cent marks in assignments to complete a course successfully. Note that you must 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 semester**. In each course there is a Tutor Marked Assignment (TMA). You must do the assignment for those courses for which you have registered. Do remember that you must 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**. This assignment is valid for two admission cycles (**July 2025** and **January 2026**).

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 203: QUANTITATIVE METHODS
Tutor Marked Assignments

Course Code: MEC-203
Assignment Code: Asst /TMA /2025-26
Total Marks: 100

PART I

Answer the following questions. Each question carries 20 marks

2 × 20 = 40

1. a) Explain Taylor's theorem to polynomial expansion.
b) Using Taylor's approach, find Taylor's series expansion for the function:
f(x,y,z)=x,y,z around the point (1,1,1)

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.

PART II

Answer the following questions. Each question carries 12 marks.

6 X 12=60

3. a) What are isoperimetric problems?
b) Find the extremal for the functional

$J(.) = \int_{t_0}^{t_f} 2x_t'^2$ +24x(t).t) dt,

$Boundary\ condition\ x(t_0) = 0, -x(t_f) = 2$

t_0=0, t_f=2

4. a) Discuss the features of chi square, t and f test?

   b) $x_1, x_2 \ldots x_n$ is a random sample from a Normal population N(μ,1). Show that

   $\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i^2$ is an unbiased estimator of μ^2+1

5. Consider the following simple problem:

$$min.\{g_0(u)\} = \int_0^1 \left\{\left(x(t)\right)^2 + \left(u(t)\right)^2\right\} dt$$

Subject to $\frac{dx}{dt} = u(t), x(0) = 1$

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:
   e) Euler-Lagrange equation
   f) Central Limit theorem
   g) Hamiltonian function
   h) Cramer –Rao inequality