

**MAEC**

**MASTER OF ARTS  
(ECONOMICS)**

**ASSIGNMENTS 2024-25**

**First Semester Courses**

**(For July 2024 and January 2025 Sessions)**



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

## **Master of Arts (Economics)**

**(TMA)**

**(2024-25)**

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 2024** and **January 2025**).

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

1. **By 31<sup>st</sup> March 2025**, for the students willing to appear in June 2025 term-end examination.
2. **By 30<sup>th</sup> September 2025**, for the students willing to appear in December 2025 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 101: MICRO ECONOMIC ANALYSIS**  
**Tutor Marked Assignments**

**Course Code: MEC-101**  
**Assignment Code: Asst /TMA /2024-25**  
**Total Marks: 100**

**Note: Answer all the questions**

**SECTION A**

**Answer the following questions in about 700 words each. The word limits do not apply in case of numerical questions. Each question carries 20 marks.**

$2 \times 20 = 40$

1. a. The production function of a small factory that produces and sells toys is:

$$Q = 5 \cdot \sqrt{L \cdot K}$$

Where Q is the number of toys produced each day, L is the labour hours and k is the machine hours. Suppose 9 labour hours and 9 machine hours are used every day, what is the maximum number of toys that can be produced in a day? Calculate the marginal product of labour when 9 labour hours are used each day together with 9 machine hours.

Suppose the firm doubles both the amount of labour and machine hours used per day. Calculate the increase in output. Comment on the returns to scale in the operation.

b. Define the term ‘Shepard’s lemma’. Assume that the production function of a producer is given by  $Q=5L^{0.5} K^{0.3}$ , where Q,L and K denote output, labour and capital respectively. If labour cost ₹ 1 per unit and capital ₹2, find the least cost combination of inputs (L&K)

2. Consider a Cobb-Douglas utility function

$$U (X, Y) = X^\alpha Y^{(1-\alpha)},$$

Where X and y are the two goods that a consumer consumes at per unit prices of  $P_x$  and  $P_y$  respectively. Assuming the income of the consumer to be ₹M, determine:

- a. Marshallian demand function for goods X and Y.
- b. Indirect utility function for such a consumer.
- c. The maximum utility attained by the consumer where  $\alpha = 1/2$ ,  $P_x = ₹ 2$ ,  $P_y = ₹ 8$  and  $M = ₹ 4000$ .
- d. Derive Roy’s identity.

## PART II

Answer the following questions in about 400 words each. Each question carries 12marks.

5 X 12=60

3. a.) What do you mean by market failure? What are its causes?  
b) What are the two principles of justice as mentioned by the philosopher Rawls?
4. a.) Define games of complete and incomplete information  
  
b.) From the following pay-off matrix, where the payoffs (the negative values) are the years of possible imprisonment for individuals A and B, determine:
  - (i) The optimal strategy for each individual.
  - (ii) Do individuals A and B face a prisoner's dilemma?

	<b>Individual B</b>		
		Confess	Don't Confess
<b>Individual A</b>	Confess	(-5, -5)	(-1, -10)
	Don't Confess	(-10, -1)	(-2, -2)

5. a) What are the conditions of Pareto optimality?  
  
b) Suppose an investor is concerned about a business choice in which there are three prospects. The probability and returns are given below:

Probability	Returns
0.4	100
0.3	30
0.3	-30

What is the expected value of the uncertain investment? What is the variance?

6. a.) Do you agree that by paying higher than the minimum wage, employers can retain skilled workers, increase productivity, or ensure loyalty? Comment on the statement in the light of efficiency wage model.  
  
b.) There are two firms 1 and 2 in an industry, each producing output  $Q_1$  and  $Q_2$  respectively and facing the industry demand given by  $P=50-2Q$ , where  $P$  is the market price and  $Q$  represents the total industry output, that is  $Q= Q_1 + Q_2$ . Assume that the cost function is  $C = 10 + 2q$ . Solve for the Cournot equilibrium in such an industry.
7. Write short notes on following:

- (a) vNM expected utility theory
- (b) Slutsky's theorem
- (c) Arrow pratt measure of risk averseness
- (d) Bergson-Samuelson Social welfare function

**MEC-102: MACROECONOMIC ANALYSIS**  
**Tutor Marked Assignments**

**Course Code: MEC-102**  
**Assignment Code: MEC-002/AST/2024-25**  
**Maximum Marks: 100**

**Note: Answer all the questions.**

**Section A**

**Answer the following questions in about 700 words each. Each question carries 20 marks. 2X20=40**

1. Specify the Lucas Supply Function. What are its implications? In what respects is it different from the classical aggregate supply function?
2. What are the implications of IS and LM curves? What are the factors on which the position and the slope of IS and LM curves depend?

**Section B**

**Answer the following questions in about 400 words each. Each question carries 12marks. 5X12=60**

3. Explain the mechanism through which internal and external balance takes place under flexible exchange rate.
4. What does the Phillips curve signify? How do you reconcile the difference in the shape of the curve in the short run and the long run?
5. Bring out the salient features of real business cycle models. What are its implications?
6. Classify various theories of unemployment based on the possible responses of the firm.
7. Write short notes on the following:
  - a) Capital asset pricing model
  - b) Permanent income hypothesis

**MEC 203: QUANTITATIVE METHODS**  
**Tutor Marked Assignments**

**Course Code: MEC-203**  
**Assignment Code: Asst /TMA /2024-25**  
**Total Marks: 100**

**PART I**

**Answer the following questions. Each question carries 20 marks**

2 × 20 = 40

1. Consider an investor who at time  $t = 0$  is endowed with initial capital of  $x(0) = x_0 > 0$ . At any time  $t \in [0, T]$  where  $T > 0$  is given he decides about his rate of consumption  $c(t) \in [0, \bar{c}]$  where  $\bar{c} > 0$  is a large maximum allowable rate of consumption thus his capital stock evolves according to  $\dot{x} = \alpha x - c(t)$  where  $\alpha > 0$  is a given rate of return the investor's time- $t$  utility for consuming at rate  $c(t)$  is  $u(c(t))$  where  $u = P_+ \rightarrow P$  is his increasing strictly concave utility function. The investor's problem is to find a consumption plan  $c(t), t \in [0, T]$  so as to maximize his discounted utility.

$$J(c) = \int_0^T e^{-rt} u(c(t)) dt$$

$$u(c(t)) = \ln(\beta t)$$

$$x(0) = x_0$$

$$x_t = 0$$

where  $r \geq 0$  is a given discount rate subject to the solvency constraint that the capital stock  $x(t)$  must be positive for all  $t \in [0, T)$ . [The value  $\beta$  lies in  $[0, \infty)$ .]

2. Consider a fishing optimal control problem which is defined by  $P_t' = a + bp_t - x_t$  where  $P_t$  is fish population at time  $t$ .  $x_t$  is fishing intensity or catch ( $a$  &  $b$  are constants). If  $r$  is the discount rate and objective function  $V(\cdot) = \int_0^{\infty} e^{-rt} u(x_t) dt$ ,  $u(x_t)$  is utility function of consumption i.e.,  $c_t = x_t$

a) State the transversality condition



- b) Find the optimal consumption,  $x_t$  if  $u(x_t) = \ln x_t$

## PART II

Answer the following questions. Each question carries 12 marks.

6 X 12=60

3. a) Let  $J$  be the functional defined by

$$J(y) = \int_0^1 (y'^2 - y^2 + 2ty) dt$$

With boundary conditions  $y(0) = 0$  and  $y(1) = 1$  Find the extremal(s) in interval  $[0, 1]$  for  $J(y)$ .

- b) Find extremals for

$$\int_0^1 \{[x'(t)]^2 + 10x(t).t\} dt$$

subject to  $x(t_0) = 2$   $x(t_1) = 3$

4. a) What is a standard error and why is it important?

b) In a random sample of 400 students of the university teaching departments, it was found that 300 students failed in the examination. In another random sample of 500 students of the affiliated colleges, the number of failures in the same examination was found to be 300. Find out the S.E of the difference between proportion of failures (i) in the university teaching departments and (ii) in the university teaching departments and affiliated colleges taken together.

5. a) Consider the following Lagrange problem:

$$\text{Maximise } f(u, v) = u + 3v$$

subject to  $g(u, v) = u^2 + av^2 = 10$ .

Use the envelope theorem to estimate the maximum value  $f^*(1.01)$  when  $a = 1.01$ , and check this by computing the optimal value function  $f^*(a)$ .

- b) Maximise the function  $f(u; a) = -u^2 + 2au + 4a^2$  with respect to  $a > 0$ .

6. a) For the function  $f(x) = \cos(x)$ , find (i) linear and quadratic approximations, and (ii) Maclaurin's series expansion of the function.

b) Let  $f: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  be defined as  $f(x, y) = (e^{2xy}, 2x^2 + 3y^2)$ , find the Jacobian  $J_f$  at the point  $(2, 1)$ .

7. Write short notes on following:
- a) Homeogeneous and Homothetic functions
  - b) L'Hopital's rule
  - c) Order of a difference equation
  - d) Cramer -Rao inequality