

2025

(May-June)

FYUP : 4th Semester Examination

ECONOMICS

(Macroeconomics—II)

(ECO-253)

Marks : 75

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

Answer **five** questions, taking at least **one**
from each Unit

UNIT—I

1. Discuss the cash balance approach to the quantity theory of money. What are its drawbacks? 9+6=15
2. Compare the cash transactions approach and the cash balance approach to the quantity theory of money. Which approach is superior and why? 10+5=15

D25/1305

(Turn Over)

3. How is Friedman's restatement of the quantity theory of money an improvement over the traditional quantity theory of money? 15

UNIT—II

4. Distinguish between the concepts of 'absolute income' and 'relative income'. Discuss the absolute income hypothesis. 5+10=15
5. "Income-consumption relationship exhibits proportionality in the long run and non-proportionality in the short run." Discuss the statement in light of the relative income hypothesis. 15
6. Discuss the acceleration theory of investment. What are its limitations? 10+5=15

UNIT—III

7. What is the LM curve? Illustrate how it is derived. 3+12=15
8. What is the IS curve? What leads to shift in the IS and LM curves? 3+(6+6)=15
9. Under the IS-LM model, how is equilibrium achieved in the goods and money markets? 15

UNIT—IV

10. Discuss the objectives of economic policies. 15
11. What are the objectives of monetary policy?
Briefly explain the instruments of monetary
policy. 6+9=15
12. Distinguish between fiscal and monetary
policies. Under what circumstances is fiscal
policy more effective than monetary policy?
6+9=15

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4/ECO-252 Syllabus-2023

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(May-June)

FYUP : 4th Semester Examination

ECONOMICS

(Environmental Economics)

(ECO-252)

Marks : 75

Time : 3 hours

**The figures in the margin indicate full marks
for the questions**

**Answer five questions, taking at least one from
each Unit**

UNIT—I

- 1. Explain the relation between environment,
economy and ecosystem. Explain the life
support system in this context. 11+4=15**
- 2. Differentiate between the following : 5×3=15**
**(a) Environmental economics and
Ecological economics**

D25/1304

(Turn Over)

(b) Environment and Ecology

(c) Development and Environment trade-off

3. What is sustainable development? Describe various measures of sustainable development. 5+10=15

UNIT—II

4. What are the characteristics of public goods? Explain how externalities lead to market failure. 7+8=15
5. Discuss the Coase theorem in relation to Property Rights with a suitable example. 15
6. What is meant by common property resource? Show how the destruction of the common property resource impacts human welfare. 4+11=15

UNIT—III

7. Explain how pollution affects the economy. Illustrate with example. Explain different solutions to pollution as an externality. 5+10=15
8. Discuss the various measures adopted to control pollution. 15

(3)

9. Discuss the Pigouvian tax. What are its advantages and disadvantages? 9+6=15

UNIT—IV

10. What is meant by total economic value? Explain the different components of total economic value. 5+10=15
11. What is the difference between willingness to pay (WTP) and willingness to accept (WTA)? Why are WTP and WTA important components in cost-effectiveness analysis? 5+10=15
12. Write notes on the following : 7½+7½=15
- (a) Valuation and decision making
 - (b) Environmental cost-benefit analysis

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4/ECO-251 Syllabus-2023

2025

(May-June)

FYUP : 4th Semester Examination

ECONOMICS

(Mathematical Methods for Economics—II)

(ECO-251)

Marks : 75

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

**Answer five questions, taking at least one
from each Unit**

UNIT—I

- 1. (a) What is an idempotent matrix? Examine
if the matrix A is idempotent**

$$A = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$$

1+5=6

D25/1303

(Turn Over)

- (b) If $A = \begin{bmatrix} 1 & 0 & -2 \\ 2 & -1 & 3 \\ 0 & 4 & 1 \end{bmatrix}$, then find $A^2 - 6A + 8I$.

6

- (c) Define the meaning of a vector using a suitable example. Show that the vectors $V_1 = (1, 5, -3)$ and $V_2 = (2, -1, -1)$ are orthogonal.

2+1=3

2. (a) Explain any three properties of determinants providing examples.

6

- (b) If $A = \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 5 \\ 3 & 1 \end{bmatrix}$ and $C = \begin{bmatrix} 4 & 3 \\ 4 & 1 \end{bmatrix}$, then show that $(ABC)' = C'B'A'$.

6

- (c) Distinguish between a symmetric matrix and a skew-symmetric matrix.

3

3. (a) Solve the following equations by matrix inversion method :

9

$$x + y - z = 4$$

$$3x - 4z = 5$$

$$4x - 5y = 2$$

- (b) (i) Find the rank of the matrix

$$\begin{bmatrix} 3 & 2 & 1 \\ 3 & 4 & 3 \\ -1 & 2 & 2 \end{bmatrix}$$

(ii) For what value of x , the rank of the

matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 3 & 2 \\ 7 & 0 & x \end{bmatrix}$ will be 2?

3+3=6

UNIT—II

4. (a) Define a homogeneous function. 2

(b) Determine the degree of homogeneity of the following functions (any three) : 3×3=9

(i) $f(x, y) = x^3 + 3x^2y + 3xy^2 + y^3$

(ii) $f(x, y) = \frac{x^2 + y^2}{2x^2y}$

(iii) $f(x, y) = (ax^{-3} + by^{-3})^{-\frac{1}{3}}$

(iv) $f(x, y) = \sqrt{ax^2 + bxy + cy^2}$

(v) $f(x, y, w) = x^4 - 5yw^3$

(c) Use the implicit function theorem to show that

$$x^2y^3 + 3xy^2 + y = 22$$

implies an explicitly defined function

$y = f(x)$ at point $(x = 1, y = 2)$. Also find

the value of derivative $\frac{dy}{dx}$ at this point. 4

5. (a) Under unconstrained optimization, what are the necessary and sufficient conditions of finding maxima and minima for a function $u = f(x, y)$? 3
- (b) Determine maxima/minima for the function $z = x^2 + 3y^2 - xy - 6x - 12y + 10$. 5
- (c) The total revenue and total cost functions of a firm producing two goods are
 $R = 10x + 5y$
 $C = x^2 + xy + 2y^2$
 Find the profit maximizing levels of x and y . 7
6. (a) Using Lagrange multiplier, find the extreme value of the function $z = xy$ subject to the constraint $x + y = 50$. 6
- (b) Solve for consumer equilibrium if the utility function is $U = x^{1.5}y$, price of commodity $x = ₹1$, price of commodity $y = ₹4$ and consumer's money income = ₹100. 9

UNIT—III

7. (a) Write down the order and degree of the following difference equations : $1+1=2$
- (i) $Y_t = 2Y_{t-1} - 3Y_{t-2} + 4$
- (ii) $(Y_{x+2})^2 - Y_{x+1} + Y_x = 0$

(b) Solve the following difference equations using general method (any three) : $3 \times 3 = 9$

(i) $Y_{x+1} - Y_x = 0, Y_0 = 2$

(ii) $Y_{t+1} - \frac{1}{3}Y_t = 6, Y_0 = 1$

(iii) $10 - 2P_t = 3P_{t-1} - 5, P_0 = 12$

(iv) $Y_x - Y_{x-1} = 4, Y_0 = 4$

(c) If a market model has the numerical form

$$Q_{dt} = 10 - 2P_t$$

$$Q_{st} = -5 + 3P_{t-1}$$

find the inter-temporal equilibrium price and determine whether the equilibrium is stable or not. 4

8. (a) Solve the following differential equations (any three) : $3 \times 3 = 9$

(i) $\frac{dy}{dx} = e^{x-y} + xe^{-y}$

(ii) $\frac{dy}{dx} - y = x$

(iii) $2xy \frac{dy}{dx} = x^2 + y^2$

(iv) $(x^2 - 4xy - 2y^2)dx + (y^2 - 4xy - 2x^2)dy = 0$

(v) $\frac{dy}{dx} + 2xy = 2x$

- (b) Demand and supply functions are given by

$$D = 100 - P + \frac{dP}{dt}$$

$$S = -50 + 2P + 10 \frac{dP}{dt}$$

Find the time path of P for dynamic equilibrium if the initial price is given to be ₹ 10 [i.e., when $t = 0$, $P(0) = 10$]. What will be the price at time $t = 10$? 4+2=6

9. Solve the following demand-supply model :

$$Q_{dt} = \alpha - \beta P_t$$

$$Q_{st} = -\gamma + \delta P_{t-1}$$

$$Q_{dt} = Q_{st}$$

Determine the time path and discuss its nature using diagrams. 9+6=15

UNIT—IV

10. (a) What is linear programming? 2

- (b) Explain the concepts of—

(i) objective function;

(ii) constraints;

(iii) slack and surplus variables;

(iv) feasible solution and feasible region. 2+2+2+2=8

- (c) (i) State the Hawkins-Simon conditions for the viability of the system in input-output analysis. 2

- (ii) The input-output matrix is given by

$$A = \begin{bmatrix} 0.3 & 0.2 & 0.2 \\ 0.2 & 0.1 & 0.5 \\ 0.2 & 0.4 & 0.2 \end{bmatrix}$$

Test the Hawkins-Simon conditions for viability of the system. 3

11. The input-output coefficients for a three-sector economy is given by

$$A = \begin{bmatrix} 0 & 0.5 & 0 \\ 0.2 & 0 & 0.5 \\ 0.4 & 0 & 0 \end{bmatrix}$$

The labour days required per unit of output are 0.4, 0.7 and 1.2 respectively. Consumer output targets (i.e., final demand) are 1000, 5000 and 4000 respectively.

Find—

- (a) gross output for each sector;
 (b) total labour days required;
 (c) total value added or cost of primary input (labour);

- (d) equilibrium price.

$$6+2+2+5=15$$

12. (a) Solve the following linear programming problem using graphical method :

$$\text{Maximize } Z = 45x_1 + 80x_2$$

subject to constraints

$$5x_1 + 20x_2 \leq 400$$

$$10x_1 + 15x_2 \leq 450$$

$$x_1, x_2 \geq 0$$

Also identify the feasible region. 11

- (b) Write the dual of the following LPP :

2+2=4

(i) Maximize $Z = 3x_1 + 2x_2$

subject to constraints

$$5x_1 + 6x_2 \leq 30$$

$$4x_1 + 7x_2 \leq 25$$

$$8x_1 + 9x_2 \leq 16$$

$$x_1, x_2 \geq 0$$

(ii) Minimize $Z = 2x_1 + 2x_2$

subject to constraints

$$2x_1 + 4x_2 \geq 1$$

$$x_1 + 2x_2 \geq 1$$

$$2x_1 + x_2 \geq 1$$

$$x_1, x_2 \geq 0$$

4/ECO-250 Syllabus-2023

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(May-June)

FYUP : 4th Semester Examination

ECONOMICS

(Public Economics)

(ECO-250)

Marks : 75

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

**Answer five questions, taking at least one
from each Unit**

UNIT—I

- 1. Define public economics. How is it different from public finance? Explain the nature and scope of public economics. 2+3+10=15**
- 2. Explain with the help of a suitable diagram, the principle of maximum social advantage according to Musgrave. What are its limitations? 10+5=15**

D25/1302

(Turn Over)

3. Evaluate the macroeconomic functions of the government in terms of allocation, distribution and stabilization. $5+5+5=15$

UNIT—II

4. What are public goods? Explain with the help of a suitable diagram, the efficiency condition required for the provision of public goods. $3+12=15$
5. Explain with the help of a suitable diagram, how negative externalities lead to inefficiencies in a perfectly competitive market. What steps can the government take to control negative externalities? $10+5=15$
6. What is the difference between provision and production of public goods? Elaborate on some of the different methods of public provision used in the real world. $5+10=15$

UNIT—III

7. Explain the concepts of incidence and shifting of tax burden under partial equilibrium analysis. Discuss the incidence and shifting of tax burden when the elasticity of demand is (a) equal to 1, (b) greater than 1 and (c) less than 1. $3+(4+4+4)=15$

8. Discuss the key features of the Goods and Services Tax (GST). How is it an improvement over Value-Added Tax (VAT)? 10+5=15
9. Explain Wagner's law of increasing State activities. How is it different from the Peacock-Wiseman hypothesis? 10+5=15

UNIT—IV

10. What is public debt? What are the different sources of public borrowing in India? What are the advantages and disadvantages of public debt in a developing economy like India? 3+6+6=15
11. What is a budget? Briefly explain the components of a budget. Discuss the functional classification of a budget. 2+8+5=15
12. What is fiscal policy? How does fiscal policy achieve full-employment and price level stability? 3+12=15

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