Prakti

S–5/ECOH/06/21

TDP (Honours) 5th Semester Exam., 2021
(Held in 2022)

ECONOMICS

(Honours)

SIXTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, taking **two** from each Unit

GROUP—A

(*Marks* : 40)

(Mathematical Economics)

UNIT—I

1. *(a)* Distinguish between any *two* of the following with appropriate examples :
   (i) Explicit function and Implicit function
   (ii) Single-valued function and Multivalued function
   (iii) Monotonically increasing function and Monotonically decreasing function

(b) What will be the shape of the following functions? 4.

(i) $y = 3x^3 + 4$

(ii) $y = 5 - 2x$ (3+3)+(2+2)=1(

2. (a) Find the derivative of the following function from the first principle of differentiation :

$$y = \sqrt{x}$$

(b) Differentiate any *two* of the following :

(i) $\left(x^2 + \frac{1}{x^2}\right)^3$

(ii) $e^{3\log x}$

(iii) $\frac{ax^2 + bx + c}{\sqrt{x}}$

(c) Evaluate $\int ae^{4x} dx$. 2+(3×2)+2=10

3. (a) Define null matrix and unit matrix.

(b) Find the inverse of the following matrix :

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

(c) Distinguish between adjoint and cofactor of a matrix.

(d) Solve the following simultaneous equations with the aid of Cramer's rule :

$$2y - 3r = -3$$

$$5y + r = -16$$

(1½+1½)+2+2+3=10

UNIT – II

4. Consider the demand function $p = ax^2 + bx + c$. Obtain the expression for its price elasticity of demand and tell what restriction should be imposed upon the value of x to make the demand function unitary elastic.

4+6=10

5. (a) Suppose that the utility function of a consumer is $U = XY$ and the budget constraint is given by $p_X \cdot X + p_Y \cdot Y = 100$.

(i) Find the equilibrium values of X and Y

(ii) If $p_X = ₹ 10$ and $p_Y = ₹ 20$, what will be the equilibrium values of X and Y?

(b) Give the interpretation of λ.

(3+3)+(1½+1½)+1=10

6. A discriminating monopolist sells output in two distinct markets. Her total cost (c) and two demand functions are given by the following equations :

$$c = 2 + x_1 + x_2$$

$$p_1 = 21 - 2x_1$$

$$p_2 = 37 - 3x_2$$

(a) Calculate the profit maximizing values of x_1, x_2, p_1 and p_2.

(b) Find out the value of minimized profit.

(2+2+2+2)+2=10

GROUP—B

(Marks : 40)

(International Trade)

UNIT—III

7. (a) What is meant by terms of trade?

(b) Discuss the factors affecting terms of trade. 2+8=10

8. "Even if one country has an absolute advantage in the production of both the commodities, trade can take place if there are differences in comparative costs." Discuss. 10

9. (a) What do you mean by gains from trade?

(b) Show that gains from trade can be decomposed into gains from exchange and gains from specialization. 2+8=10

UNIT—IV

10. (a) What is quota?

(b) Discuss various effects of quota. 2+8=10

(a) Discuss the concept of 'optimum tariff' with diagram.

(b) Mention the factors that determine the rate of optimum tariff. 6+4=10

2. (a) Distinguish between current account and capital account in the balance of payments.

(b) Chart the components of balance of payments.

(c) Explain the concept of balance of payments disequilibrium and its corrective actions. (1+1)+4+(1+3)=10

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TDP (Honours) 5th Semester Exam., 2020
(Held in 2021)

ECONOMICS

(Honours)

SIXTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, taking **two** from each Unit

GROUP—A

(**Mathematical Economics**)

UNIT—I

1. (a) Distinguish between linear function and quadratic function. 3

(b) Show that the function $y = 6x + 30$ is a monotonically increasing one. 2

(c) Obtain the explicit functions for the following implicit function :

$$y^2 - 3x^2 - 4 = 0$$

Are these explicit functions single-valued?

(d) Evaluate the limit of the function

$$\lim_{x \to 3} \frac{x^2 - 2x - 3}{x^2 + x - 12}$$

2. (a) Given $y = (u+4)(3u+2v)$, find the partial derivatives. 3

(b) Find the total differential of the function $y = 3x_1^2 + x_1 x_2^2$. 5

(c) Examine the monotonicity of the demand function $q = 7 - 3p$. 2

3. (a) Define the following : 2+2=4

(i) Symmetric matrix

(ii) Rank of a matrix

(b) Using Cramer's rule, solve the following set of simultaneous equations :

$$2x + y + 3z = 15$$
$$x - 2y + 5z = 13$$
$$4x + 3y - z = 11$$

6

UNIT—II

5. Given the utility function $u = 2 + x + 2y + xy$ and the budget constraint $4x + 6y = 94$, find out equilibrium purchase of x and y in order to maximise total utility. 10

6. The production function is given as $q = 7K^{0.3}L^{0.7}$. If the unit prices of K and L are given as 3 and 7 and the firm is ready to spend ₹ 100, find out the maximum level of output the firm can produce. 10

7. The two demand curves of a discriminating monopolist are $p_1 = 100 - 2x_1$ and $p_2 = 80 - x_2$ and the total cost is $C = 20(x_1 + x_2)$ where p_1 and p_2 are the prices and x_1 and x_2 are the quantities sold in markets 1 and 2 respectively.

(a) Calculate the profit maximising values of p_1, p_2, x_1 and x_2. 6

(b) Spell out the relationship between the market elasticities and the price charged. 4

GROUP—B

(International Trade)

UNIT—III

7. (a) What are the similarities and differences between internal trade and international trade?

   (b) What is a community indifference curve? Mention its properties. 2+3=5

8. (a) State Heckscher-Ohlin theory of trade pattern. 3

   (b) Explain Heckscher-Ohlin theory considering the physical criterion of factor abundance. 7

9. (a) Discuss Mill's theory of reciprocal demand. 5

   (b) What are the limitations of this theory? 5

UNIT—IV

10. (a) Make a comparative analysis between tariff and quota. 4

    (b) Although the effect of quota is certain to curb import, still tariff is preferred to quota. Why? 6

(Continued)

(a) Distinguish between autonomous and accommodating transactions of balance of payments.

(b) "Balance of payments always balances." Examine the truth of the statement.

4. (a) Distinguish between fixed and flexible exchange rate.

(b) Explain how the exchange rate between two currencies is determined.

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S-5/ECOH/06/19

TDP (Honours) 5th Semester Exam., 2019

ECONOMICS

(Honours)

SIXTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, taking **two** from each Unit

GROUP—A

(Mathematical Economics)

UNIT—I

1. *(a)* Distinguish between any *two* of the following with appropriate examples :

   (i) Function and Relation

   (ii) Range and Domain of a function

   (iii) Monotonically increasing and Monotonically decreasing functions

(b) Show that the function $y = \sqrt{16 - x^2}$ is not defined for all values of x. (3+3)+4=10

2. (a) Find the derivative of the following function from the first principle of differentiation :

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

(b) Given $y = 3x_1^2 + x_1x_2 + 4x_2^2$, find the partial derivatives.

(c) Evaluate :

$$\int xe^{-x^2} dx$$

3+(2+2)+3=10

3. (a) Define the following :

(i) Transpose of a matrix

(ii) Identity matrix

(b) Find the inverse of the following matrix :

$$\begin{bmatrix} 3 & 2 & 1 \\ 1 & 1 & 1 \\ 5 & 1 & -1 \end{bmatrix}$$

(2+2)+6=10

UNIT—II

4. An individual's utility function is given by $U = x^{\alpha}y^{\beta}$. If p_x and p_y are the fixed prices of two goods x and y and the individual's fixed income is μ, find the demand functions.

Deduce that the elasticity of demand for either good with respect to income is equal to unity. 3+3+4=10

5. Given the short-run total cost function

$$C = 2Q^3 - 15Q^2 + 30Q + 16$$

(a) Find out the level of output at which average variable cost (AVC) is minimum and also show that MC = AVC at that level of output.

(b) Show that when output $Q = 4$, the average cost is minimum and MC = AC. 5+5=10

6. (a) The average revenue function is given by AR = 100 – 3Q. Find out the elasticity of demand, when $Q = 5$.

(b) The total revenue (R) and total cost (C) functions of a firm under competitive condition are given by

$$R = 10Q_1 + 4Q_2$$

$$C = 2Q_1^2 + \frac{1}{4}Q_2^2 + Q_1Q_2 + 5$$

Find profit maximising output and maximum profit. 4+6=10

GROUP—B

(International Trade)

UNIT—III

7. (a) What is meant by 'terms of trade'?

(b) What are offer curves?

(c) Show how terms of trade are determined with the help of offer curves. 2+2+6

8. Explain the opportunity cost version of the comparative advantage theory of international trade. What are the limitations of this theory? 6+4=1

9. (a) What do you mean by 'gains from trade'?

(b) What are the factors determining gains from trade?

(c) Distinguish between gains from exchange and gains from specialization in trade. 2+3+5=10

UNIT—IV

10. (a) Discuss the concept of 'optimum tariff' with diagram.

(b) Mention the factors that determine the rate of optimum tariff. 5+5=10

(a) Mention the causes for which there may arise disequilibrium in the balance of payments of a country.

(b) What measures may be adopted for correcting deficit in the balance of payments of a country? 5+5=10

(a) What is foreign exchange market?

(b) Show how foreign exchange rate is determined in a flexible exchange system. 3+7=10

TDP (Honours) 5th Semester Exam., 2017

ECONOMICS

(Honours)

SIXTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, taking **two** from each Unit

GROUP—A

(Mathematical Economics)

UNIT—I

1. (a) What is the difference between 'relation' and 'function' of two variables? Explain with suitable examples.

(b) Give the ideas about any *two* of the following with appropriate examples :

(i) 'Domain' and 'range' of a function

(ii) Exponential function

(iii) Function of two variables 4+(3+3)=10

2. (a) What is meant by 'partial differentiation'?

(b) Find the partial derivative of x_1 from (i) and x_2 from (ii) of the following :

(i) $y = 3x_1^3 - 5x_1^2 x_2 + 2x_2^2$

(ii) $y = 5x_1^3 - 4x_1 x_2^2 + 3x_2^2$

(c) State and interpret the necessary and sufficient conditions of maximization for a function $y = f(x)$ with maximum value at $x = x_0$. 2+2+6=10

3. (a) What is an inverse of a matrix? Find the inverse of

$$A = \begin{bmatrix} 4 & 2 & 5 \\ 3 & 1 & 8 \\ 9 & 6 & 7 \end{bmatrix}$$

(b) Solve the following set of equations using Cramer's rule :

$$5x_1 - 3x_2 = 28$$
$$-2x_1 + 4x_2 = 14$$

(2+3)+5=10

UNIT—II

4. A consumer derives his utility (U) out of the consumption of q_1 and q_2 amount of commodities Q_1 and Q_2 respectively. His/Her income (y) exactly equals the amount needed to purchase q_1 and q_2 at prices p_1 and p_2 respectively. Prove that his/her ordinary demand for q_1 and q_2 depends on both prices p_1, p_2 and income (y). 6+4=10

5. Consider the cost of production (C) of commodity Q is given by the following function :

$$C = q^3 - 12q^2 + 60q$$

(a) Find out the average and marginal costs of producing Q.

(b) Find out the amount of Q at which average cost of production is minimum.

(c) Show that marginal cost of production of Q equals its average cost when average cost is at its minimum. (1+2)+4+3=10

6. (a) A firm producing two goods Q_1 and Q_2 has the profit function

$$\pi = 64q_1 - 2q_1^2 + 4q_1q_2 - 4q_2^2 + 32q - 14$$

Find the profit maximizing level of output for each of the two goods and test the second-order condition for profit maximization.

(b) A discriminating monopolist sells his output in two district markets. His total cost and two demand curves are

$$C = 2 + q_1 + q_2$$

$$P_1 = 17 - 2q_1$$

$$P_2 = 25 - 3q_2$$

Calculate the profit maximizing value of q_1 and q_2. 5+5=10

GROUP—B

(International Trade)

UNIT—III

7. (a) Point out the basic economic reasons behind the decision of a country to take part in international trade.

(b) What are the differences between internal trade and international trade in respect of a given country?

(c) Point out the difference between individual indifference curve and community indifference curve with suitable explanation. 3+3+4=10

8. (a) What are meant by 'absolute advantage' and 'comparative advantage' in the context of international trade theory?

(b) Consider a world with two countries H and F both of which produce both the commodities Q_1 and Q_2. Use the argument put forwarded by Adam Smith to show that both H and F gain by engaging in international trade. (2+2)+6=10

9. (a) What do you mean by gains from trade?

(b) Show that gains from trade can be decomposed into gains from exchange and gains from specialization. 2+8=10

UNIT—IV

10. (a) Explain, in brief, 'price effect' and 'revenue effect' of tariff in a tariff-imposing country.

(b) Show how price of a commodity would be affected if tariff is imposed on the import of that commodity for a country in a partial equilibrium setup. (2+2)+6=10

11. (a) Explain the concept of 'optimum tariff'.

(b) Consider two countries H and F involved in international trade. As a measure of trade policy, if both H and F impose tariff, show how the countries can attain the level of maximum net benefit out of such trade. 3+7=10

12. *(a)* Give an idea about the composition of 'balance of payments' account of a country.

(b) Explain why a country may face an adverse 'balance of payments' account at some point of time. 5+5=1

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BDP (Honours) 5th Semester Exam., 2018

ECONOMICS

(Honours)

SIXTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, taking **two** from each Unit

GROUP—A

(**Mathematical Economics**)

UNIT—I

1. (a) Distinguish between explicit function and implicit function.

(b) Obtain the explicit functions corresponding to the function $x^3 - 9y^2 = 0$.

(c) Define with example—

(i) polynomial function;

(ii) increasing function. 3+3+(2+2)=10

2. (a) Deduce first-order derivative of the function

$$y = \frac{5x^2 - 2}{x^2 - 5x}$$

(b) Find the second-order partial derivative of x_1 from $y = 2x_1^2 + x_1x_2 + 3x_2^2$.

(c) Find the maximum value of y from the function $y = -4x^2 + 16x + 15$ using second derivative test. 3+3+4=10

3. (a) Define with suitable example (i) orthogonal matrix and (ii) singular matrix.

(b) Using Cramer's rule, solve the following set of simultaneous equations :

$$3x_1 + 2x_2 = 13$$
$$9x_1 - 3x_2 = 21$$

(2+2)+6=10

UNIT—II

4. A consumer purchases commodities Q_1 and Q_2 at prices ₹ 2 and ₹ 5 respectively. He derives utility out of consumption of Q_1 and Q_2 in the form $U = q_1q_2 + q_1 + 2q_2$ with his money income ₹ 51. Calculate the utility maximizing q_1 and q_2. Show that the sufficient condition is satisfied. 10

(Continued)

(a) Use the properties of homogeneity to show that Cobb-Douglas production function $q = AK^{\alpha}L^{1-\alpha}$ exhibits constant returns to scale (A and α are constants).

(b) If the Cobb-Douglas production function $q = AK^{\alpha}L^{1-\alpha}$ is linearly homogeneous, then verify Euler's theorem.

(c) Calculate elasticity of substitution for this production function. 3+3+4=10

6. (a) A firm's demand function is given by $p = 100 - 2q$. Obtain the relationship between the slopes of corresponding AR and MR curves.

(b) A monopolist faces the demand curve given by $p = 20 - q$ and his cost function is given as $C = q^2 + 8q + 2$. Determine the profit maximizing output and the corresponding price.

(c) Find the equilibrium price in a market with demand function $q_d = 25 - 2p$ and supply function $q_s = -2 + p$. 3+5+2=10

GROUP—B

(International Trade)

UNIT—III

7. Write short notes on (any *two*) : 5×2=

(a) Production possibility curve

(b) Trade indifference curve

(c) Offer curve

8. Considering relative factor abundance within countries in a two-country, two-commodity and two-factor world, state and prove the Heckscher-Ohlin theorem of international trade. 10

9. *(a)* Discuss Mill's theory of reciprocal demand.

(b) What are the major limitations of this theory? 6+4=10

UNIT—IV

10. *(a)* Explain the impact of tariff in a partial equilibrium framework.

(b) Although the effect of quota is certain to curb imports, still tariff is preferred to quota, why? 6+4=10

(a) What do you mean by free trade policy?

(b) Give arguments for and against the free trade policy. 4+6=10

(a) Distinguish between fixed and flexible exchange rate.

(b) Explain how the exchange rate between two currencies is determined. 4+6=10

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TDP (Honours) 5th Semester Exam., 2016

ECONOMICS

(Honours)

SIXTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, taking **two** from each Unit

Candidates are required to give their answers in their own words as far as practicable

UNIT—I

1. *(a)* Explain the significance of the following expressions :

(i) $y \geq x$ khata

(ii) $y = f(x)$ P-27

1. Match the functions in *B* with the expressions in *A*

A	*B*
Constant function	$y = 3x^2 + 2x + 5$
Linear function	$y = 100$
Quadratic function	$y = c_0 + a_1x + a_2x^2 + a_3x^3$
Cubic function	$y = mx + c_0$ (c_0 = constant)

(3+3)+4=10

2. (a) Find the derivative of the following function from the first principle of differentiation :

$$y = 3x^2 + 2x + 6$$

(b) By using the second-derivative test, find the maximum value of y from the following function :

$$y = -4x^2 + 16x + 15$$

5+5=10

3. (a) Define, with suitable example, any two of the following :

(i) Singular matrix

(ii) Null matrix

(iii) Identity matrix

(Continued)

(b) Evaluate the following determinant by Laplace expansion :

$$\begin{vmatrix} 8 & 1 & 3 \\ 4 & 0 & 1 \\ 6 & 0 & 3 \end{vmatrix}$$

(3+3)+4=10

UNIT—II

4. A consumer is able to purchase commodities q_1 and q_2 at prices ₹ 4 and ₹ 6 respectively. With a given income of ₹ 130 which he can spend on the purchase of q_1 and q_2, he derives utility (U) out of consumption of q_1 and q_2 in the following manner :

$$U = (q_1 + 2)(q_2 + 1)$$

Find the equilibrium level of consumption of q_1 and q_2 which maximizes the utility of the consumes.

10

5. Production of Q is made with the help of factors K and L in the following manner :

$$Q = AK^{\alpha}L^{(1-\alpha)}$$

Where A is a constant and $0 < \alpha < 1$.

(a) Find the marginal products of K and L.

(b) Show that the total product Q will be exhausted if K and L are paid the amount of their respective marginal product.

(2½+2½)+5=10

6. (a) Find the equilibrium price (p_0) and quantity (q_0) in a market with the following demand and supply functions :

Demand function : $q_d = 25 - 2p$

Supply function : $q_s = -2 + p$

(b) Revenue and cost of a firm in producing and selling commodity x are as under :

Revenue : $R = 20x - x^2$

Cost : $C = x^2 + 8x + 2$

Find out the profit-maximizing output (x^0) and equilibrium price (p_0) acceptable to the firm. 5+5=10

UNIT—III

7. Write short notes on any two of the following in the context of international tradetheory : 5+5=10

(a) Production possibility frontier

(b) Community indifference curve

(c) Offer curve

8. Consider a world with two countries H and F both of which produce both the commodities Q_1 and Q_2. Show how international trade can be beneficial to both H and F even if H enjoys an absolute advantage over F in producing both Q_1 and Q_2. 10

9. Considering relative factor abundance within countries in a two country, two commodity and two factor world, state and prove the Heckscher-Ohlin theorem of international trade.

2+8=10

UNIT—IV

10. (a) What is meant by 'tariff' in international trade policy?

(b) Mention any two objectives for imposing tariff by a country.

(c) Explain the following terms (any *two*) :

(i) Specific tariff

(ii) ad valorem tariff

(iii) Compound tariff

2+2+(3+3)=10

11. (a) Explain why a country should adopt a policy of 'free trade' with other countries.

(b) Point out the limitations of adopting a policy of 'free trade'.

5+5=10

12. (a) Give an idea about the components which constitute the 'balance of payments' of a country.

(b) Explain any one method adopted to correct disequilibrium in the balance of payments of a country.

5+5=10

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