DFSE-U-ECM

GENERAL ECONOMICS

Paper – I

Time Allowed : Three Hours

Maximum Marks : 200

Question Paper Specific Instructions

Please read each of the following instructions carefully before attempting questions :

There are **THIRTEEN** questions divided under **THREE** sections.

The ONLY question in Section A is **compulsory**.

In Section B, **FIVE** out of **SEVEN** questions are to be attempted.

In Section C, **THREE** out of **FIVE** questions are to be attempted.

Candidates should attempt questions/parts as per the instructions given in the sections.

The number of marks carried by a question/part is indicated against it.

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly.

Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

Candidates are required to write clear, legible and concise answers.

Answers must be written in **ENGLISH** only.

SECTION A

Q1. Answer all the following seven parts.   *5×7=35*

(a) Show the conditions for a Cobb-Douglas production function under :

    (i)   increasing returns to scale

    (ii)   constant returns to scale

    (iii)   diminishing returns to scale

    Are the Laws of Returns compatible ?   5

(b) Define homothetic preferences. Explain the common characteristics of such preferences with the help of necessary diagrams.   5

(c) What is monopoly power ? What factors determine the amount of monopoly power ?   5

(d) Explain the difference between Bandwagon effect and Snob effect.   5

(e) What is meant by deadweight loss ? Why does a price ceiling usually result in a deadweight loss ?   5

(f) State the fundamental theorems of Welfare Economics.   5

(g) Public goods are both non-rival and non-exclusive. Explain each of these terms and show clearly how they differ from each other.   5

SECTION B

Answer any *five* of the following seven questions.

Q2. (a) Explain the meaning of Nash equilibrium. How does it differ from an equilibrium in dominant strategies ?   8

(b) Let market demand faced by the duopolists be

$$P = 100 - 0.5Q; \quad Q = Q_1 + Q_2$$

and their respective cost functions as

$$C_1 = 5Q_1 \text{ and } C_2 = 5Q_2.$$

Find out Cournot-Nash Equilibrium.   10

Q3. (a) Suppose the utility function for the consumer takes one of the following forms :

(i) $U = 50x + 20y$

(ii) $U = 20x + 50y$

(iii) $U = 80x + 40y$

The budget of the consumer is ₹ 10,000. The prices of good X and good Y are ₹ 50 and ₹ 20 per unit respectively. Determine the possibility of determination of the equilibrium basket in each case using diagram and comment on the nature of the solutions.   12

(b) Outline how the production possibility frontier can be used to explain the concept of opportunity cost. Why is the production possibility frontier concave to the origin ?   6

Q4. Suppose that a firm's production function is given by the Cobb-Douglas function : $Q = K^\alpha L^\beta$ (where $\alpha, \beta > 0$). The firm can purchase all the K and L it wants in competitive input markets at rental rates of r and w respectively.

(i) Show that cost minimisation requires $\dfrac{rK}{\alpha} = \dfrac{wL}{\beta}$. What is the slope of the expansion path for this firm ?   8

(ii) Assuming cost minimisation, show that total costs can be expressed as a function of Q, r and w of the form

$$TC = BQ^{\frac{1}{\alpha+\beta}} \cdot w^{\frac{\beta}{\alpha+\beta}} \cdot r^{\frac{\alpha}{\alpha+\beta}},$$

where B is a constant depending on α and β.   3

(iii) Show that if $\alpha + \beta = 1$, total cost (TC) is proportional to Q.   3

(iv) Calculate the firm's marginal cost curve.   4

Q5. (a) Distinguish between economic rent and transfer earnings. Can economic rent exist in the long run ? Justify your answer.　　9

(b) Explain graphically the role of elasticity of supply of a factor determining the economic rent.　　9

Q6. (a) Why do externalities prevent markets from being efficient ? How does Coase theorem correct an externality ?　　10

(b) Using a particular industry, explain what is meant by economies of scale and economies of scope. How do these affect the industry you have identified ?　　8

Q7. (a) In a contest, two judges ranked eight candidates A, B, C, D, E, F, G and H in order of their preference as shown in the following table. Find the rank correlation coefficient.

	A	B	C	D	E	F	G	H
First Judge	5	2	8	1	4	6	3	7
Second Judge	4	5	7	3	2	8	1	6

9

(b) The regression equations of the variables x and y are $8x - 10y + 66 = 0$ and $40x - 18y = 214$. The variance of x is 9. Identify the two regression lines. Find the simple correlation coefficient between the two variables and variance of y.　　9

Q8. Discuss Social Choice theory in Economics. Distinguish between the views of Amartya Sen and Kenneth Arrow in making choices for social welfare.　　18

SECTION C

Answer any *three* out of the following five questions.

Q9. (a) Consider a two-variable linear regression model

$$Y_t = \alpha + \beta X_t + U_t$$

and $U_t = \rho U_{t-1} + \varepsilon_t; \quad |\rho| < 1$

Find Mean, Variance and Covariance of random disturbance term (U_t). *5*

(b) Consider the model of wage determination :

$$Y_t = \beta_1 + \beta_2 X_t + \beta_3 Y_{t-1} + U_t$$

where

Y = wages

X = productivity

$U_t = \rho U_{t-1} + \varepsilon_t; \quad -1 < \rho < 1$

Discuss the method of testing with the help of appropriate test statistic. *5*

(c) Consider a model

$$Y_t = \beta_1 + \beta_2 X_t + U_t$$

and $U_t = \rho U_{t-1} + \varepsilon_t$

Discuss the process of the removal of autocorrelation when

(i) ρ is known

(ii) ρ is unknown (using Cochrane-Orcutt iterative method) *15*

Q10. (a) An economy produces only coal and steel. The two commodities serve as intermediate inputs in each other's production. 0·4 tonne of steel and 0·7 tonne of coal are needed to produce a tonne of steel. Similarly, 0·1 tonne of steel and 0·6 tonne of coal are required to produce a tonne of coal. No capital inputs are needed. 2 and 5 labour days are required to produce a tonne of coal and steel respectively. If the economy needs 100 tonnes of coal and 50 tonnes of steel,

      (i) Calculate the gross output of the two commodities and the total labour required.

      (ii) Write down technology matrix.

      (iii) Do you think that the system is viable ?

      (iv) Determine the equilibrium prices, if the wage rate is ₹ 10 per man-day.   *15*

    (b) Mohan is paid ₹ 8 if two coins turn both heads and ₹ 1 if two coins turn both tails. Ram is paid ₹ 3 when the two coins do not match.

      (i) Write down the pay-off matrix of the above problem.   *5*

      (ii) Whom do you consider in the better situation ?   *5*

Q11. (a) Compare the distribution theory of Marx with that of Ricardo.   *10*

    (b) Explain when Kaldor's theory of distribution becomes more appropriate.   *10*

    (c) Narrate the areas where Kaldor's distribution model fails.   *5*

Q12. (a) The kinked demand curve describes price rigidity. Explain how the model works. Why does price rigidity occur in oligopolistic market ?   *15*

    (b) State and prove Product Exhaustion Theorem. How does it differ from Clark-Wicksteed-Walras Theorem ?   *10*

Q13. (a) Consider a two variable linear regression model :

$$Y_i = \alpha + \beta X_i + U_i$$

and

$$Var(U_i) = E(U_i^2) = \sigma_i^2$$

Show that $\hat{\beta}$ is unbiased and inefficient estimator of β.   *10*

(b)   Consider a three variable linear regression model

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i$$

and suppose that

(i) $\sigma_i^2 = \sigma^2 Z_i^2$

(ii) $\sigma_i^2 = \sigma^2 X_{1i}$

(iii) $\sigma_i^2 = \sigma^2 X_{1i}^2$

Discuss Generalised Least Squares (GLS) method to overcome the heteroscedasticity problem under three cases (i, ii and iii).   *15*