# GENERAL ECONOMICS

## Paper – I

| Time Allowed : Three Hours | Maximum Marks : 200 |
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### 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 section. 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 and to adhere to word limits wherever indicated. Failure to adhere to word limits may be penalized.

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

**Answer all the following seven parts in about 100 words each :**　　　　**5×7=35**

**Q1.** (a) Why do we need the constancy assumption of marginal utility of money in Cardinal Utility Analysis ? Justify your answer.　　　5

(b) Define the method of Compensating Variation of Income and the method of Cost Difference. Why is the latter method superior to the former one ?　　　5

(c) Distinguish between laws of variable proportions and laws of returns to scale. Find out the elasticity of substitution in the case of fixed coefficient type production function.　　　5

(d) Find out the cost elasticity of output at the minimum point of the average cost curve in the short-run.　　　5

(e) Define peak-load pricing. How does it differ from third degree price discrimination ? Analyse graphically.　　　5

(f) Consider the equilibrium of a firm under perfect competition. Find out the condition for normal profit, or supernormal profit or loss (whichever is applicable for the firm) without using the average cost curve. Explain only diagrammatically.　　　5

(g) Explain the concept of divergence in the context of social and private welfare.　　　5

# SECTION B

Answer any *five* out of the following seven questions in about 200 words each.                                                                          *18×5=90*

**Q2.** (a) How can you measure the price elasticity of demand at any point on a straight line demand curve ?                                                    9

   (b) Compare between price elasticity at a given price and also at a given quantity for a set of parallel demand functions.                                   9

**Q3.** (a) Write down the form of CES production function and interpret its parameters. Show that the Cobb-Douglas production function is a special case of CES function.                                                        12

   (b) Find out the elasticity of substitution of the CES production function.     6

**Q4.** What do you mean by price discrimination ? Under what circumstances is price discrimination profitable ? Trace out the equilibrium situation under price discrimination.                                                            18

**Q5.** State and explain the Kaldor-Hicks compensation principle. How does Scitovsky provide an improvement of Kaldor-Hicks compensation principle ?     18

**Q6.** State, prove and give an economic interpretation of Euler's theorem. Show that at the minimum point of the long-run average cost, the total product is exhausted.                                                                    18

**Q7.** (a) Consider two regression equations of y on x and x on y. Show that the arithmetic mean of two regression coefficients is greater than the correlation coefficient, provided the correlation coefficient is positive. Under which condition do the two regression lines coincide ?                12

   (b) In a bivariate distribution, a researcher gets two lines of regression as

   $2x - y + 1 = 0$

   $3x - 2y + 7 = 0$

   Identify the true regression lines and find the mean of x and y.               6

**Q8.** If a single buyer focuses on a single seller, what are the outcomes likely to appear ? Do you think that the exploitation of labour will emerge ? Justify in favour of your arguments. Find out the equilibrium condition of a firm in the presence of perfect competition in both the product and input market.       18

## SECTION C

Answer any *three* out of the following five questions in about 300 words each :                                                                25×3=75

**Q9.** (a)  Let the demand function for a good be

$$q = A\, p^\alpha\, y^\beta$$

where $q$ = the quantity demanded, $p$ = the price per unit and $y$ = the income. What do the parameters $\alpha$ and $\beta$ imply and what is the sum of $\alpha$ and $\beta$ ? Interpret your result.                                      8

(b)  Consider the utility function $u = \log x_1 + x_2$ which is to be maximized subject to the budget constraint $m = p_1 x_1 + p_2 x_2$, where $p_1$ and $p_2$ are the prices per unit of the goods $x_1$ and $x_2$ respectively, and $m$ is the income of the consumer. Derive the demand for $x_1$ and $x_2$ and interpret your results.                                                                      10

(c)  Given the demand function and total cost function of a perfectly competitive firm as $p = 32 - X$, $c = X^2 + 8X + 4$, $p$ being price, $c$ being cost and $X$ = output.

Find out the output, price, profit and total revenue corresponding to maximization of total profit.                                                          7

**Q10.** (a)  Describe the Leontief static open input-output model along with its assumptions.                                                                      5

(b)  State the Hawkins-Simon conditions and explain their economic meaning and significance.                                                          5

(c)  Find out the total demand for industries 1, 2 and 3 if the coefficient matrix A and the final demand vector B are as follows :                     15

$$A = \begin{pmatrix} 0.3 & 0.4 & 0.1 \\ 0.5 & 0.2 & 0.6 \\ 0.1 & 0.3 & 0.1 \end{pmatrix} \quad \text{and} \quad B = \begin{pmatrix} 20 \\ 10 \\ 30 \end{pmatrix}$$

**Q11.** (a)  What do you mean by multicollinearity ?                                     5

(b)  How does it affect the precision of estimates ?                             5

(c)   Consider a simple model

$$y_i = \beta_2 x_{2i} + \beta_3 x_{3i} + u_i \; ; \; i = 1, 2, ..., n$$

and the variables are in deviation form. The disturbance term $u_i$ satisfies all the classical assumptions. Suppose $x_{2i}$ and $x_{3i}$ are multicollinear. Should you drop either $x_{2i}$ or $x_{3i}$ to have precise estimates of the remaining parameters ? If so, under what condition are you permitted to do so ?   *15*

**Q12.** (a)   Explain the meaning of spurious regression.   *3*

(b)   How are the values of Durbin-Watson d statistic and $R^2$ indicative of spurious regression ?   *4*

(c)   Show that in the case of spurious regression between $Y_t$ and $X_t$, where both $Y_t$ and $X_t$ are generated by random walks, (i) the errors have a permanent effect; (ii) the variance of the errors is infinitely large. What should you interpret from your result ?   *18*

**Q13.** (a)   Explain what do you mean by heteroscedasticity.   *5*

(b)   Given the model   $Y_i = \beta_1 + \beta_2 X_{2i} + u_i$,   where   $E(u_i^2) = \sigma^2 X_i^2$   and $i = 1, 2, 3, ..., n$,   find out the OLS and GLS variance of the regression slope.   *12*

(c)   Show that if $X_i$ takes the values 1, 2, 3, 4, 5, $Var(\hat{\beta}_2) > Var(b_2)$, where $\hat{\beta}_2$ is the OLS estimator of $\beta_2$ and $b_2$ is the GLS estimator of $\beta_2$.   *8*