Bachelor of Science (B.Sc.) Semester—III Examination
STATISTICS (Economic Statistics)
Optional Paper—II

Time : Three Hours] [Maximum Marks : 50

N.B. :— All questions are compulsory and carry equal marks.

1. (A) Explain the construction of price indices using simple and weighted average of price relatives. State the uses of index numbers.

   (B) Define the terms :

   (i) Price Relatives

   (ii) Quantity Relatives.

   If L(p) and L(q) represent Laspeyre's price and quantity index numbers respectively and P(p) and P(q) represent Paasche's price and quantity index numbers respectively then show that :

   $$\frac{L(p)}{L(q)} = \frac{P(p)}{P(q)}.$$ 5+5

   OR

   (E) What are Chain Indices ? Explain the construction of chain indices. Distinguish between chain-base indices and fixed base indices.

   (F) Explain time reversal test and factor reversal test. Show that Fisher's ideal index number satisfies time reversal test and factor reversal test. 5+5

2. (A) What is meant by base shifting ? State its purpose. Explain splicing of index number series.

   (B) Explain the concept of cost of living index number. Describe the two methods of its construction. 5+5

   OR

   (E) State any two uses of cost of living index number.

   (F) Explain the concept of purchasing power of money and inflation.

   (G) Define an index of industrial production. State its uses.

   (H) Describe any one method of computation of national income. 2.5×4=10

3. (A) State demand and supply function. Explain law of demand and supply. Explain the concept of an equilibrium price. Discuss price elasticity of demand and price elasticity of supply. 10

   OR

   (E) Explain income and cross elasticity of demand.

   (F) State Engel's Law. Define Engel's Curve.

   (G) State Pareto's Law of income distribution. Explain the terms used in Pareto's function.

   (H) If the demand functions of two commodities A_1 and A_2 are respectively given by

   $$x_1 = p_1^{-1.3} \; p_2^{0.5}$$
   $$x_2 = p_1^{0.3} \; p_2^{-0.5}$$

   Check whether the two commodities are complementary or substitutes. Hence find the two cross price elasticities of demand. 2.5×4=10

4. (A) Define economic time series. State its different components. Explain additive and multiplicative models for time series data. Explain the least square method of determination of trend. 10

   OR

(E) Explain ratio to trend method and ratio to moving average method of studying seasonal variations in time series. State the merits and demerits of these two methods.

(F) Explain Leontief's method of estimating elasticity from time series data, stating the underlying assumptions. Also state the limitations of this method. 5+5

5. Solve any **TEN** questions from the following :

(A) Define value index number.

(B) Which measure of central tendency is more appropriate in the construction of index numbers ?

(C) Name the index number that satisfies circular test.

(D) Which organization compiles WPI ?

(E) Differentiate between inflation and deflation.

(F) Name the three methods of computing national income.

(G) Define Giffen's goods.

(H) Define Gini's concentration ratio.

(I) Show that demand curve with constant price elasticity has a simple hyperbolic form.

(J) State the assumption made in the simple average method of obtaining seasonal indices.

(K) Which components of time series are associated with the following phenomena :

(i) Increase in tourists visiting a hill station during summer

(ii) Increase in the number of AIDS patients over the years ?

(L) What is a Business Cycle ? 1×10=10