Third Semester B. Sc. Examination

STATISTICS

Paper – II

(Economic Statistics)

Time : Three Hours] [Max. Marks : 50

N. B. : All the **five** questions are compulsory and carry equal marks.

1. (A) Define an index number. What are its uses ? Differentiate between weighted and un – weighted indices ? Define different price indices generated by weighted aggregate method. 10

OR

(E) Name various types of averages used in the construction of index numbers. which average is appropriate in its construction and why ?

(F) Explain factor reversal test. Show that Fisher's index satisfies it.

(G) Prove that if Laspeyre's and Paasche's index numbers are equal then they are equal to Marshall – Edgeworth index number.

(H) Distinguish between chain base indices and fixed base indices. State the advantages of chain base indices over fixed base indices. 2.5 x 4 = 10

2. (A) Define cost of living index number. Discuss the main steps of construction of this index number. Describe aggregate expenditure method and family budget method of its construction. State its any two uses. 10

OR

(E) Explain the technique of splicing index number series stating the need.

(F) Define index of industrial production. Write its any two uses.

(G) Explain the "Ceusus of output or Production method" of estimating national income.

(H) Define the terms :—

(i) Inflation (ii) Deflation 2.5×4=10

3. (A) Define price elasticity of demand η_P. When is the demand for a commodity said to be elastic ? When is it inelastic ? Obtain the form of a demand curve with constant price elasticity of demand. Let the demand functions for the commodity A_1 and A_2 be $x_1 = f(P_1, P_2)$ and $X_2 = \phi(P_1, P_2)$. Define partial and cross elasticities of demand for A_1. If the demand curve is of the form $P = ae^{-Kx}$ where P is price and x is the demand, prove that elasticity of demand is $\frac{1}{kx}$. 10

OR

(E) What is Lorenz curve ? Explain how it can be used to compare inequality in income distribution of two states.

(F) State Pareto's law of income distribution. Interpret the parameters.

(G) State Engel's law. Define Engel's curve.

(H) The demand function for a commodity X is given by $X = 300 - 0.5P_x^2 + 0.02\ P_0 + 0.05\ y$ where x is quantity demanded of 'X' , P_x is price of X , P_0 is the price of related commodity and y is constant income. Compute the income elasticity of demand for X. 2.5 x 4 = 10

4. (A) Explain the seasonal component in a time series, giving examples. Describe the following methods of studying seasonal variation in time series stating their relative merits and demerits,

(i) Ratio to trend method

(ii) Ratio to moving average method. 10

OR

(E) Explain Leontief's method of estimating price elasticities of demand and supply from time series data.

(F) State the uses of time series.

(G) Explain the residual method of obtaining cyclical component of a time series.

(H) Define time series. Explain its mathematical models. 2.5 x 4 = 10

5. Solve any **ten** questions from the following :—

(A) Define value index number.

(B) Which types of error can occur in the construciton of index numbers ?

(C) State the season for shifting the base of an index number.

(D) Which measure of central tendency is used to calculate I. I. P. and W. P. I. from commodity indices ?

(E) State official sources of collecting data for construction of wholesale Price Index.

(F) State the static laws of demand and supply.

(G) Define a Giffen good.

(H) Which mathematical function is most appropriate in fitting trend to given data when the difference between successive observations of a series is nearly constant ?

(I) State the assumption made in the average percentage method (i. e. simple average method) of obtaining seasonal indices.

(J) Give examples of time series data where irregular component is present.

(K) Define an index number which has an upward bias.

(L) Define Gini's concentration ratio. 1 x 10 = 10