NKT/KS/17/5125

Bachelor of Science (B.Sc.) Semester—III (CBS) Examination

STATISTICS (Economic Statistics)

Paper—II

Time : Three Hours] [Maximum Marks : 50

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

1. (A) Explain the purpose of index numbers. What are the uses of index numbers ? Describe the simple and weighted aggregate methods of constructing price indices. Define the different price indices generated by weighted aggregate method. 10

OR

(E) Distinguish between chain-base and fixed-base indices.

(F) Explain the three types of errors in the construction of index numbers.

(G) Explain TRT. Show that Marshal Edgeworth Index formula satisfies this test.

(H) Show that Fisher's Index lies between Lapeyre's and Paasche's indices. 2.5×4=10

2. (A) Explain the concept of wholesale price index. What are the uses of WPI ?

(B) Define Purchasing power of money, inflation and deflation. Bring out the difference between inflation and deflation.

(C) What is meant by base shifting ? Explaining the purpose, state how base shifting is carried out.

(D) Explain the expenditure method of computation of National Income. 2.5×4=10

OR

(E) Explain the concept of cost of living index number. Discuss the various steps in its construction. Explain the two methods of construction of this index. 10

3. (A) Define : Price elasticity of demand, Income elasticity of demand Cross elasticity of demand.

The demand function for a commodity A is given by,

$$x = 500 - 0.5\ p_A^2 + 0.1\ p_o + 0.5\ y,$$

where x is the quantity demanded of the commodity A, P_A the price of commodity A, p_o the price of related commodity and y is the constant income.

If $p_A = 10$ $p_o = 10$, and $y = 1000$, then find :

(i) Price elasticity of demand for commodity A.

(ii) The Income elasticity of demand for A.

(iii) Cross elasticity of demand for A with respect to price p_0. 10

OR

(E) If the demand functions for two commodities A_1 & A_2 are given by,

$$x_1 = p_1^{-1.5} \cdot p_2^{0.3}$$

$$x_2 = p_1^{0.5} \cdot p_2^{-0.5},$$

then find the four partial elasticities of demand. Check whether the two commodities are competitive or complementary. 5

(F) State the laws of demand and supply. Explain how the equilibrium price is determined. The demand functions of two commodities A & B are as follows :

$$D_A = 10 - p_A - 2p_B \;\&\; D_B = 6 - p_A - p_B$$

Also, the supply functions of A & B are,

$$S_A = 3 + p_A + p_B \text{ and } S_B = 2 + P_B.$$

Find the equilibrium prices of commodities A and B and the quantities exchanged of these commodities in the market. 5

4. (A) Explain the 4 components of a time series giving one example each. Explain the moving average method and least square method for the measurement of trend, stating their relative merits and demerits. 10

OR

(E) Discuss the following methods for the measurement of seasonal variation in a time series :

(i) Ratio to moving average

(ii) Ratio to trend

(iii) Link Relatives method State their relative merits and demerits. 10

5. Answer any **TEN** of the following questions :—

(A) Name three Index number formulae which satisfy circular test.

(B) Name the index number formula which has :

(i) an upward bias

(ii) a downward bias.

(C) State the price index formula based on weighted geometric mean of price relatives method.

(D) What is the purpose of construction of Index of Industrial Production ?

(E) Which organization/office compiles WPI ?

(F) State 2 use of CPI.

(G) What is meant by de-seasonalization in time series ? State its purpose.

(H) State additive and multiplicative models of time series.

(I) Define a moving average of period K.

(J) Define Giffen's goods. Give one example.

(K) Show that demand curve with constant price elasticity is of the simple hyperbolic form.

(L) State whether demand for goods having substitutes is elastic or inelastic. 10×1=10