AT–360

B.Sc. (Part—II) Semester—IV Examination

4S : STATISTICS

Time : Three Hours]　　　　　　　　　　　　　　　　　[Maximum Marks : 80

Note :— ALL questions are compulsory.

1. (A) Fill in the blanks :

(i) _____ index number is considered as an ideal index number.

(ii) Demand and supply curve intersect at _____ price.

(iii) Student 't' was invented by _____.

(iv) Analysis of variance utilise _____ test.　　　　　　　2

(B) Choose the correct alternative (MCQ) :

(i) Price index number P_{01} satisfies Time Reversal test if _____.

(a) $P_{01} \times P_{10} \neq 1$

(b) $P_{01} \times Q_{01} = V_{01}$

(c) $P_{01} \times P_{10} = 1$

(d) $P_{01} \times Q_{01} = 1$

(ii) Price elasticity of demand is always _____.

(a) Positive

(b) Negative

(c) Zero

(d) None of the above

(iii) F-statistic was invented by :

(a) R.A. Fisher

(b) W.S. Gosset

(c) G.W. Snedecor

(d) W.G. Cocran

(iv) Rank correlation was given by :

(a) A.M. Mood

(b) Karl Pearson

(c) Spearman

(d) L.E. Moses　　　　　　　2

(C) Answer in one sentence :

 (i) Define "Run" in non parametric test.

 (ii) Name the four phases of business cycle.

 (iii) Define Student t-statistic.

 (iv) Define Laspeyer's Price Index Number.   4

2. (A) State the assumption involved in t-test and explain Paired t-test for difference of means.

                        6

 (B) Establish the relationship between t- and F-distribution. 6

OR

3. (P) Define Snedecor's F-distribution and derive its p.d.f. 6

 (Q) Define Students t-statistics and explain t-test for testing significance difference between two sample means. 6

4. (A) Define Fisher's Z transformation and state its use only. 4

 (B) State central limit theorem and its uses. 4

 (C) Describe steps to be used for testing of hypothesis in large sample test. 4

OR

5. (P) Describe large sample test for single mean. 4

 (Q) State the p.d.f. of bivariate normal distribution and explain its parameters. 4

 (R) Explain the assumptions used in large sample tests. 4

6. (A) Explain run test for two sample and obtain distribution of odd runs. 6

 (B) What is non parametric test ? Explain its advantages and disadvantages. 6

OR

7. (P) Explain sign test for univariate distribution and discuss order statistics in detail.

                        6

 (Q) Explain Median test with its merits and demerits. 6

8. (A) Prove that Marshall-Edgeworth price index lies between Laspeyer's and Paasche's price index. 4

(B) Define index numbers. Explain selection of base period. 4

(C) Explain family budget method of constructing cost of living index number. 4

OR

9. (P) Why Fisher's index number is ideal index number ? 4

(Q) Discuss the problems involved in construction of index numbers. 4

(R) Why index numbers are called barometer of economics ? 4

10. (A) Name the different components of time series. Explain seasonal variations. 4

(B) What are the uses of Time Series ? 4

(C) Explain Trend component in time-series. 4

OR

11. (P) Explain method of moving average method for measuring trend. 4

(Q) What do you mean by deseasonalisation of data ? 4

(R) Explain the additive and multiplicative models in analysis of time series. 4

12. (A) Explain price elasticity of demand. 4

(B) Define :

(i) Demand function

(ii) Equilibrium price. 4

(C) Define Partial and Cross elasticities. 4

OR

13. (P) Define :

(i) Competitive commodities

(ii) Demand and supply function. 4

(Q) Explain laws of demand and supply. 4

(R) What are the types of data required for estimating elasticity ? 4