(C) Discuss large sample test for difference of two proportions. 4

OR

5. (P) Define Bivariate normal distribution with its concept. 4

(Q) Discuss large sample test for single mean. 4

(R) Discuss large sample test for single proportions. 4

6. (A) Define Non – Parametric test. Write the assumptions and advantages of non – parameteric tests. 6

(B) Describe the procedure for sign test of paired sample. 6

OR

7. (P) What do you mean by order statistics ? Explain median test in detail. 6

(Q) Discuss Kolmogorov – Smirnov one sample tests. 6

8. (A) Define index numbers and write down uses of index numbers. 4

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Fourth Semester B. Sc. (Part–II) Examination

4S–STATISTICS

P. Pages : 6

Time : Three Hours] [Max. Marks : 80

Note : All questions are compulsory.

1. (A) Fill in the blanks :—

(i) Range of variance ratio F is ..... .

(ii) Sign test utilises ..... distribution.

(iii) ..... is an ideal index number.

(iv) Ratio to moving average method is for measurement of ..... variation in time series. 2

(B) Choose the correct alternative (MCQ) :—

(i) Kolmogorov – Smirnov test is a :

(a) One sample test.

(b) Two sample test.

(c) One and two sample test.

(d) Neither one nor two sample test.

(ii) The degree of freedom for paired t–test based on n pairs of observations

is .....

(a) 2 (n – 1)

(b) n – 1

(c) 2n – 1

(d) 2n.

(iii) Price elasticity of demand is always .....

(a) Positive.

(b) Negative.

(c) Zero.

(d) Other than this.

(iv) In additive model time series is given by .....

(a) $U_t = T_t \cdot S_t \cdot C_t \cdot R_t$

(b) $U_t = T_t + S_t + C_t + R_t$

(c) $U_t = T_t \cdot S_t + C_t R_t$

(d) $U_t = T_t S_t \cdot C_t + R_t$. 2

(C) Answer in **one** sentence :—

(i) For testing differences of mean in a small sample, which test is to be applied ?

(ii) Which Non parametric test is useful for alloting ranks ?

(iii) What is equillibrium price ?

(iv) Write the name of any one method of measurement of trend in time series. 4

2. (A) Derive p. d. f. of t – distribution. 4

(B) Explain the test for testing the equality of population variance. 4

(C) Explain the relation between F – distribution and chi – square distribution. 4

OR

3. (P) Discuss t – test for single mean. 4

(Q) Discuss the assumptions for t – test. Also state the applications of t – test. 4

(R) Obtain 95% confidence limits for population mean μ based on small sample. 4

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

(B) Explain Fisher's Z transformation and its uses. 4

(B) Show that Fisher's formula satisfies factor reversel test. 4

(C) Explain family budget method of obtaining cost of living index no. 4

OR

9. (P) Define Drowbish – Bowley and Marshall – Edgeworth price index number. 4

(Q) Define Time reversal test and show that Fisher's formula satisfy time reversal test. 4

(R) What are the criteria for the selection of base period ? 4

10. (A) Define Time series. Describe mathematical models in time series. 6

(B) Explain Ratio to Trend method of measurement of seasonal variations. 6

OR

11. (P) Explain seasonal variations in time series. What do you mean by De – seasonalisation of data ? 6

(Q) State various components of time series. Explain method of moving averages of measurement of trend in time series. 6

12. (A) Explain Laws of demand and supply. 4

(B) Define :—

(i) Complementery goods.

(ii) Equillibrium price. 4

(C) Explain Pareto's Law of income distribution. 4

OR

13. (P) Explain Price elasticity of demand. 4

(Q) The demand curve and supply curve of a commodity are given by $D = 19 - 3P - P^2$ and $S = 5P - 1$. Find equillibrium price and quantity exchanged. 4

(R) Define :—

(i) Necessicities and Luxuries good.

(ii) Compitative goods. 4