

B.Sc. Part-II (Semester-III) Examination**3S : STATISTICS**

Time : Three Hours]

[Maximum Marks : 80

Note :— ALL questions are compulsory.

1. (A) Fill in the blanks : 2
- (i) Testing of hypothesis is a _____ decision problem.
 - (ii) In $r \times s$ contingency table, d.f. is _____.
 - (iii) A method of “sample study” relating to population is known as _____.
 - (iv) The study of birth, death, migration etc. is called _____.
- (B) Choose the correct alternative : 2
- (i) “Testing of hypothesis” was initiated by :
 - (a) Karl Pearson
 - (b) R.A. Fisher
 - (c) J. Neyman
 - (d) C.R. Rao
 - (ii) Chi-square test is also called as :
 - (a) Normal test
 - (b) Parametric test
 - (c) Non-parametric test
 - (d) Two tailed test
 - (iii) Generally census in every country is conducted after _____ years.
 - (a) Three
 - (b) Five
 - (c) Ten
 - (d) Fifteen
 - (iv) In life table terminology q_x : _____
 - (a) $\frac{\ell_{x+1}}{\ell_x}$
 - (b) $\ell_{x+1} - \ell_x$
 - (c) $\ell_{x+1} \cdot \ell_x$
 - (d) $\frac{dx}{\ell_x}$
- (C) Answer in **ONE** sentence each : 4
- (i) What is meant by vital event ?
 - (ii) Define parameters of population.
 - (iii) Who proposed the chi-square test for testing the goodness of fit ?
 - (iv) What is T_x , in life table terminology ?
2. (A) Explain in brief, present statistical system in India. 4
- (B) State the important publications of banking and finance. 4
- (C) Describe De facto method of census with its advantages and disadvantages. 4

OR

- (P) What do you mean by official statistics ? 4
- (Q) Explain the functions of CSO. 4
- (R) Name the publication of agricultural statistics. 4
4. (A) Define vital statistics. Explain registration method of obtaining vital statistics with its demerits. 6
- (B) What do you mean by standardization ? Explain indirect method of standardization of death with merits and demerits. 6

OR

5. (P) What are various measures of mortality ? Explain CDR with its merits and demerits. 6
- (Q) Explain specific death rates and define age SDR with its merits and demerits. 6
6. (A) What are the assumptions in the construction of life table ? Give the uses of life table. 6
- (B) What are different measures of fertility ? Explain age SFR with its merits. 6

OR

7. (P) Prove that, in life table terminology : 6
- (i) $nP_x = P_x \cdot P_{x+1} \cdot P_{x+2} \cdot \dots$
- (ii) $e_x = \left(\sum_{n=1}^{\infty} l_{x+n} \right) / l_x$
- (Q) Explain N.R.R. in detail. Why N.R.R. is called as rate of replenishment of population ? 6
8. (A) What do you mean by estimation ? Give the requisites of good estimator. 4
- (B) Describe unbiased estimator with example. 4
- (C) Distinguish between point estimation and interval estimation of a parameter. 4

OR

9. (P) Explain simple and composites hypothesis with example. 4
- (Q) Explain Type-I and Type-II error. 4
- (R) Explain steps involved in testing of hypothesis. 4
10. (A) Explain the concept of random sample. 4
- (B) Obtain sampling distribution of sum of Binomial variate. 4
- (C) Describe the steps for drawing a random sample from normal distribution. 4

OR

11. (P) Explain the term statistic and its distribution. www.FirstRanker.com www.FirstRanker.com 4
- (Q) Obtain sampling distribution of sum of Poisson variate. 4
- (R) Give the procedure of drawing a random sample from Binomial distribution. 4
12. (A) Define chi-square variate with 'n' degrees of freedom and obtain its m.g.f. 4
- (B) State and prove additive property of chi-square variate. 4
- (C) Explain Yate's correction factor in 2×2 contingency table and give corrected chi-square. 4

OR

13. (P) State the conditions for validity of chi-square test. 4
- (Q) Explain chi-square test for testing goodness of fit. 4
- (R) In 2×2 contingency table

a	b
c	d

 show that :

$$\chi^2 = \frac{N(ad - bc)^2}{(a + b)(c + d)(a + c)(b + d)} . \quad 4$$

