AR – 545

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

STATISTICS

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : All questions are compulsory.

1. (A) Fill in the blanks :—

   (i) The vital rates are computed per _____ persons usually.

   (ii) In life table l_x denotes the number of _____ at age x.

   (iii) The sum of two independent chi-square variates is _____ variate.

   (iv) The sampling distribution of the mean of normal variates is _____. 2

   (B) Choose the correct alternative :-

   (i) The number of deaths per K persons is known as _____ .

   (a) ASDR

   (b) CDR

(c) SDR

(d) None of the above

(ii) The fertility rates computed for specific age groups is _____ .

(a) SFR

(b) TFR

(c) GFR

(d) AS FR

(iii) A square of standard normal variate is _____ .

(a) Normal variate

(b) Chi-square variate

(c) Binomial variate

(d) Poisson variate

(iv) A statement of neutral attitude is _____ hypothesis.

(a) Alternative

(b) Composite

(c) Null

(d) None of the above 2

(C) Answer in one sentence.

(i) Define degrees of freedom ?

(ii) What do you mean by radix of life table?

(iii) What is crude birth rate ?

(iv) State the pdf of chi-quare variate with n degrees of freedom. 4

2. (A) Discuss De-Jure method and De-facto method of census. 6

(B) State the major publications of

(a) Industrial statistics

(b) Labour and employment statistics. 6

OR

3. (P) What are the present official statistical system in India ? Expalin any one of them. 6

(Q) State the major publications on –

(a) Population statistics.

(b) Agricultural statistics. 6

4. (A) What do you mean by vital statistics ? State the sources of obtaining vital statistics. 4

(B) Explain how will you measure the population at any time t. 4

(C) Define rates and ratios of vital events. 4

OR

5. (P) What is standardization of death rate ? Explain direct method of standardization. 4

(Q) Explain Age specific death rate and state it's merits. 4

(R) Define crude death rate and infant mortality rate. 4

6. (A) State the uses of life table. 4

(B) Define crude birth rate and state its merits and demerits. 4

(C) Explain the term GRR alongwith its merits. 4

OR

7. (P) Show that –

$$l_x = \sum_{i=x}^{w-1} di$$

Where w is the last age at which ($l_w = 0$) l_x vanishes. 4

(Q) Define total fertility rate and state its merits and demerits. 4

(R) Explain the concept of stable population. 4

8. (A) State the properties of an estimator and explain any one of them. 6

(B) Explain the terms Hypothesis, simple hypothesis and composite hypothesis with the help of suitable examples. 6

OR

9. (P) What do you mean by unbiased estimator? Show that sample mean is an umbiased estimate of population mean in case of normal distribution. 6

(Q) Explain the terms Type-I and Type-II errors. State the steps involved in testing of hypothesis problems. 6

10. (A) Explain the concept of sampling distribution of statistics. 4

(B) State the procedure of drawing random samples from discrete distribution. 4

(C) Obtain sampling distribution of the mean of normal variates. 4

OR

11. (P) Explain the terms random sample and statistic. 4

(Q) Give the stepwise procedure of selecting random sample from continuous distribution. 4

(R) Obtain sampling distribution of sum of Poisson variates. 4

12. (A) Obtain cumulant generating function of chi-square distribution and hence obtain its mean and variance. 4

(B) State the conditions for validity of chi-square test. 4

(C) Explain chi-square test for independence of attributes. 4

OR

13. (P) Define chi-square variate and obtain its pdf. 4

(Q) Explain the concept of Yate's correction. Obtain the formula for corrected chi-square after applying Yate's correction in 2×2 contingency table. 4

(R) Discuss chi-square test for testing goodness of fit. 4