2020

STATISTICS

(Major)

Paper : 6·3

(Applied Statistics – 2)

Full Marks : 60

Time : Three hours

The figures in the margin indicate
full marks for the questions.

1. Answer the following questions as directed :

$$1 \times 7 = 7$$

   (a) The first Indian census took place in the year _____. (Fill in the blank)

   (b) In the construction of which chart Poisson distribution is used ?

   (i) $\overline{X}$ – chart (ii) R–chart

   (iii) P–chart (iv) C–chart

   (Choose correct answer)

(c) The control chart for fraction defective is called *np*-chart.

(Write true or false)

(d) An assumed number of newly born babies at the same time denoted by l_0 is called _____. *(Fill in the blank)*

(e) The probability of accepting a lot with fraction defective p_t is termed as _____.

(Fill in the blank)

(f) Most serious drawback of crude death rate is that it does not take into account of the age and sex distribution.

*(Write true **or** false)*

(g) What is meant by the statement 'NRR of a country is 0·508'?

2. Answer the following questions :   2×4=8

(a) Distinguish clearly between defect and defective.

(b) Explain the usefulness of *R*-chart.

(c) Name different measures of population growth.

(d) What do you understand by abridged life table ?

3. Answer **any three** of the following questions :   3×5=15

(a) Explain the main control charts for attributes and obtain their control limits.

(b) Is the crude death rate an accurate measure of mortality of a population of a country ? If not, how will you modify it to give reliable results ?

(c) What is Average Sample Number (ASN) and Average Total Inspection (ATI) ? Explain the method of their calculation for single sampling plan.

(d) State the assumptions regarding the population under which a life table is constructed. Also mention the uses of a life table.

(e) What is clinical trial ? Write a note on the importance of its study.

4. Answer **any three** of the following questions :   10×3=30

(a) What do you mean by fertility of a population ? Explain the various measures of fertility in common use and discuss their merits and demerits.

(b) Describe single sampling plan. Obtain OC and AOQ curve for this plan.

(c) Starting from a suitable assumption regarding the relative growth rate of population, derive the logistic equation. Also mention the properties of this curve.

(d) What do you mean by statistical quality control? Discuss its utility and limitations. Also state the role of SQC in the industrial world.

(e) Write brief notes on the origin and functions of the

    (i) Central Statistical Organisation and

    (ii) National Sample Survey Organisation.

(f) Define *(i)* Central mortality rate (m_x)

    (ii) Force of mortality rate (μ_x)

and *(iii)* Probability of death (q_x) in a life table.

Hence show that

$$(i)\ \ q_x = \frac{2m_x}{2 + m_x}$$

$$(ii)\ \ m_x = \mu_x + \frac{1}{2}.$$