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3 (Sem–6) STS M 3

2021

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.***

GROUP–A

1. Answer the following as directed : $1 \times 5 = 5$

(a) Statistical control charts help in controlling the quality during manufacturing process.

(Write true **or** false)

Contd.

(b) In a C-chart, if average number of defects \bar{c} is 9, Then lower control limit is :

(i) 9

(ii) 0

(iii) 18

(iv) None of these

(Choose the correct option)

(c) General fertility rates mainly depend on —

(i) total female population

(ii) total population

(iii) female population of child bearing age

(iv) None of these

(Choose the correct option)

(d) In a life table $d_x = 1 - \frac{l_{x+1}}{l_x}$.

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

(e) Infant mortality rate is computed for children —

(i) above 5 years age

- (ii) between the age of 1 to 5 years
- (iii) under the age of 1 year
- (iv) None of these.

(Choose the correct option)

2. Answer **all** questions : 2×5=10
- (a) What is meant by process control and product control in industrial statistics ?
 - (b) Why is an abridged life table prepared ?
 - (c) Explain the usefulness of R-chart.
 - (d) What do you understand by acceptance quality level (A.Q.L) ?
 - (e) Write a note on expectation of life.
3. Answer **all** questions : 5×3=15
- (a) What is meant by Sampling inspection plan ? Describe the single sampling inspection plan.
 - (b) What is C-chart ? How are the control limits for C-chart obtained ? Justify the use of Poisson distribution in their computation.
 - (c) Define central mortality rate. Show that with the usual notations :

$$m_x = \frac{2q_x}{2 - q_x}$$

GROUP-B

4. Answer **any three** questions : $10 \times 3 = 30$
- (a) What do you understand by a crude birth rate ? Is it an accurate measure of the population growth of a country ? If not, how can it be improved to give better results ?
 - (b) Describe in detail, the construction of a complete life table and its uses. Give also the assumptions regarding the population under which a life table is constructed.
 - (c) Distinguish between crude and specific death rates. Explain clearly the purpose and procedure of standardised death rates.
 - (d) Explain in detail, \bar{X} and R-charts. What purposes do they serve ? What are their advantages over the P-chart ?
 - (e) What are the advantages of statistical quality control ? Also explain the justification for using the three sigma (3σ) limits in the control charts.
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