3 (Sem–6/CBCS) STA HE 2

2024

STATISTICS

(Honours Elective)

Paper : STA–HE–6026

(Demography and Vital Statistics)

Full Marks : 60

Time : Three hours

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

1. Answer the following questions as directed : $1\times7=7$

   (a) Infant mortality rate (IMR) is defined as

   (i) $\text{IMR} = \dfrac{\text{Number of deaths}}{\text{Total population}} \times 1000$

   (ii) $\text{IMR} = \dfrac{\text{Number of deaths}}{\text{Total number of live births}} \times 1000$

(iii)

$$\text{IMR} = \frac{\text{Number of deaths among children of age 0 l.b.d}}{\text{Number of live births}} \times 1000$$

(iv) $\text{IMR} = \frac{\text{Number of births}}{\text{Number of deaths}} \times 100$

(Choose the correct option)

(b) If the age distribution of the two populations being compared are not similar, the comparison based on crude death rate may be misleading.

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

(c) Define dependency ratio.

(d) Population census is usually conducted at an interval of _____ in our country.

(Fill in the blank)

(e) Different methods of obtaining vital statistics are

(i) registration method

(ii) census enumeration method

(iii) Both (i) and (ii)

(iv) None of the above

(Choose the correct option)

(f) Births, deaths etc. are _____ events of human life.

(Fill in the blank)

(g) The principal drawback of GRR is that it does not take account the mortality of mothers.

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

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

(a) Distinguish between rates and ratios of vital events.

(b) What is the meaning of the statement 'NRR = 1'?

(c) What is a life table?

(d) Define central mortality rate in a life table.

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

(a) Prove that

(i) $e(x) = \frac{\sum_{n=1}^{\infty} l(x+n)}{l(x)}$

(ii) $e_x^0 = \frac{1}{2} + e_x$

(b) Explain the coverage and content errors in demographic data.

(c) Discuss in brief the uses of life table.

(d) "CBR is not a probability rate but CDR is." Explain.

(e) Write the difference between stationary population and stable population.

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

(a) Discuss in detail about the factors involved in the growth of a population.

(b) Is crude death rate an accurate measure of mortality of population of a country ? If not, how will you modify it to give reliable results ? 2+8=10

(c) *(i)* Explain why TFR, GFR and NRR are regarded as hypothetical figure.

(ii) Show that NRR cannot exceed GRR. 6+4=10

(d) Define CBR, GFR and ASFR and indicate why each is considered as the improvement on the preceeding measure of fertility. 6+4=10

(e) Discuss the assumptions used in the construction of a life table. Explain in brief how different columns of a life table may be computed on the basis of the observed age-specific death rate. 4+6=10

(f) Write notes on the following : 3+4+3=10

(i) Population composition

(ii) Use of balancing equations

(iii) Infant mortality rate
