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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 :

1×7=7

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

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

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

Contd.

(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 : $2 \times 4 = 8$

(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 : $5 \times 3 = 15$

(a) Prove that

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

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

(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 : $10 \times 3 = 30$

(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