This question paper contains **3** printed pages]

Roll No. ☐☐☐☐☐☐☐☐☐☐☐

S. No. of Question Paper : **8395**

Unique Paper Code : **32377906**   **HC**

Name of the Paper : **Demography and Vital Statistics**

Name of the Course : **STATISTICS : DSE for Honours**

Semester : **V**

Duration : **3 Hours**   Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all.

Question No. **1** is *compulsory* and comprises of 7 parts. Do any 5 parts out of these 7 parts.

Select *Four* questions from the remaining questions, choosing *two* from each section.

Use of simple calculators is allowed.

1. (*i*)   Define balancing equation of population growth and give *two* uses of balancing equation.

    (*ii*)   What is an abridged life table ? Name *two* methods of abridgement.

    (*iii*)   Define Tendentious bias. Also give an example.

    (*iv*)   Why is the use of N.R.R. not advised for forecasting future population changes ? Give *two* reasons.

P.T.O.

    (*v*)   Differentiate between stable and stationary population.

    (*vi*)   Fill in the blanks of the following table which are marked with ?

X	l_x	d_x	q_x	L_x	T_x
20	6,93,435	?	?	?	35,081,126
21	6,90,673	—	—	—	—

    (*vii*)   GFR suffers from the drawback of non-comparability in respect of time and country. Explain.   3,3,3,3,3

SECTION A

2. (*a*)   Use an appropriate method for constructing an abridged life table if the life table functions are to be obtained for values of x at some distance apart.

    (*b*)   Explain ASFR and TFR. Discuss their relative merits and demerits. Why is TFR a better measure of fertility than ASFR ?

                                 8,7

3. (*a*)   Describe Myers's index as a measure of age accuracy for evaluation of age data. Also state the underlying assumption.

    (*b*)   What are different measures of aging of population ? Elaborate age-dependency ratio explaining clearly its components.   8,7

4. (*a*)   Define Gross Reproduction Rate (GRR) as a measure of population growth. Give its physical interpretation. Find the approximate value of GRR under the assumption of constant sex ratio.

    (*b*)   Explain Coverage and Content errors in demographic data. State the possible errors in age data and give reasons for them.   8,7

SECTION B

5. (a) Define Infant Mortality Rate. How is it different from other indices of mortality ? Describe a method for the adjustment of IMR.

   (b) Define Vital Statistics. What are vital events ? Describe the usual sources of data collection on vital events.

   8,7

6. (a) Describe the structure of a complete life table. Explain how the different columns of a life table may be computed on the basis of observed age specific mortality rate.

   (b) Define force of mortality and show that its approximate value is :

   $$\{8(l_{x-1} - l_{x+1}) - (l_{x-2} - l_{x+2})\}/12l_x \qquad 8,7$$

7. (a) Explain Crude and Standardized death rates. In what way is STDR superior to CDR ? Explain the Direct method of standardization along with its merits and demerits.

   (b) Show that :

   (i) $1 + \dfrac{d}{dx} e_x^0 = \mu_x e_x^0$

   (ii) If $\mu_x = A + BC^x$, then find the expression for l_x.

   8,7