WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 6th Semester Examination, 2021

STSADSE04T-STATISTICS (DSE3/4)

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

Answer any *four* from the following questions	5×4 = 20

1.	What are differences between 'rate' and 'ratio' in the context of vital statistics? Briefly discuss about possible errors in census data.	2+3
2.	Comment briefly about two measures that indicate health condition of West Bengal specific to the disease 'Covid-19' in the month of August, 2021. Among the two measures, which one will you prefer and why?	3+2
3.	Discuss the limitations of CDR as a measure of mortality situations of two different places. Also suggest a suitable measure in this context.	2+3
4.	What are GRR and NRR? Show that GRR > NRR. Explain the nature of the growth of a population when NRR < 1.	5
5.	Interpret the columns l_x and L_x in the context of life table. Distinguish between complete and abridged life table.	5
6.	In the context of life table, prove that $e_x^0 \approx e_x + \frac{1}{2}$.	5

Answer any *two* from the following questions	10×2 = 20

7. (a)	Define TFR. Why does TFR a hypothetical figure? Why GRR is an improvement over TFR in case of a measure of population growth?	5
(b)	What is MMR? Do you think this measure is a good one for mortality due to puerperal causes?	2
(c)	Show that CDR for a life table stationary population, except for the multiplier 1000, equals to $1/e_0^0$.	3

8. (a) What is meant by μ_x, the force of mortality at age x ? 2

   (b) Can this exceed 1? 1

   (c) Derive Makeham's Formula starting from suitable assumptions. 7

9. (a) Distinguish between population projection and population estimation. 2

   (b) Briefly describe the component method of population projection. 4

   (c) In order to build a mathematical model for population projection, if the relative growth rate of population size P_t assumed to be constant, then find the model and discuss its disadvantages. 4

   N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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