WEST BENGAL STATE UNIVERSITY

B.Sc. Programme 6th Semester Examination, 2021

STSGDSE03T-STATISTICS (DSE2)

SURVIVAL ANALYSIS AND BIOSTATISTICS

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.

GROUP-A

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

1. Explain hazard function and cumulative hazard function.   5

2. Write any four distributions used in survival analysis. Why are these distributions relevant to survival analysis?   5

3. Define type I and type II censoring in survival analysis. Give examples.   5

4. Explain with example when the hazard function is constant.   5

5. Describe cause-specific hazard rate.   5

6. Explain the properties of hazard function under assumption of Weibull distribution.   5

GROUP-B

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

7. Describe Kaplan-Meier method for estimating survival function. Write the variance of the estimator.   8+2

8. Describe the role of exponential distribution in survival analysis. Find hazard and cumulative hazard function when the distribution is exponential.   5+5

9. (i) Describe briefly actuarial method for estimating survival function.   8
   (ii) Define simple stochastic epidemic model.   2

10. (i) Describe the random censoring in survival analysis. Give an example.   7
    (ii) What do you mean by Competing Risk?   3

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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