

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – NOVEMBER 2023

UST 5502 – BIOSTATISTICS AND SURVIVAL ANALYSIS

Date: 03-11-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

Answer ALL the questions

(10 x 2 = 20 marks)

1. Provide any two applications of Biostatistics.
2. What is a double blind study?
3. Provide an example of retrospective study.
4. Define Odds Ratio.
5. Define accuracy in a diagnostic test.
6. What is Meta Analysis?
7. Define $h(t)$ and provide $h(t)$ for two parameter exponential distribution.
8. Define censoring in survival data.
9. Discuss any four purposes of Drug Regulatory Bodies.
10. State the use of Kaplan-Meier survival curve and log rank test.

PART – B

Answer any FIVE questions

(5 x 8 = 40 marks)

11. Explain Clinical Trial with Independent concurrent control and Clinical trial with Cross over.
12. Explain prevalence, Sensitivity, Specificity, PV+, PV-, LR+, LR- with an example.
13. Define various bias in epidemiological studies.
14. Provide any eight applications of Biostatistics.
15. Define $f(t)$, $F(t)$, $S(t)$, $h(t)$ and $H(t)$ under usual notation and provide the relationships among these functions.
16. Discuss Type I and Type II censoring.
17. Discuss the contributions of Edward Salk and Alexander Fleming in the field of drug discovery.
18. Obtain $S(t)$ and $h(t)$ for one parameter Exponential distribution and Lognormal distribution.

PART - C

Answer any TWO questions

(2 x 20 = 40 marks)

19. Discuss the different phases of clinical trial in detail.
20. Discuss any two observational study designs and any two experimental designs in detail.
21. Compare the survival function for the two treatments using Kaplan Meier survival curves
Treatment A: 6,6,6,7,10,13,16,22,23,6+,9+,10+,11+,17+,19+,20+,25+,32+,32+,34+,35+
Treatment B: 1,1,2,2,3,4,4,5,5,8,8,8,8,11,11,12,12,15,17,22,23
22. Compare the difference between the two survival curves using log rank test based on the data given in Question 21.

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