Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF COMMERCE
END TERM EXAMINATION - JUN 2023

Semester : Semester II - 2022
Course Code : BSE2011
Course Name : Sem II - BSE2011 - Applied Statistics
Program : BSE

Date : 16-JUN-2023
Time : 1.00PM - 4.00PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(10 X 2 = 20M)**

1. State any two advantages of sampling. (CO1) [Knowledge]

2. Give two examples for population and sample in a study. (CO1) [Knowledge]

3. Elucidate on the meaning of Sampling process. (CO3) [Comprehension]

4. Mention different test for Goodness of fit. (CO4) [Comprehension]

5. Expand BLUE. (CO5) [Comprehension]

6. What are the different sources of collecting Primary data? (CO1) [Knowledge]

7. In a region, there were 30 maternal deaths in a year, and there were 10,000 live births. Calculate the Maternal Mortality Rate (MMR) of the region. (CO2) [Knowledge]

8. Elucidate the meanings of Bi-variate and Multivariate data sets with an example for each. (CO5) [Comprehension]

9. Mention the equation for hypothesis testing if n<30. (CO3) [Comprehension]

10. In a city, the number of live births among women aged 20-24 is 4,000, and the population of women aged 20-24 is 50,000. Calculate the Age-Specific Fertility Rate (ASFR) for this age group. (CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(4 X 10 = 40M)**

11. The production manager of a company that manufacturers electric heaters believes that atleast 10% of the heaters are defective. For testing his belief, he takes a random sample of 100 heaters and finds that 12 heaters are defective. He takes the level of significance as 5% for testing the hypothesis. Applying the seven steps of hypothesis testing, test his belief.(z = ±1.96).

(CO4) [Comprehension]

12. Find the values to form a regression equation.

Y	184	514	194	120	371	225	179	552	344	137	433	471
X	167	328	231	174	389	217	267	421	543	678	388	410

(CO5) [Comprehension]

13. A manufacturer of alkaline batteries wants to be reasonably certain that fewer than 6% of its batteries are defective. Suppose that 240 such batteries are chosen randomly from a large shipment and are tested. a total of 8 of the batteries are found to be defective. is the evidence sufficient for the manufacturer to conclude that the proportion of defectives in the entire shipment is less than 0.06 at a significance level of 1% .(z critical value is -2.33).

(CO4,CO3) [Comprehension]

14. Elucidate on the hypothesis testing procedure. Also mention about what kind of test to use for different sample sizes.

(CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **(2 X 20 = 40M)**

15. An automatic machine used to fill hair oil in 500 bottles is set to fill oil with a standard devistion equal to 10 ml. The production supervisor examines samples at regular intervals t determine if the variability has of the oil-fill has changes. in today's sample the following quantities of oil (in ml) were found:

496 512 488 483 507 509 501 484 517 502 479

Assume that the amount of oil filled is normally distributed. using the level of significance of 0.10, test whether the variance has undergone a change(chi-square test)(chi-square value=3.940>chi square>18.307)

(CO5) [Comprehension]

16. Using the least sqaures method, fit the curve for the following data and represent it in graphical format.

Agriculture Yield (Rs. 0000/ph) (Y)	20	60	40	75	85	100	5
Fertilizer expenditure (Rs.0000/ph) (X)	15	33	25	42	50	58	2

(CO4) [Application]