

22U310

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Name:

Reg.No:

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U BCA3 C05 - COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

(Computer Application - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. Convert 58 to binary number system.
2. Write Newton's forward and backward difference formula.
3. Give the formula for Lagrangian interpolation.
4. Define trapezoidal rule.
5. Find the geometric mean of the numbers 4, 6 and 9.
6. If the mean and median of a moderately asymmetrical series are 26.8 and 27.9 respectively, what would be its most probable mode?
7. Define partition values.
8. What are the different methods of studying dispersion?
9. Distinguish between positive and negative correlation.
10. Explain the concept of regression.
11. Two fair dice are thrown. What is the sample space of it? What is the probability of obtaining the sum of the numbers on the dice to be 7?
12. Define distribution function of a random variable.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Using regula-falsi method, find a real root of the equation $f(x) = x^3 + x - 1 = 0$, near $x=1$.
14. Find the value of $\sqrt{2}$. Correct to 4 decimal places using Newton Raphson method.

15. Define the operators given below.
- Forward difference
 - Backward difference
 - Shift operator
 - Central difference
 - Mean operator
16. Find an approximate value of $\int_0^1 x^2 dx$ by Simpson's 1/3 rule with $n=10$
17. Explain the various stages of statistical investigation.

18. Fit a straight line to the following data.

x	1	2	3	4	5
y	35	68	100	138	170

19. if $f(x) = \begin{cases} Ax & 0 \leq x \leq 1 \\ 0 & \text{otherwise} \end{cases}$
 Determine i) A and ii) $P(1/4 < x < 1/2)$

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any **one** question. The question carries 10 marks.

20. For the following data compute QD, MD (about mean) and coefficient of variation.

Marks	10-20	20-30	30-40	40-50	50-60
No. of students	8	10	12	8	4

21. Compute Karl Pearson's coefficient of correlation of the following data.

Price (Rs.)	11	12	13	14	15	16	17	18	19	20
Demand (Rs.)	30	29	29	25	24	24	24	21	18	15

Also comment on the result obtained.

(1 × 10 = 10 Marks)
