D3BCA2202 (PAGES 2) **Reg.No.....**

Name: .....

THIRD SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2023

(Regular/Improvement/Supplementary)

BCA

GBCA3C05T: COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 Marks)

1. Give the false position formula for evaluating a root of a non-linear equation?
2. What are the properties of a distribution function?
3. What is interpolation?
4. Give the iteration formula of Newton-Raphson method.
5. Define mean deviation.
6. Give trapezoidal rule.
7. Three dice are rolled together. What is the probability of getting at least one '4'?
8. What do you mean by principle of least squares?
9. Define sample space of a random experiment.
10. Distinguish between discrete and continuous random variables. Give example.
11. What is meant by probability density function?
12. Explain Lorenz curve.

SECTION B: Answer the following questions. Each carries *five* marks
(Ceiling 30 Marks)

13. Define the probability density function and distribution function of a discrete random variable with examples for each.
14. Fit a straight line of the form $y = ax + b$ to the following data by using principle of least squares.

X	1	2	3	4	6	8
Y	2.4	3	3.6	4	5	6

15. Calculate harmonic mean and geometric mean.

Marks	10	20	25	40	80
No. of students	20	30	50	15	5

16. Find the root of the equation $x^3 - x - 1 = 0$ using bisection method?
17. For a discrete random variable X with probability distribution.

X	-2	-1	0	1	2
P(X=x)	0.1	0.2	0.3	k	0.2

Find k and $P(X > 0)$.

(PTO)

18. Given the data.

X	1.2	1.3	1.4	1.5
f(x)	1.063	1.091	1.119	1.145

Calculate f (1.35) using Newton's Interpolation polynomial of order 1 through 3.

19. The ranking of 10 individuals at the start and at the finish of a course of training are as follows:

Individuals:	A	B	C	D	E	F	G	H	I	J
Rank before:	1	6	3	9	5	2	7	10	8	4
Rank after:	6	8	3	2	7	10	5	9	4	1

Calculate the rank correlation coefficient.

SECTION C: Answer any *one* question. Each carries *ten* marks.

20. Find Karl Pearson's coefficient of correlation for the following data

X	80	90	100	110	120	130	140	150	160
Y	15	15	16	19	17	18	16	18	19

21. Calculate Mean and Standard deviation from the following data:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency:	5	7	14	12	9	6	2

(1 x 10 = 10 Marks)