D 111924 **(Pages : 3)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2024

B.C.A.

BCA 3C 05—COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

(2019—2023 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type)

All questions can be answered.
Each question carries 2 *marks.*
(Ceiling 20 *marks)*

1. State Simpson's $(1/3)^{rd}$ rule.
2. Write Newton Raphson formula.
3. Define Geometric Mean.
4. What is curve fitting ?
5. Find the difference between to three significant figures ?
6. Define Regression.
7. Calculate mode 5, 10, 15, 20, 25, 30, 35, 40
8. What is positive correlation ?
9. What do you mean by absolute errors ?
10. Given the p.m.f of a random variable. Find the value of k.
11. Define random variable with an example.
12. For $A = \{5, 6, 7, 8, 9\}$ and $B = \{3, 6, 8\}$ find $A \cup B$ and $A \cap B$.

Turn over

Section B (Paragraph / Problem Type)

All questions can be answered.
Each question carries 5 *marks.*
(Ceiling 30 *marks)*

13. From the following values of x and y, find the regression equation of y on x :

X	:	2	3	4	5	6
Y	:	3	5	4	8	9

14. Find quartile deviation for the following data :

Marks	:	10	15	20	25	30
No. of Students	:	5	20	47	38	10

15. Calculate Pearson's co-efficient of correlation for the following data :

X	:	5	6	8	11	9
Y	:	10	8	7	5	6

16. Compute S.D for the following data :

Marks	:	10	20	30	40	50	60
No. of students	:	4	7	15	8	7	2

17. Use Newton-Raphson method to find a root of the equation

18. A random variable X has the following probability function.

$f(x) = k$ for $x = 0$
$= 2k$ for $x = 1$
$= 3k$ for $x = 2$
$= 0$ otherwise

Determine the value of k. Write down the distribution function of X.

19. A card is drawn from a pack of cards. What is the probability that it is (i) black card ; (ii) a king ; (iii) a queen ; (iv) a spade ; and (v) a spade king.

Section C (Essay Type)

Answer any **one** *of the following questions.*
The question carries 10 *marks.*

20. Find rank correlation for the following data :

X	:	50	60	70	65	80	85	90	92	65
Y	:	60	70	75	63	80	82	63	86	90

21. Find the approximate value of using (i) Trapezoidal rule ; and (ii) Simpson's $(1/3)^{rd}$ rule.

(1 × 10 = 10 marks)