

D 31770

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Name.....

Reg. No.....

**THIRD SEMESTER (CBCSS-UG) DEGREE EXAMINATION, NOVEMBER 2022**

B.C.A.

BCA 3C 05—COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

(2019 Admission onwards)

Time : Two Hours

Maximum : 60 Marks

**Section A (Short Answer type questions)***Answer all questions.**Each correct answer carries a maximum of 2 marks.**Ceiling 20 marks.*

1. Define relative and absolute errors.
2. Find the difference  $\sqrt{6.37} - \sqrt{6.36}$  to three significant figures.
3. Write Newton Raphson Formula.
4. Find the second approximation to 4<sup>th</sup> root of 32 using Regula-falsi method.
5. What are Positional Averages ?
6. The marks obtained by seven students are 5, 10, 15, 20, 25, 30 and 45. Find the Harmonic Mean.
7. Distinguish between Positive and Negative correlation.
8. Write the formula for finding Karl Pearson's Coefficient of correlation.
9. Define an Event with an example.
10. Explain Random Variable with example.
11. Define Mean Deviation.
12. Define sample space. Give an example.

(20 marks)

**Section B (Short Essay type questions)***Answer all questions.**Each correct answer carries a maximum of 5 marks.**Ceiling 30 marks.*

13. Perform four iterations of the Newton-Raphson method to find the smallest positive root of the equation  $f(x) = x^3 - 5x + 1$ .
14. Using Simpson's (1/3)<sup>rd</sup> Rule, Evaluate  $\int_1^5 \frac{dx}{x}$  given  $h = 1$ .

**Turn over**

15. What are the desirable properties of a good measure of dispersion ?

16. Obtain the quartiles and its coefficient for the data given below :

Age	:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of persons	:	15	30	53	75	100	110	115	125

17. From the following data of 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

18. Explain the following with an example :

- (i) Mutually Exclusive Event.
- (ii) Exhaustive events. and
- (iii) Dependent Events.

19. A set of three similar coins are tossed 100 times with the following results :

Number of heads	:	0	1	2	3
Frequency	:	36	40	22	2

Fit a binomial distribution and estimate the expected frequencies.

(30 marks)

### Section C (Essay type questions)

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

20. From the following table of marks obtained by two students A and B in 10 tests of 100 marks each, find out who is more intelligent and who is more consistent :

A	:	25	50	45	30	70	42	36	48	34	60
B	:	10	70	50	20	95	55	42	60	48	80

21. Find the approximate value of  $\int_0^1 \frac{dx}{(1+x)}$  using (i) Trapezoidal Rule ; (ii) Simpson's  $(1/3)^{\text{rd}}$  Rule.

(1 × 10 = 10 marks)