

**D 51306**

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Name.....

Reg. No.....

**THIRD SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2018**

(CUCBCSS—UG)

Complementary Course

BCA 3C 05—COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

**Part A**

*Answer all questions.*

*Each question carries 1 mark.*

1. What do you mean by Chopping ?
2. What is the no. of significant digits of 3600.0 ?
3. Give the iteration formula of Newton-Raphson method.
4. Subtract 0.994576 E-3 from 0.999658 E-3 ?
5. What is curve fitting ?
6. Which are the methods available for Interpolation ?
7. What do you mean by median of a data ?
8. What are quartiles ?
9. Define Mean Deviation.
10. Define simple correlation.

(10 × 1 = 10 marks)

**Part B**

*Answer all questions.*

*Each question carries 2 marks.*

11. How would you decide the two initial values that are required for using the bisection method ?
12. Give the false position formula for evaluating a root of a non-linear equation ?
13. Which are the desirable properties of a good average ?
14. Give the relationship between Arithmetic mean, Geometric mean and Harmonic mean ?

**Turn over**

15. Define geometric mean with its formula.
16. Explain any *two* measures of dispersion.
17. How will you find Spearman's Rank-correlation coefficient in the case of tie in ranks ?
18. Distinguish between correlation and regression.

(8 × 2 = 16 marks)

### Part C

*Answer any six questions.  
Each question carries 4 marks.*

19. Calculate Mode for the following data :

Wages	:	30–35	35–40	40–45	45–50	50–55	55–60	60–65
No. of workers	:	12	18	22	27	17	23	29

20. From the following data, find mean deviation about median :

5, 28, 33, 44, 83, 87, 96, 99, 25, 35, 82.

21. Which are the merits and demerits of standard deviation as a measure of dispersion ?
22. Apply Newton's method to find the roots of the equation  $\tan(x) - x = 0$ .
23. Fit a straight line of the form  $y = ax + b$  to the following data by using principle of least squares.

x	:	5	6	10	12
y	:	2	3	4	2

24. Two unbiased dice are thrown, find the probabilities of :
  - (a) Both the dice show the same number.
  - (b) One die shows five.
  - (c) First die shows five.
  - (d) The total of the number on the dice is eight.
25. Consider the experiment of tossing of two coins. Find the pdf and distribution function of number of heads.

26. For the following data, obtain a cubic polynomial using Lagrange formula :

X	:	0	1	2	3
$f(x)$	:	1	-1	-1	0

27. Find the root of the following equation by using the Bisection method.

(6 × 4 = 24 marks)

### Part D

*Answer any three questions.  
Each question carries 10 marks.*

28. Use false position formula repeatedly to obtain the roots of the equation  $x^3 - 4x^2 + x + 6 = 0$ .

29. Find the Harmonic mean and Geometric mean for the following data :

Class	:	10-20	20-30	30-40	40-50	50-60
Frequency	:	4	6	10	7	3

30. Form the two regression equations for the following data :

X	:	46	42	44	40	43	41	45
Y	:	40	38	36	35	39	37	41

Also find  $y$  when  $x = 50$ .

31. 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 by using A.M. and S.D. :

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

32. Obtain Spearman's rank correlation co-efficient for the following data :

X	:	68	64	75	50	64	80	75	40	55	64
Y	:	62	58	68	45	81	60	68	48	50	70

(3 × 10 = 30 marks)