DL-33 *Your Roll No.....*

BACHELOR OF COMPUTER APPLICATION II YEAR EXAMINATION, 2010

Paper — BCAD-401

NUMERICAL and STATISTICAL ANALYSIS

Time : 2½ Hours *Maximum Marks : 70*

(Write your Roll No. at the top immediately on receipt of this question paper.)

Answer ALL questions of Section A, any SIX questions of Section B and any THREE questions of Section C.

SECTION - A (1 × 10 = 10)

Fill in the blanks.

1. Numerical method gives _____ solution of any problem.
2. If 't' is true value, 'a' is approximate value, then absolute error is _____.
3. The general equation of any straight line is _____.
4. The general equation of any quadratic curve is _____.

P.T.O.

5. The solution for Numerical Integration is given by _____method.

6. The solution for Numerical Differentiation is given by _____ method.

7. To fit a straight line, _____ method is used.

8. For Bisection method, if solution lies in interval (a,b) then first solution is given by _____.

9. For Newton Raphson method, the solution is given by_____.

10. If sum of n numbers is S, then mean of numbers is given by_____.

SECTION - B (6 × 5 = 30)

11. Define Error. Explain different types of errors.

12. If 0.333 is the approximate value of 1/3, then find its absolute, relative and percentage errors.

13. Solve the following equation by Gauss Elimination Method:

$$2x + 3y - z = 5$$
$$4x + 4y - 3z = 3$$
$$2x - 3y + 2x = 2$$

14. Find the root of the equation $x^3 - x - 1 = 0$ lying between 1 and 2 by biscetion method.

15. Find the real root of the equation $f(x) = x^3 - 9x + 1 = 0$ by Regula Falsi method.

16. Given the table of values as:

x :	2.0	2.25	2.50	2.75	3.0
y (x) :	9.00	10.06	11.25	12.56	14.00

Find y (2.35)

17. Given the following distribution:

Variable	2	4	5	7	8	9
Frequency	2	3	3	5	6	6

Find arithmetic mean for above distribution.

18. Given the following frequency distribution

x	1	3	4	6	7
Cumulative Frequency	2	3	8	15	18

Find the Mean Deviation of the above distribution.

SECTION - C (3 × 10 = 30)

19. Find the real root of the equation $x^2 - 5x + 2 = 0$ between 4 and 5 by Newton's Raphson's Method upto four decimal places.

20. Solve the following system of equations by Jacobi's Method:

$$5x - y + z = 10$$
$$2x + 4y = 12$$
$$x + y + 5z = -1$$

Start with the solution (2, 3, 0).

21. Evaluate $\int_0^1 \frac{dx}{1+x^2}$ by ysuing :

i) Trapezoidal Rule

ii) Simpson's 1/3 Rule

iii) Simpson's 3/8 Rule

Take h = 0.125

22. Calculate the mean, median and mode from the following frequency table :

Class	Frequency
20.5 – 29.5	8
30.5 – 39.5	20
40.5 – 49.5	62
50.5 – 59.5	73
60.5 – 69.5	42
70.5 –79.5	8

24. Calculate the Standard Deviation of the following data :

x	3	4	5	6	7	8
f	2	2	3	4	5	6