Total No. of Questions : 5 Total No. of Printed Pages : 5

CN-297-A

B.C.A. IVth Semester Examination, 2013

Computer Oriented Numerical Methods

Paper - BCA-402

Time : 3 Hours] **[Maximum Marks : 85**

Note :- Attempt all the questions.

SECTION - 'A'

Objective Type Questions **2×5=10**

1. Choose the correct answer :

(i) The order of convergence in Newton Raphson Method is :

(a) 2

(b) 3

(c) 1

(d) 0

P.T.O.

(ii) The Value of $\int_0^1 \frac{dx}{1+x}$ by simpson's $\frac{1}{3}$ rule is :

(a) 0.96315

(b) 0.63915

(c) 0.69315

(d) 0.69351

(iii) As soon as a new value of variable is found by iteration it is used immediately in the following equations this method is called.:

(a) Gauss-Jordan method

(b) Guass-Seital method

(c) Jacobis method

(d) Ralaxation method

(iv) Which of the following is a step by step method :

(a) Taylor's

(b) Ricard

(c) Euler

(d) Remage Kutta method

(v) Which of the following method is used to find the solution of given set of unequal spaced points :

(a) Newton-Raphosan

(b) Gauss Forward

(c) Simpson's Rule

(d) Lagrange's Method

SECTION - 'B'

2. (a) Using by section method find aroot of the euqation $x^3 - 4x - 9 = 0$ correct to two places of decimal. 10

(b) Find a real root of the equation $x \log_{10} x = 1.2$ by regula falsj method correct to three place of decimal. 10

OR

(a) Apply Gauss elimination method to solve the equations $x + 4y - z = -5$, $x + y - 6z = -12$ and $3x - y - z = 4$.

(b) Solve by Gauss-Seidal method $20x + y - 2z = 17$, $3x + 20y - z = -18$ and $2x - 3y + 20z = 25$

3. (a) Find the value of y at x = 5 by using Newtons' forward interpolation formula : 10

x:	4	6	8	10
y:	1	3	8	15

(b) Using Lagrange's interpolation formula find y (10) : form the given data :

x:	5	6	9	11
y:	12	13	14	16

OR

(a) Find f(4) from the following data by using suitable interpolating formula : 10

x :	0	1	2	3
f(x):	1	2	1	10

(b) Find f(6) by using Newton's divided difference formula :

x :	3	7	9	10
f(x):	168	120	72	63

4. (a) Find $\int_0^6 \frac{dx}{1+x^2}$ by trapezoidalrule. 10

(b) Evaluate $\int_0^1 \frac{dx}{1+x}$ by Simpsons' both rule. 10

OR

(a) Use trapezoidal rule to find $\int_0^1 x^3 dx$ considering five sub interval.

(b) For the following values x and y. Find the first

derivatives at $x = 4$, i.e. $\frac{dy}{dx}$ at $x = 4$

x :	1	2	4	8	10
y :	0	1	5	21	27

5. Solve any **three** :- 5×3=15

(a) Using Euler' method find y at $x = 1$ given that $\frac{dy}{dx} = x + y$ and $y(0) = 1$ by taking $h = 0.2$

(b) Applying Runge-Kutta method of fourth order find y when $x = 0.2$ given that $\frac{dy}{dx} = x + y$ and $y = 1$ when $x = 0$.

(c) Find the coefficient of correlation from the lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$.

(d) Write the formula of forward and backward difference.

(e) Find the correlation coefficeint from :

x :	1	2	3	4	5
y :	2	5	3	8	7