Student Exam No:

GANPAT UNIVERSITY

B. Tech. Semester III (CIVIL ENGINEERING)

Regular Examination : Nov - Dec 2012

2CI 306:Numerical Analysis & Computer Programming

Max.Time: 3 Hours **Total Marks: 70**

Instructions: - (1) Answer to the two sections must be written in **separate** answer books.

(2) Figures to the right indicate **full** marks.

(3) Assume suitable data if required.

Section - I

1 (A) Find a positive root of equation $cosx = xe^x$ by False position method upto four decimal places (6)

(B) Use Bisection method to find the positive root of equation $x - cosx = 0$ correct to four decimal places (6)

OR

1 (A) Solve the following systems by Matrix-Inversion method: (6)

$x - 2y + z = 3$

$2x + y - z = 5$

$3x - y + 2z = 12$

(B) Using Newton's divided difference formula, find the missing value from the table: (6)

x	:	1	2	4	5	6
$f(x)$	:	14	15	5	------	9

2 (A) Using Lagrange's interpolation formula ,fit a polynomial to the data (5)

x	:	0	1	3	4
y	:	-12	0	6	12

Also find y at x=2.

(B) Solve the following systems by Gauss-Seidal Iteration method: (6)

$9x + 4y + z = -17$

$x - 2y - 6z = 14$

$x + 6y = 4$

OR

2 (A) A curve is drawn to pass through the points given by the following table: (5)

x :	1	1.5	2	2.5	3	3.5	4.0
y :	2	2.4	2.7	2.8	3	2.6	2.1

Estimate the area bounded by the curve, x-axis and the lines x=1,x=4.

(B) Fit a second degree parabola to the following data using Least Squares method: (6)

x :	0	1	2	3	4
y :	1	1.8	1.3	2.5	6.3

3 (A) Using Taylor series method find the correct to four decimal places, the value of (6)
$y(0.1)$, given $\frac{dy}{dx} = x^2 + y^2$ *and* $y(0) = 1$.

(B) Using Euler's method, Solve the differentia equation at $x = 0.1$ given that (6)
$\frac{dy}{dx} + xy = 0$, *where* $y(0) = 1$.

Section - II

4 (A) Write in detail about Inheritance (4)

(B) What is mean by Type Conversion (4)

(C) Describe in detail: Pointers, Polymorphism (4)

OR

4 (A) **Define (Any Eight)** (8)
(1) Class (2) Constructor (3) Destructor (4) Pointer (5) Virtual function
(6) OOP (7) POP (8) Encalpsation (9) Arrays

(B) Write a program for Center of Gravity for Circle (4)

5 (A) Write a program for summation of 3*3 Square Matrix (6)

(B) What is Inheritance? Enlist it Types. (5)

OR

5 (A) How do you Specify Class and Define its Member Function (4)

(B) State the Difference between Constructor And Destructor (3)

(C) State the Difference between OOP and POP (4)

6 (A) What is Class? What its Uses in C++? (3)

(B) What is Virtual Function and Describe its Uses. (3)

(C) Write a program to find individual sum of given number (6)

" END OF PAPER"