

GANPAT UNIVERSITY

B.Tech. Semester III (CIVIL),

Regular Examination – Nov/Dec: 2011, Exam. No. of the candidate: _____

C 306: Numerical Analysis & Computer Programming

Max. Time: 3 Hours

Max. 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

Q-1 (A) Find a root of the equation $x^3 - x - 11 = 0$, using bisection method upto eighth approximation. 6

(B) Find the positive root of $x^3 + 2x^2 + 10x - 20 = 0$ by Newton-Raphson method. 6

OR

Q-1 (A) Find a root of the equation $e^x = 3x$, using bisection method correct to three decimal places. 6

(B) Find the real root of the equation $f(x) = xe^x - 2 = 0$ which lies between 0.8 and 0.9 correct to three decimal places. 6

Q-2 (A) Solve the following systems by Gauss Elimination Method 6
(1) $-x_1 + x_2 + 2x_3 = 2$ (2) $3x_1 - x_2 + x_3 = 6$ (3) $-x_1 + 3x_2 + 4x_3 = 4$

(B) Solve any one of the following for a positive root by False Positioning method 5
(1) $3x - \cos x = 1$ (2) $xe^x = 3$

OR

Q-2 (A) Solve the following systems by Gauss Jordan Method 6
(1) $5x - 2y + 3z = 18$ (2) $x + 7y - 3z = -22$ (3) $2x - y + 6z = 22$

(B) Find the real root of $\sqrt{10}$ correct to three decimal places by Newton-Raphson method. 5

Q-3 (A) Use trapezoidal rule to evaluate $\int_0^1 x^3 dx$ considering five sub-intervals. 6

(B) (1) The population of a certain town is shown in the following table : 6

Year	1951	1961	1971	□1981	1991
Population	19960	36650	58810	77210	94610

Find the rate of growth of population in the year 1981.

(2) Define Absolute and Relative Errors.

Section – II

- Q-4 (A) Write a short note on Scope Resolution operator. Write applications of OOPS 6
(B) What are the types of constructor? Explain the special characteristics of constructor. 6
OR
- Q-4 (A) Define inline function. What are the advantages and disadvantages of inline function 6
(B) Write a program to find out shear stress for 6
(1) rectangular section (2) triangular section
- Q-5 (A) Define the following with example 5
(a) dynamic binding (b) call by reference
(B) Write a program to find the details of student record like class, branch, hobby etc. by using array of object. 6
OR
- Q-5 (A) Differentiate the three types of inheritance? 5
(B) What do you mean by default argument? Explain the concept of OOPs. 6
- Q-6 (A) Explain the term "Overloading". List out the rules for operator overloading. 6
(B) Write a program to enter the age of any 10 persons and find the ages of person between 80 to 90 with output. 6

END OF PAPER