



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.A., B.Sc. DEGREE EXAMINATION – ECON, MATHS. STATS. PHYS. COMP.SCI.**

THIRD SEMESTER – NOVEMBER 2011

**CS 3203 - NUMERICAL METHODS USING C**

Date : 11-11-2011  
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

PART – A

(10 X 2 =20)

ANSWER ALL THE QUESTIONS

1. Define the term : keyword
2. Give the syntax for printf () statement.
3. What is the use of control statement?
4. What is meant by recursion?
5. Determine the determinant of the given matrix.

$$\begin{pmatrix} 14 & 5 \\ 6 & 3 \end{pmatrix}$$

6. State the formula for Newton's backward interpolation.
7. Differentiate the equation  $X^7 + 6X^4 + 2X^2 + 4X + 5$
8. What is called pivot element?
9. Give the formula for Runge-Kutta IV<sup>th</sup> order method.
10. How would you decide the two initial values that are required for using the bisection method?

PART – B

(5 X 8 =40)

ANSWER ALL THE QUESTIONS

11. a) Differentiate while and do..while statement in C. Explain it with examples.  
(Or)

b) Explain Single dimensional array with an example.

- 12.a) Write a C program to find out factorial of n numbers using functions.  
(Or)

b) Write short notes on input statements in C with different control strings.

- 13.a) Solve the system of equation using Gauss Jordan method.

$$\begin{aligned} 2X + 4Y - 6Z &= -8 \\ X + 3Y + Z &= 10 \\ 2X - 4Y - 2Z &= -12 \end{aligned}$$

(Or)

- b) Write a C program to find out Eigen value and Eigen vector using power Method.

14. a) Write a C program to implement trapezoidal rule.

(or)

b) Write a C program to implement Runge – kutta II<sup>nd</sup> order method.

15. a) Evaluate the following integral using Simpson's 3/8 rule.

$$\int_1^2 (x^3 + 1) dx \text{ with } n = 3$$

(Or)

b) Write a C program to find out the root of the equation using Regula – Falsi method.

PART – C

(2 X 20 =40)

ANSWER ANY TWO QUESTIONS

16. a) Explain the branching statements in C with suitable example.

b) Write a C program to solve the system of equation using Gauss Elimination method.

17. a) Write the operator precedence rule and explain it with an example.

b) Estimate the value of Sin  $\theta$  at  $\theta = 25$  using Newton forward interpolation formula with the help of the following table.

$\theta$	10	20	30	40	50
Sin $\theta$	0.1736	0.3420	0.5000	0.6428	0.7660

18. a) Write a C program to add two given matrices.

b) Compute the root of the given equation using Newton-Raphson method.

$$X^2 - 3X + 2 = 0 \text{ with the initial value } x_0 = 0$$

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