LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - PHYSICS
THIRD SEMESTER – NOVEMBER 2011
PH 3812 - NUMERICAL METHODS AND C PROGRAMMING

Date : 04-11-2011   Dept. No.   Max. : 100 Marks
Time : 9:00 - 12:00

PART – A

Answer **ALL** the questions   (10 X 2 = 20)

1. What is the use of comma operator in C?

2. Describe the various logical operators in C.

3. Give the general format of "**structure**".

4. What are the data types available in C?

5. State the syntax for opening and closing a file.

6. Explain the use of typedef () function.

7. Distinguish between break and continue statements in C.

8. Determine the approximate root of $x^3-3x+1=0$.

9. Calculate $\int_2^{10} \frac{dx}{(1+x)}$ by dividing the range into eight equal parts, using Simpson's 1/3rd rule.

10. Define a recursive function.

PART – B

Answer any **FOUR** questions   (4 X 7.5 =30)

11. Solve the following systems of equations by Gauss-Jordan method.

     x+2y+z=8;   2x+3y+4z=20;   4x+3y+2z=16

12. Use Lagrange interpolation formula, to find f(10), given that f(5)=12, f(6)=13, f(9)=14, and f(11)=16.

13. Solve $y'=x^2+y$, with initial condition y(0)=0.94, using Euler's modified method, and find y(0.1).

14. Write a C program to check the given string is Palindrome or not.

15. Write a program in C to perform the basic arithmetic operations using switch –case.

PART – C

Answer any **FOUR** questions   (4 X 12.5 =50)

16. Develop a C program to multiply two 3x3 matrices.

17. Write a program in C to solve a second order differential equation using the fourth order Runge-Kutta method.

18. Develop C programs to,

   i) generate the Fibonacci series,   ii) find the greatest of three numbers.

19. Find the root of equation $x^5-x^4-x^3-1=0$ by Regula-falsi method.

20. Using Newton's divided difference formula, find the value of f(8) and f(15) from the following table.

x	4	5	7	10	11	13
f(x)	48	100	294	900	1210	2028

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