LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

THIRD SEMESTER – **APRIL 2014**

CS 3203 - NUMERICAL METHODS USING C

Date : 10/04/2014 Dept. No. Max. : 100 Marks

Time : 09:00-12:00

Part-A

Answer all the questions **2x10=20**

1. Define the term constant.
2. What is a variable?
3. What is recursion?
4. List the string handling functions.
5. Find the characteristic equation of the given matrix A= $\begin{bmatrix} 3 & -5 \\ -2 & 4 \end{bmatrix}$
6. List the linear algebraic equations method.
7. What is interpolation?
8. List down the types of numerical integration methods.
9. Find the positive root of the equation $3x^3+5x-40$.
10. Write the formulae of Newton Raphson method

Part-B

Answer all the questions **5x8=40**

11a .Explain the structure of C in brief.

(OR)

b. What is array? Explain the types of array with an example.

12a.Solve the following system of equations by Gauss Elimination method 5x1 –x2+x3=10, 2x1,4x2=12,x1+x2+5x3=-1.

(OR)

b. Write a C program to implement Gauss Jordan method.

13a.Using the data of the following table, compute the integrals $\int_{0.5}^{1.1} x2ydx$ using trapezoidal rule.

x	0.5	0.6	0.7	0.8	0.9	1.0	1.1
y	0.4804	0.5669	0.6490	0.7262	0.7985	0.8658	0.9281

(OR)

b. Write a C program to solve Simpson‘s 1/3 rd method.

14a. Determine by Lagrange’s method the percentage number of patients over 40 years using the following data.

Age over (x) years	30	35	45	55
% number (y) of patients	148	96	68	34

(OR)

b. Solve the equation $\frac{dy}{dx} = \frac{1}{x} + y$, y(0)=1 for y(0.1) using Runge Kutta method of the fourth order.

15a.Write a C program to solve bisection method.

(OR)

b. Find the root of the equation x3-5x-7=0 that lies between 2 and 3 correct to 4 places of decimals, using the method of false position.

Part-C

Answer any two questions: **2x10=20**

16a. Write in detail about the types of operators with examples.

b. Explain in detail about built in functions with example.

17a.Discuss in detail control flow statements.

b. What is a file? Explain in detail with examples.

18a.Write a C program to implement equal interpolation method.

b. Find the first and second derivatives of y=f'(x) at x=1.5 from the data. Also f'(x) at x=3.5 in two ways.

x	1.5	2.0	2.5	3.0	3.5	4.0
y	3.375	7.0	13.625	24.0	38.875	59.0