



Reg. No. :

Name :

**Sixth Semester B.Tech. Degree Examination, May 2011
(2008 Scheme)**

Branch : Electrical and Electronics

08.603 : NUMERICAL TECHNIQUES AND COMPUTER PROGRAMMING

Time : 3 Hours

Max. Marks : 100

Instruction : Answer all questions from Part – A and one from each Module of Part – B.

PART – A

1. Illustrate with examples different expressions in C.
2. What is mean by preprocessor directives ?
3. Explain any two structured data type in C.
4. Explain with syntax diagram the 'if' and 'case' statements in C.
5. Write a C function program to swap the values of a pair of integers.
6. What is meant by command line arguments ?
7. Write different file handling functions used in C.
8. Define Eigen values and Eigen vectors of a matrix.
9. Explain fourth order R.K. method for the solution of ordinary differential equation.
10. Write a program segment in C for the solution of NR method for transcendental equations.

(10×4=40 Marks)



P.T.O.



PART – B

Module – I

11. a) Explain the syntax of 'While' and 'Do-while' statements in C. 8
- b) Write a program to simulate a simple calculator. It reads 2 integers and a character. If the character is '+', sum of integers is printed. If '-', difference is printed. If '*', '/', or '%', multiplication, division or remainder of division is printed. 12

OR

12. a) Write a C program to evaluate $\exp(x)$ corrected to 4 decimal places
$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$$
 8
- b) What is meant by hierarchy of operators? 5
- c) Draw a flow chart to check whether a number is prime or not. 7

Module – II

13. a) Differentiate between 'call by value' and 'call by reference' functions with example programs. 8
- b) Write a C program to arrange the elements of an integer array in ascending order by means of pointers. 8
- c) Write notes on dynamic allocation of memory. 4

OR

14. a) Write a C program to read numbers from one file and write all odd numbers to a second file and even numbers to a third file. Also display the contents of second and third file. 14
- b) Write a C program to compute binomial coefficient $nCr = \frac{n!}{(r!(n-r)!)}$ use function. 6



Module – III

15. a) Explain the method for the solution of linear equations by Gauss Elimination. Also write the C program. 11
- b) Solve by Gauss Elimination :
- $$x_1 + 2x_2 - x_3 = 8$$
- $$3x_1 + x_2 + 2x_3 = 9$$
- $$2x_1 - 2x_2 + 3x_3 = 2.$$
- 9
- OR
16. a) Explain Simpson's $\frac{1}{3}$ rule for numerical integration. 8
- b) Evaluate $\int_0^1 (x^2 + \sin x) dx$ using Simpson's $\frac{1}{3}$ rule. Compare the result with Trapezoidal rule. Comment on the results. 12

