

# COMPUTER PROGRAMMING AND NUMERICAL METHODS – 2012

Answer any FIVE questions.

First question is compulsory.

All questions carry equal marks.

1. (a) What is recursion ? Give an example.  
(b) What is two dimensional array ? How to initialize two dimensional array ?  
(c) Write down scope and extent variables.  
(d) Give any four string handling functions.  
(e) Describe different bitwise operators.  
(f) What is truncation and round off errors?  
(g) Write the eulers method equations.
2. (a) Describe the different types of operators in C.  
(b) Write a program to solve quadratic equation.
3. (a) Differentiate while and do-while loops.  
(b) Write a program to check given number is palindrome or not.
4. (a) What is function ? Explain call-by-value and call-by-reference with suitable example.
5. (a) What is file ? How to create a file ? Describe the different file operations.  
(b) Write a program to copy a content of one file to another file.
6. (a) What is pointer ? Give the advantage of pointers.  
(b) Write a program to processing student records using structures. The student record contain the following variables.  

Student name, roll no., avg. marks, rank.
7. (a) Explain the secant method to roots of given polynomial equation.  
(b) Use secant method to estimate the root of the equation  $x^2 - 4x - 10 = 0$  with initial estimates of  $x_1 = 4$  and  $x_2 = 2$ .
8. (a) Explain about RK-method.  
(b) Compute the integral  $\int_0^{\pi/2} \sqrt{\sin(x)} dx$  by applying Simpson's 1/3 rule for  $n = 4$  and  $n = 6$  with an accuracy to five decimal places.