(Pages : 2) **A – 2852**

Reg. No. : .....

Name : .....

Sixth Semester B.Tech. Degree Examination, May 2016
(2008 Scheme)
08.603 : NUMERICAL TECHNIQUES & COMPUTER PROGRAMMING (E)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. What is the relevance of void data type in C ?
2. Explain the difference between while and do-while structure.
3. Describe how data are stored by functions in a procedure oriented program.
4. Explain the difference between array and pointer variable.
5. Explain the need for introducing structure variables in procedure oriented programming language.
6. Explain with an example how you would create memory space for an array of 10 elements using pointers.
7. List the various sources of errors in numerical computing.
8. Explain the stability analysis used in Numerical techniques.
9. What is the need for command line arguments ?
10. Write down the finite difference formula for Laplace Equation. Explain the application of this equation. **(10×4 = 40 Marks)**

PART – B

Answer **one full** question from **each** Module. **Each full** question carries **20** marks.

Module – I

11. a) Prepare a C program to read three numbers from the keyboard and display the largest value on the screen. **10**

    b) Explain the rules for naming variables in C++. **10**

OR

12. a) Write a program to find the prime numbers between 1 and 500. **10**

    b) Write a program to find the sum of first hundred odd numbers using function. **10**

Module – II

13. a) Write a program to read a matrix of size m×n from the keyboard and display the same on the screen using function. **10**

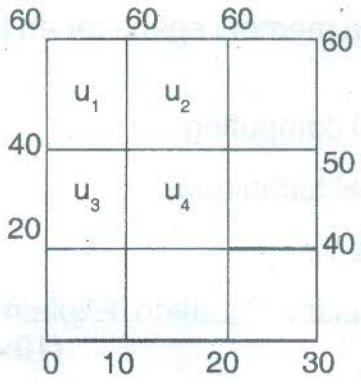
    b) Write a program to sort a list of numbers in ascending order. **10**

OR

14. Explain with the help of an example the implementation of stack and queue operations using pointer. **20**

Module – III

15. The function u satisfies Laplace equation at all points within the square domain given in the following figure and has boundary values as indicated. Compute the value of u at the interior nodes u_1, u_2, u_3 and u_4 using finite difference method : **20**



OR

16. a) Solve

    $10x - 7y + 3z + 5u = 6$, $-6x + 8y - z - 4u = 5$, $3x + y + 4z + 11u = 2$, $5x - 9y - 2z + 4u = 7$ by Gauss Elimination method. **10**

    b) Implement the above problem using a 'C' program. **10**