PAPER ID : 1305

TCS-101 Printed Pages : 3

Paper ID and Roll No. to be filled in your Answer Book

Roll No. 9 0 8 0 1 0 1 0 6 1

B. Tech.

(SEM. I) (ODD SEM.) EXAMINATION, 2009-10

FUNDAMENTALS OF COMPUTER PROGRAMMING

Time : 3 Hours] [Total Marks : 100

Note : Answer all questions.

1 Attempt any **two** of the following : **10×2=20**

(a) Explain the following :
- Mini systems
- Micro systems.

(b) Differentiate between Windows and Unix.

(c) Convert the following hexadecimal numbers to decimal :

(a) IC_{16} (b) $A85_{16}$

(c) $E5_{16}$ (d) $B2F8_{16}$

2 Attempt any **two** of the following : **10×2=20**

(a) Give the features of MS-VC editor

(b) Differentiate between structured programming and functional programming.

(c) What do you understand by programmability and programming languages.

3 Attempt any **two** of the following : **10×2=20**

(a) Write macro definitions with arguments for calculation of area and perimeter of a triangle, a square and a circle store these macro definitions in a file called "areaperi.". Include this file in your program and call the macro definitions for calculating area and perimeter for different squares, triangles and circles.

(b) Write a function that will calculate and display the real roots of the quadratic equation. The calculated roots should be real.

(c) Write a C program that will allow the computer to be used as an ordinary desk calculator. Consider only the common arithmetic operations (addition, subtraction, multiplication and division). Include a memory that can store one number.

Attempt any **two** of the following : **10×2=20**

(a) Write a program to obtain transpose of a 4×4 matrix. The transpose of a matrix is obtained by exchanging the elements of each row with the elements of the corresponding column.

(b) Write a program to pick up the largest number from any 5 row by 5 column matrix. Also calculate sum of all blocks.

(c) Write a C program to show how an array of structures is passed to a function, and how a pointer to a particular structure is returned.

5 Attempt any **two** of the following : **10×2=20**

(a) There are 200 records present in a file with information like itemcode, itemname in the structure. Write a program to read these records, arrange them in ascending order and write them in the target file.

(b) Write a complete C program, using pointer notations, that will generate a table containing the following three columns

$t \quad ae^{bt}\sin ct \quad ae^{bt}\cos ct$

Structure the program in the following manner. Write two special functions, f_1 and f_2 where f_1 evaluates the quantity $ae^{bt}\sin ct$ and f_2 evaluates $ae^{bt}\cos ct$.

(c) Write an appropriate declarations for each of the following situations involving pointer :

(a) Declare a function that accepts an argument which is a pointer to an integer array and returns a pointer to a character.

(b) Declare a 12-element array of pointers to a functions. Each function will accept two pointers to double - precision quantities as arguments and will return a pointer to a double precision quantity.