Printed Pages—4   **MCA113**

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

| PAPER ID : 7303 | Roll No. | | | | | | | | | | |

M.C.A.

(SEM. I) THEORY EXAMINATION 2011-12

COMPUTER CONCEPTS AND PROGRAMMING IN C

Time : 3 Hours   *Total Marks : 100*

Note :– (i)   This paper consists of **three** sections. Section A carries 20 marks, Section B carries 30 marks and Section C carries 50 marks.

(ii)   Attempt **all** Sections.

(iii)   Make necessary assumptions if so required.

SECTION—A

1. (a)   Explain the following in brief :   (7×2=14)

    (i)   Algorithm

    (ii)   Size of () function in C

    (iii)   Operator precedence in C

    (iv)   Global variables in C

    (v)   Continue statement in C

    (vi)   Hard Disk

    (vii)   Syntax error

(b) Fill in the blanks :

(6×1=6)

(i) The software used to manage the resources of computer system is called ....

(ii) The .... function in C is used to join the two strings.

(iii) The .... Statement in C is called a multiple choice statement.

(iv) The binary equivalent of $(211)_{10}$ is ....

(v) 1 MB is equal to .... Bytes.

(vi) An example of a system software is ....

SECTION—B

2. Answer any **three** parts :

(10×3=30)

(a) Explain the various components of a digital computer with suitable block diagram; also describe the function of each component. Give an example of any three input and three output devices with their application.

(b) Write short notes on structured programming.

(c) What do you mean by operating system ? Explain various types of functions performed by an operating system.

(d) Write a program in C to display first 20 Fibonacci numbers and their sum; also give the flow chart for the same.

(e) What do you mean by sorting ? Write a program in C to sort the elements of a given array of N positive integers. Also give flow chart for the same.

SECTION—C

3. Answer any **two** parts : (5×2=10)

   (a) Discuss various data types used in C with suitable examples.

   (b) Write an algorithm for calculating the sum of all the digits of a given number (at least 4 digits long). Also write the program in C for same.

   (c) Convert the following :

   (i) $(2751)_8 = (...)_2$

   (ii) $(110101.101)_2 = (...)_{10}$

   (iii) $(111.11)_{10} = (...)_2$

   (iv) $(345.2)_{16} = (...)_{10}$

   (v) $(1101011.10111)_2 = (...)_{16}$

4. Answer any **two** parts : (5×2=10)

   (a) Write a program in C to count the frequency of vowels in a given sentence of at least 35 characters long.

   (b) Create a suitable structure for the preparation of award list for marks obtained in a single subject using C for 5000 students. Also display the ROLLNO, NAME and MARKS of those students who secured greater than 70%.

   (c) Describe any five library functions used in C by giving their syntax and with an appropriate example.

5. Answer any **two** parts : (5×2=10)

   (a) Write a function in C to check that a given number is a prime number or not. If the number is prime the function should return 1 otherwise –1.

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(b) What do you understand by the Scope of variables ? Discuss various types of Scope used C with suitable examples.

(c) Write a program in C to search name of a student in a given student list.

6. Answer any **two** parts : (5×2=10)

(a) What are various storage classes used in C ? Discuss their significance with suitable examples.

(b) Write a program in C for multiplication of the two matrices. The result must be stored in a third matrix.

(c) What do you mean by a macro ? How macros are defined and called in C ? Explain with suitable example.

7. Answer any **two** parts : (5×2=10)

(a) How pointers are created and initialized ? Explain. Write a program in C to create a two dimensional matrix of real numbers using pointers and also find the transpose of that matrix.

(b) Write a short note on the following : (i) Dynamic memory allocation (ii) Stack.

(c) Explain various parameters passing mechanism used in function in C with some example.