# MCA (Revised)

## Term-End Examination

## December, 2012

### MCS-011 : PROBLEM SOLVING AND PROGRAMMING

*Time : 3 hours*  *Maximum Marks : 100*
*(Weightage 75%)*

*Note :* Question number **1** is **compulsory**. Attempt **any three** questions from the rest.

1.  (a)  Draw a flowchart and then develop an interactive 'C' program which finds whether a given integer number is prime or not. Make the use of a function subprogram.   **10**

    (b)  Differentiate between various storage classes in 'C'.   **5**

    (c)  Write down a recursive function in 'C' to calculate the factorial of a given number.   **5**

    (d)  Explain the concept of pointer to an array. Write a program in 'C' to copy the contents of an array to another array using pointers.   **10**

    (e)  Write a 'C' program that will enter a line of text, store it in an array and then display backwards. The length of the line should be undefined (being terminated by ENTER key), but less than 80 characters.   **10**

2.  (a)  Explain null pointer assignment. Also give    **4**
        an example of use of null pointer.

    (b)  Write a macro for the following :    **2x3=6**
        (i)  to find square of a given number.
        (ii)  to find smallest of 3 given number.

    (c)  Write a program in 'C' to enter two $4 \times 4$    **10**
        matrices and to display the product of these
        matrices.  Explain and give suitable
        documentation.

3.  (a)  Write a program and flowchart to display    **8**
        the following :

        A
        B  A  B
        C  B  A  B  C
        B  A  B
        A

    (b)  Give the syntax of getch( ) and gets( ). Give    **4**
        examples also.

    (c)  Explain the action of do-while statement.    **3**
        With an example.

    (d)  What is the difference between a call by    **5**
        value and call by reference?  Explain with
        examples.

4.  (a)  Write a C program to create a file and copy    **8**
        the contents of another given file into this
        newly created file.

    (b)  What is # ifdef ? Give an example to explain    **4**
        use of # ifdef.

(c) Differentiate between a structure and a **8** union. Write a structure for a student and write a 'C' program to display the marks of the student for five subjects and also calculate the percentage of marks obtained.

5. (a) Give the syntax and examples of usage of **4** scanf( ) and printf( ).

(b) Give 5 distinctive features of 'C' which states **6** it to be a structured programming. What are the differences between a low level, a middle level and a high level language. Give examples.

(c) Write a program to display the following **5** patterns :

```
1   2   3   4   5
    2   3   4   5
        3   4   5
            4   5
                5
```

(d) What is array of pointers to string? Declare **5** an array of pointers to string having names of your five friends.

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