

• MCA (Revised)
Term-End Examination
June, 2008

**MCS-011 : PROBLEM SOLVING AND
PROGRAMMING**

Time : 3 hours

Maximum Marks : 100

(Weightage 75%)

Note :

- (i) Question number 1 is **compulsory**.
 - (ii) Attempt any **three** questions from the rest.
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1. (a) Design an algorithm, draw a corresponding flowchart and then write a program in C to convert a given string to lower case. 10
- (b) Write an algorithm and program in C to generate fibonacci series. Use recursion. 10
- (c) Draw a flowchart and write a program in C to calculate the number of vowels in a given string. 10
- (d) What do you mean by 'array of pointers' ? Write a program in C to calculate the difference of the corresponding elements of two arrays of integers of same size. 10
2. (a) Write the usage of the following (with an example of each) : 5

- (i) #define
- (ii) enum
- (b) Write a macro for the following : 7
 - (i) to find the smallest number among 3 given numbers.
 - (ii) to find the factorial of a given number N.
- (c) What are the differences between structure and union ? Give one illustrative example of usage of the union. 8
- 3. (a) Write a program in C, using structures to generate a report for employees which displays the total salary, designation, department, address etc. Assumptions can be made wherever necessary. 8
- (b) Write a program to read formatted data from the file. 6
- (c) Give a brief note on null pointer assignment. Write a program in 'C' to illustrate this concept. 6
- 4. (a) Write a program which reads a file and counts the number of lines and words in the file, assuming that a line can contain at most 80 characters. 8
- (b) Give differences between : 6
 - (i) Sequential and Random Access files
 - (ii) Global variable and Local variable
- (c) Write a program and flowchart to display the following pattern : 6

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21

5. (a) Write a program in C to find the difference between two matrices of size (3 × 3). 5
- (b) Write a program in C to sort a given list of numbers using bubble sort. Draw corresponding flowchart also. 7
- (c) Explain meaning of following prototypes and mention return data type of each of them : 8
- (i) int (*f) (char*);
 - (ii) int *f (char*);
 - (iii) double f (int a, int b, char c);
 - (iv) unsigned f ();