

MCA (Revised) / BCA (Revised)

Term-End Examination

June, 2015

02493

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

Time : 3 hours

Maximum Marks : 100

(Weightage 75%)

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

1. (a) Explain the different storage classes in 'C' programming language. 5
- (b) What is the difference between "while-do" and "do-while" loop? 5
- (c) Design a flowchart and then write a program in 'C' to convert a given complete string to upper case. 10
- (d) What do you mean by "array of pointers"? Write a program in 'C' to calculate the sum of the corresponding elements of two arrays of integers of same size. 10

- (e) List and explain the precedence of Arithmetic, Logical and Relational operators in 'C'. 10
2. (a) What is the difference between '&' and '&&' in 'C'? Explain with an example. 5
- (b) Write a loop that calculates the sum of n elements of the following series :
 $1 + 4 + 7 + 10 + 13 \dots$
Use the loop during programming in the following two different ways : 10
- (i) Using while loop
- (ii) Using do-while loop
- (c) What do you mean by scope of a variable? Differentiate between global and local variables giving an example of each. 5
3. (a) Write a program in 'C', using structures to generate a report for n students which displays the Roll No., Class, Subjects, Marks, Total, Grade, etc. Assumptions can be made wherever necessary. 10

- (b) Write a program in 'C' to print the following output 'n' rows. For example, if $n = 3$, the following should be output by the program :

10

```
    1
   1 2 1
  1 2 3 2 1
   1 2 1
    1
```

4. (a) Explain the meaning and usage of each of the following function prototypes : $5 \times 2 = 10$

- (i) `getch()`
- (ii) `strcmp()`
- (iii) `getchar()`
- (iv) `gets()`
- (v) `puts()`

- (b) Write a program to multiply 2 matrices of size 3×3 .

10

5. (a) A 'C' program contains the following declaration :

```
int arr [3] [2] = {{3, 1}, {4, 1}, {3, 2}};
```

What is the meaning of the following : $1 \times 5 = 5$

- (i) `*(arr + 1)`
- (ii) `*(*(arr) + 2) + 1`
- (iii) `*(*(arr) + 1)`
- (iv) `arr`
- (v) `*(arr) + 1 + 1`

(b) Write a recursive program in 'C' to check whether a given string is a palindrome or not. 10

(c) Explain the syntax of switch case statement in 'C' language. Also compare the performance of *switch case* with *if else* statement. 5

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