MCA (Revised) / BCA (Revised)
Term-End Examination
December, 2016

00419

MCS-011(S) : PROBLEM SOLVING AND PROGRAMMING

Time : 3 hours   *Maximum Marks : 100*

(Weightage : 75%)

Note : *Question no. 1 is **compulsory**. Attempt any* **three** *questions from the rest.*

1. (a) Design a flow chart and write an algorithm to calculate the sum of all the digits of a 4-digit number.   *10*

    (b) Write a C program to find the largest and the smallest numbers in a given single dimensional array of "n" numerical values.   *10*

    (c) Write a C program to compute the age of a person by taking the current date and the date_of_birth as inputs.   *10*

    (d) Write macro definitions for the following :   *10*

        (i)   To find the AREA of a circle (pi $\times$ r^2 where pi = 3·14)

        (ii) To find the PERIMETER of a rectangle (2 length + 2 breadth)

(iii) To find the AREA of a rectangle (length × breadth)

(iv) To find the PERIMETER of a square (4 × side)

(v) To find the AREA of a square (side × side)

2. (a) What is the use of **malloc ( )** function ? Illustrate it with the help of a program segment. *4*

(b) Write any four string functions and explain their usage with example program segments. *8*

(c) Write a C program to read formatted data (Act_No, CName, Balance) from a file and print the information of all the customers whose balance is equal to and more than ₹ 1,000. *8*

3. (a) In C programming, what is the use of switch-case statement ? What are the rules associated with it ? Give the complete syntax and illustrate it with an example program segment. *10*

(b) Write a function in C to sort an array of integers in ascending order. *10*

4. (a) Using pointers, write a C program to test whether the given string is a palindrome or not. *10*

   (b) Define recursion. Write a C program to find the factorial of a given number using *recursion*. *10*

5. (a) Summarize the purpose of the format strings "%f, %s, %d, %c", which are commonly used with the printf and scanf functions with the help of an example for each. *10*

   (b) When can we find the product of 2 matrices ? Also, write a program in C to find the product of 2 matrices (A, B) and store the result in matrix C. *10*

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