PG – 780

I Semester M.C.A. Examination, January 2015
(CBCS)
COMPUTER SCIENCE
MCA101T : Problem Solving Techniques Using C

Time : 3 Hours | Max. Marks : 70

***Instruction** : Answer **any 5** questions from Section – **A** and **any 4** from Section – **B**.*

SECTION – A

Answer **any 5** questions. **Each** question carries **6** marks. **(5×6=30)**

1. a) What is an Algorithm ? State its characteristics. **2**

   b) Write an algorithm for counting the number of digits in a given number. **4**

2. Compare Flowcharts and Algorithms. Write an algorithm and draw a flowchart for displaying even numbers in the range of 1 to 100. **6**

3. Trace the following code snippets and write the output : **(2×3)**

   a) for (i = 5 ; i < = 15 ; i + = 2)

      for (j = 0 ; j < = 1; j ++)

      printf ("%d %d", i, j);

   b) char a = 5 ; b = 5;

      printf("%d %d", a | b, a ^ b) ;

4. Discuss the different loop structures in C. **6**

5. a) Explain the difference between actual and formal parameter with an example. **3**

   b) Explain with example the different memory allocation functions in C. **3**

6. a) What is an array ? How is it defined and initialized ? Illustrate. **2**

   b) Write a C program to convert the upper case alphabets in an input string into lower case. **4**

P.T.O.

7. Explain the different storage classes. 6

8. Write a C program to create an employee file with the fields like Eno., Name, department and salary. 6

SECTION – B

Answer **any 4** questions. **Each** question carries **10** marks. (4×10=40)

9. a) Briefly describe the different Format Specifiers that can be used with the printf and scanf functions. 5

   b) Write a C Function for performing Binary search and trace it on the following array : 8, 2, 7, 1, 9, 3, 5. Assume search value is 3. 5

10. a) Explain the following with example : 6

   i) Call by value

   ii) Call by reference

   iii) Recursive function.

   b) Write a recursive function in C to find sum of first 10 natural numbers (1..10). 4

11. a) Explain the different bit wise operators. Give examples. 4

   b) Write an algorithm to convert a given binary number into decimal. Trace the algorithm for an input of the binary number 10011. 6

12. a) What are pointers ? How are the pointers declared and initialized ? Explain with examples. 5

   b) Write a program to copy a given string using pointers. 5

13. a) Differentiate between structures and unions. Give examples of each. 4

   b) Write a C program to generate the marks card for a class of 40 students. Define a structure to hold the student details like Rno., Name and marks in 5 subjects (marks are out of 100). In order to pass a student has to score above 40 in all the 5 subjects. He gets a result of "First" if his percentage is greater than or equal to 70. Otherwise he gets the "Second" class. 6

14. a) What are pre-processor directives ? Give examples. 4

   b) Write a C program that accepts several names from the user and displays them in dictionary order 6