USN ☐☐☐☐☐☐☐☐☐☐ **13MCA11**

First Semester MCA Degree Examination, Dec.2016/Jan.2017
Problem Solving Using C

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Write a flowchart to find the biggest of three numbers.   (05 Marks)
   b. Write the structure of a C program and explain each section in detail.   (08 Marks)
   c. What is the output of the following program?
      ```
      main( )
      { int x = 100, y = 200;
        printf ("%d\n",  (x > y)? x : y);
        printf ("%d\n",  10 + x++);
        printf ("%d\n",  10 + ++x);
      }
      ```
                                                                                  (03 Marks)
   d. What is a variable? Write the rules to frame variable names.   (04 Marks)

2 a. Explain getchar( ) and putchar( ) functions with examples.   (04 Marks)
   b. Write the syntax of switch statement and explain its working with an example program.
                                                                                  (08 Marks)
   c. Write a C program to find the sum of the digits and reverse of a given integer.   (08 Marks)

3 a. Explain the working of for loop with an example.   (05 Marks)
   b. Write a C program to generate prime numbers between 1 and n. Also count the number of
      prime numbers.   (10 Marks)
   c. What is an array? How to declare and initialize one dimensional array?   (05 Marks)

4 a. Write a C program to multiply two matrices that satisfy the constraints of multiplication and
      print both given matrices and product matrix.   (10 Marks)
   b. Write a C program to read a string and find the length of it with out using in built function.
                                                                                  (05 Marks)
   c. Explain the following string handling functions with examples: i) strcat( ) ii) strcpy.
                                                                                  (05 Marks)

5 a. Explain the general format of a function definition.   (06 Marks)
   b. Write a user defined function to compute factorial of a number and use this in main function
      to compute nCr [nCr = n! / ((n – r)! * r!)].   (08 Marks)
   c. What is a pointer? How to access a variable through its pointer?   (06 Marks)

6 a. Write a C program that invokes a function called find( ) to perform the following tasks:
      i)   Receives a character array and a single character.
      ii) Returns 1 if the specified character is found in the array, 0 otherwise.   (08 Marks)
   b. Define a structure. How to access structure members? How to initialize structure?   (06 Marks)
   c. Explain nested structure with an example.   (06 Marks)

7 a. Define an employee structure having the employee name, employee number, experience (in years) and salary as its members. Create an array of structure. Develop a C program to print the names and numbers of all the employees who have more than 3 years of experience and salary less than Rs.500. **(10 Marks)**

   b. Explain the following functions with examples:
       i) fopen( )   ii) fseek( )   iii) ftell( )   iv) rewind. **(10 Marks)**

8 a. Explain malloc and calloc functions with examples. **(06 Marks)**

   b. Write a C program to copy one file content to another file without using inbuilt functions. **(08 Marks)**

   c. Explain different forms of macro substitutions with examples. **(06 Marks)**

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