F.E. A11   CHOICE BASED

(3 Hours)

[Total Marks : 80]

N.B. :

1. Question Number 1 is compulsory.
2. Attempt any 3 questions from remaining 5 questions.
3. Figures to right indicate full marks.
4. Assume suitable data if necessary and state them clearly.

Q 1.
   a. Convert 0010 0100 0010 1101 from base 2 to decimal. Convert 134 from base   **4**
     10 to hexadecimal. Write steps of conversion.

   b. Enlist all the data types in C language along with their memory requirements,   **4**
     format specifiers and range.

   c. Draw flowchart for 'if else' and 'while' statements of C language.   **4**

   d. What is use of storage classes? Explain extern storage classes with suitable   **4**
     example.

   e. Differentiate between structure and union.   **4**

Q 2.
   a. What is need of computer programming? What do you mean by structured   **10**
     programming? Develop an ALGORITHM and FLOWCHART to find reverse
     of a number.

   b. Write a menu driven program to perform arithmetic operations on two integers.   **10**
     The menu should be repeated until the user selects 'STOP' option. Program
     should have independent user defined function for each case

Q 3.
   a. Write a program that creates two integer arrays of size 8 and 7. Initialize the   **10**
     arrays with random values. Sort the arrays in ascending order with the help of
     a user defined function namely 'sortArray'. Merge these arrays with the help of
     another user defined function named 'mergeArrays' which returns a new array.
     Program should display the arrays before and after sorting, also the merged
     array.

   b. What are advantages and disadvantages of recursion? Comment on conditions   **10**
     to be considered while writing a recursive function. Write a program to print
     Fibonacci series up to N terms using a recursive function.

Turn Over

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Q 4. a. What are structures? Comment on nested structures. Write a program to read **10** Title, Author and Price of 10 books using array of structures. Display the records in ascending order of Price.

b.

    i.   Explain gets() and puts() functions of C language. Comment on their **5** parameters and return values.

    ii. Enlist bitwise operators in C language. Explain any 2 with examples. **5**

Q 5. a. Write programs to print following patterns for N lines

    i.   **5**

```
5 4 3 2 *
5 4 3 * 1
5 4 * 2 1
5 * 3 2 1
* 4 3 2 1
```

    ii.   **5**

```
        5
      5 4
    5 4 3
  5 4 3 2
5 4 3 2 1
```

b. Why files are needed? Explain all the file opening modes. Write a program to **10** create copy of a file. Let the user specify names of source and destination files.

Q 6. a. Comment on dynamic memory allocation. Write a program to read and store N **8** integers in an array, where value of N is defined by user. Find minimum and maximum numbers from the array.

b. Explain any 4 functions from string.h header file with suitable examples. **8**

c. Explain continue and break statements with the help of suitable examples. **4**