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18CPS13/23

## First/Second Semester B.E. Degree Examination, July/August 2021
## C Programming for Problem Solving

Time: 3 hrs.

Max. Marks: 100

**Note: *Answer any FIVE full questions.***

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|---|---|---|---|
| 1 | a. | Explain different generations of computer. | (10 Marks) |
| | b. | With a neat block diagram of computer explain its components. | (10 Marks) |
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| 2 | a. | Write the basic structure of C program. Briefly explain each section. | (08 Marks) |
| | b. | Classify the operators based on the number of operands. Explain with one example for each. | (08 Marks) |
| | c. | State whether the following are valid identifiers or not: integer, char, _for, while. | (04 Marks) |
| | | | |
| 3 | a. | With neat syntax explain formatted input and output functions. | (06 Marks) |
| | b. | Compare while and do-while loops. | (04 Marks) |
| | c. | Write a C program to display the Pascal's triangle. | (10 Marks) |
| | | | |
| 4 | a. | With neat syntax and example, explain if, if…else and switch statements. | (10 Marks) |
| | b. | Write a C program to find the roots of a quadratic equation. | (10 Marks) |
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| 5 | a. | What is string? With example, explain the following spring manipulation functions strcpy, strcmp, strcat and strrev. | (10 Marks) |
| | b. | Write a C program to sort the list of numbers using bubble sort technique. | (10 Marks) |
| | | | |
| 6 | a. | What is an Array? Explain the declaration and initialization of one dimensional array. | (10 Marks) |
| | b. | Write a C program to search a given key element from the list of elements using binary search technique. | (10 Marks) |

7 a. With neat syntax explain the following:
   i)    Function declaration
   ii)   Function cal
   iii)  Function definition.      **(06 Marks)**

   b. Explain global variables and static variables.      **(04 Marks)**

   c. What is function? List and explain the categories of user defined functions.      **(10 Marks)**

8 a. What is recursive function? Write a C program to find the factorial of a number using recursion.      **(06 Marks)**

   b. Write a C program to find Fibonacci series using function.      **(08 Marks)**

   c. Explain call by value and call by reference functions.      **(06 Marks)**

9   a.   Define structure. Explain how structure members are accesses using dot (·) operator.
                                                                                    **(04 Marks)**
    b.   Write a C program to accept RollNo, Name, and Marks of students and display the sum and average of the marks using structure.                                   **(10 Marks)**
    c.   What is pointer? With example explain how pointer variables are declared and initialized.
                                                                                    **(06 Marks)**

10  a.   What is preprocessor directive? Explain #define preprocessor directive.    **(04 Marks)**
    b.   Write a C program to compute the sum, mean and standard deviation of elements stored in an array of n real numbers using pointers.                              **(10 Marks)**
    c.   With example explain structure within structure.                           **(06 Marks)**

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