2024

COMPUTER SCIENCE — MINOR

Paper : MN-2

(Problem Solving Using C)

Full Marks : 75

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer *question no.* 1, and *any three* from *Section - A* and *any five* from *Section - B.*

1. Answer *any five* questions :　　　　　　　　　　　　　　　　　　　　　2×5

   (a) Define token in C. Give two examples of tokens in C.

   (b) Name four library functions commonly used in C.

   (c) Describe in brief, about explicit type casting in C.

   (d) State the format specifiers corresponding to int, float, char and double data types in C.

   (e) What are the escape characters used to insert a new line and a tab character?

   (f) Define pointers.

   (g) Give examples of relational and logical operators.

   (h) What will be the values of *a*, *b*, *c* after the execution of the following statements?

   int $a = 6$, $b = 9$, c ;

   $c = (a++) + (++b) + (++b);$

Section - A

2. How is static memory allocated in C? Give an example.　　　　　　　　　2+3

3. Write a program in C to exchange the value of two variables without using a third variable.　　5

4. (a) Is recursion always better than iteration? Justify your comment with an example.

   (b) How is int main( ) different from void main( )?　　　　　　　　　　3+2

5. Write a C program using loop to display all odd numbers between 51 and 90. Also find their sum.　　3+2

6. Write a function in C that accepts an integer and finds out its factorial.　　5

Please Turn Over

Section - B

7. (a) Describe briefly two bitwise operators.

   (b) What is the purpose of using a flow chart?

   (c) Draw the structures used in flow chart specifying their functions.

   (d) State the functions of an assembler and a complier. 2+1+3+4

8. (a) Write four basic operations on files with function name.

   (b) Explain different modes of opening files with syntax and example.

   (c) Write programs to demonstrate the use of getc(), fgetc() and ungetc(). 2+2+6

9. (a) Can the conditional if-else statements be nested (one within another)? Justify your answer with a suitable example.

   (b) Write a program in C to check if the given number is Armstrong number or not. (e.g., $153 = 1^3 + 5^3 + 3^3$). 5+5

10. (a) If a structure and union have the same definition, will the size of the structure variable be the same as the size of the union variable? Justify.

    (b) Explain the concept of arrays. Write a program to find the largest element in an array. (1+2)+(2+5)

11. (a) Differentiate between break and continue statements with examples.

    (b) Write a program to generate Fibonacci series upto n terms where n is input by the user. 4+6

12. Write a C program for array manipulation. The program should do the following :

    - Input an integer array of maximum size 10.
    - Display the array such that each array element is separated by a tab character.
    - Find the sum and average of the numbers in the array.
    - Find the position of the maximum number in the array.
    - Display only the odd numbers in the array. 2+2+2+2+2

13. (a) Differentiate actual parameters and formal parameters.

    (b) Explain the various categories of user defined functions in C with examples.

    (c) Write a program segment in C to read an integer array and then store the odd elements in 2nd array and the even elements in 3rd array. 2+4+4

14. (a) Write a program in C to find all occurrences of a substring in a given string.

    (b) Where are the two functions strcat = (str 1, str 2) and getchar () used? 6+4