

2025

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) Differentiate between compiler and interpreter.
 - (b) Why is C programming called procedure oriented programming?
 - (c) What do you mean by type conversion in C? Give an example.
 - (d) Differentiate between array and structure.
 - (e) Differentiate between a character and a string.
 - (f) What is the difference between Break and Continue statements?
 - (g) Differentiate between while and do-while loops using an example.
 - (h) What are the main differences between Structure and Union?

Section - A

- 2. Write a program in C to find out GCD of two positive integers. 5
- 3. Explain how Call By Reference mechanism can be achieved in C with an example. 5
- 4. What do you mean by null pointer? Is it same as void pointer? Justify. 2+3
- 5. What is a recursive function? Write a recursive function to find factorial of a number. 2+3
- 6. Explain the concepts of Algorithm and Flowcharts with examples. 5

Section - B

- 7. (a) How can 1's complement of a number be achieved using bitwise operator in C? Explain with an example.
- (b) Differentiate between pre-increment and post-increment operators in C with an example.
- (c) State the functions of linker and loader. 3+3+(2+2)

Please Turn Over

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8. (a) What is the purpose of using `getchar()` and `putchar()` functions in C? Give examples.
(b) Discuss about characteristics of static storage class with an example.
(c) Differentiate between actual parameters and formal parameters in functions. 4+4+2
9. (a) Discuss how `scanf()` function can be used in C to input strings from user.
(b) Write a program in C to check whether a given string is palindrome or not. 5+5
10. (a) Will `sizeof` operator and `strlen()` function applied on a string yield same results? Justify with an example.
(b) Write a program to compare two strings without using `strcmp()` function. 4+6
11. (a) How can `malloc()` function be used to dynamically allocate memory? Explain with an example.
(b) What is memory leak in dynamic memory allocation and how can it be avoided?
(c) Differentiate between `malloc()` and `calloc()` functions. 4+3+3
12. (a) Explain the purpose of using `fseek()` and `ftell()` functions in file handling using C. Explain with suitable examples.
(b) Write a program in C to read contents of a text file which contains multiple lines and count number of vowels present in each line. Number of vowels per line should be displayed as output. (2+2)+6
13. (a) What do you understand by multi-dimensional arrays?
(b) Write C code to do the following :
(i) Declare an integer 2D-array (matrix) having 3 rows and 2 columns.
(ii) Input values in the matrix.
(iii) Display the elements of the first and second rows.
(iv) Find the sum of the diagonal elements of the matrix. 2+(1+1+2+4)
14. Write short notes on *any two* of the following : 5×2
(a) Relational Operators in C
(b) Function Prototyping in C
(c) Pointers in C
(d) Functions of Pre-processor.
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