2025

COMPUTER SCIENCE — MDC

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.

1. Answer ***any five*** questions from the following : 2×5

(a) What are header files in C? Give an example and briefly state its use.

(b) Compare the behaviour of the prefix (++P) and Postfix (P++) increment operators in C.

(c) What are some common modes of opening files in C?

(d) What is a Pointer in C? Why is it significant in Programming?

(e) What is the role of switch statement in controlling program flow?

(f) What is the role of the continue statement?

(g) What are the differences between the while loop and the do-while loop in C?

(h) What is a function prototype?

Section - A

Answer ***any three*** questions.

2. What are different storage classes in C? Explain with example. 5

3. Explain difference between call by value and call by address. 5

4. What is Union? How it is different from structure? 3+2

5. What are command-line arguments in C? Illustrate with an example that adds two numbers passed from the command line. 2+3

6. Draw a flowchart for converting a temperature value from Celsius to Fahrenheit. 5

7. What is top-down approach of problem solving? How modular programming is related to the same? 3+2

Section - B

Answer ***any five*** questions.

8. (a) What are the different phases of compilation in C?

(b) Write a C program to calculate the sum of first N natural numbers, without using any formula.

(c) Mention any two differences between compiler and interpreter. 3+5+2

9. (a) Write a program in C to check whether an integer is prime or composite.

(b) Briefly describe about relational operators in C with examples. 6+4

10. (a) Design an algorithm for checking if an integer is a palindrome.

(b) Write a C program that reads an integer n and displays the following pattern, input = 5. 5+5

```
*
* *
* * *
* * * *
* * * * *
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11. (a) Write a function in C to check whether an element is present in an array or not.

(b) Briefly explain row-major order and column major order of arranging elements in a 2D-array. 6+4

12. (a) Explain purpose of strcat() and strcmp() with proper examples.

(b) What do you mean by nested structure? Give an example.

(c) What is the meaning of the declaration : int*p[10], ? 4+4+2

13. (a) Differentiate between malloc() and calloc() functions. What is the purpose of free() function?

(b) What is dangling pointer problem?

(c) Explain usage of void pointer in C. (3+1)+2+4

14. (a) How is append operation implemented for file handling in C?

(b) What is the purpose of fseek() and ftell()? Explain with examples. 4+(4+2)
