



I Semester B.C.A. (Full Stack Development) (AI and ML) (Data Science)
Examination, January/February 2026
(SEP 2024 – 25)

COMPUTER APPLICATION
24BCA12 : Problem Solving Techniques

Time : 3 Hours

Max. Marks : 80

Instruction : Answer **all** Sections.

SECTION – A

I. Answer **any eight** questions. **Each** question carries **2** marks. **(8×2=16)**

- 1) Define an algorithm and list any two characteristics of an algorithm.
- 2) Why is analyzing algorithm efficiency important ?
- 3) Write an algorithm to swap two numbers.
- 4) What is a conditional (ternary) operator in C ?
- 5) Define array, with an example.
- 6) What are escape sequences ?
- 7) Define pointers.
- 8) Difference between break and continue.
- 9) Write the output for this code.

```
int main() {  
    int color=2;  
    switch(color)  
    {  
        case 0: printf("Black");  
        case 1: printf("Blue");  
        case 2: printf("Green");  
        case 3: printf("Aqua");  
        default: printf("Other");    }  
    return 0; }  

```

- 10) List the various sorting techniques.





SECTION – B

II. Answer **any four** questions. **Each** question carries **6** marks. (4×6=24)

- 11) Explain the different steps involved in solving the problem.
- 12) Write a C program to reverse the digits of an integer.
- 13) Why do we need a looping statement ? Explain the syntax of for loop with a program.
- 14) Write a C program to find prime factors of a given integer.
- 15) What is binary search ? Write a C program to demonstrate binary search.
- 16) Explain the need for linear pattern searching.

SECTION – C

III. Answer **any five** questions. **Each** question carries **8** marks. (5×8=40)

- 17) a) Define flowchart. Draw a flowchart to find largest of 3 numbers. 4
b) Write an algorithm to find factorial of a number. 4
- 18) What is the difference between while and do-while loop ? Explain in detail. 8
- 19) Write a C program to add and subtract two matrices using two-dimensional arrays. 8
- 20) Write a C program to find the square root of a number without using built-in functions. 8
- 21) a) Describe how to remove duplicate elements from an ordered array. 4
b) Explain string functions with syntax and example. 4
- 22) a) Write a C program to swap two numbers using pointers. 4
b) Differentiate call by value and call by reference. 4
- 23) Write a C program to sort the elements 10, 3, 28, 17, 5 by using bubble sort. 8

