QP Code: P25DR004

Reg. No : .....
Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

I SEMESTER (CBCSS-PG) DEGREE REGULAR EXAMINATIONS, NOVEMBER 2025
M. Sc. Computer Science
CSS1C04 : THE ART OF PROGRAMMING METHODOLOGY
2025 Admission Onwards

Time: 3 Hours **Maximum Marks: 30**

Section A

Short answer type questions. Answer **any four**. Weightage **2** for each.
(4x2 = 8 Weightage)

1. Analyze the following code snippet and classify the errors into syntax, runtime and logical.

```
#include <stdio.h>
 #include<stdlib.h>
int main() {
int a, b, sum;
printf("Enter two numbers: ");
scanf("%d %d", a, b);
sum = a + b;
printf("Sum is: %d\n", sum);
if (a = b) {
printf("Both numbers are equal.\n");
} else {
printf("Numbers are different.\n");
}
int arr[5];
for (int i = 0; i <= 5; i++){
arr[i] = i * 10;
}
printf("Value at index 10: %d\n", arr[10]);
return 0
}
```

2. Explain the purpose of the assignment operator in C with examples.
3. Define constant in C with two examples.
4. Describe the difference between break , continue and goto statements with examples.
5. State differences between scope and lifetime of a variable with example.
6. Define a linked list and its types.

Turn Over

7. Explain an array of pointers with an example.

Section B

Short essay-type questions. Answer **any four**. Weightage **3** for each.
(4x3 = 12 Weightage)

8. a) List the different types of flowchart symbols used in structured programming.
   b) Explain the role of decision symbols in a program flowchart with an example.
9. Analyze the role of precedence and associativity in expression evaluation.
10. Write a program to count the number of vowels, consonants, digits, and special characters in a string.
11. Design an algorithm for sorting an array of integers using the bubble sort approach.
12. Apply your understanding of storage class specifiers in C by giving examples where misuse of auto, static, register, or extern leads to performance issues or reduced maintainability.
13. a) State the syntax for opening and closing a file in C.
    b) Define random access in files.
14. Implement a program to input and display the details of a car using a union.

Section C

Essay-type questions. Answer **any two**. Weightage **5** for each.
(2x5 = 10 Weightage)

15. a) List any five characteristics of a good program.
    b) Define modular programming and mention its advantages.
16. a) Explain with a diagram the structure of a C program.
    b) Discuss the role of tokens in C programming with examples.
17. Evaluate two different methods of initializing a single-dimensional array. Write programs for both and justify which method is more efficient and easier to maintain.
18. Analyze the advantages and disadvantages of using macros versus functions for repetitive tasks.

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