

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – December 2023
Programme Name: B Tech (NAOE)

Semester: III

Subject Code: UG12T2307/104

Subject Name: Computer Programming

Date: 22.12.2023

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

Section A

Ten MCQs/Fill in the Blanks of One Mark each – Choose the correct answer as applicable. Objective Questions (MCQ/True or False/Fill in the blanks/Match the following) 10 X 1 = 10 Marks

1. strlen() function is used to _____
2. Compiler converts source code into _____
3. A pointer is
 - (a) A keyword used to create variables
 - (b) A variable that stores address of an instruction
 - (c) A variable that stores address of other variable
 - (d) All of the above
4. In C, which data type is used to represent high-precision decimal values?
 - (a) int
 - (b) char
 - (c) double
 - (d) float
5. What is the size of the "int" data type in bytes?
 - (a) 1 bytes
 - (b) 2 bytes
 - (c) 4 bytes

- (d) 8 bytes
6. In a queue, where do the elements get removed during the "dequeue" operation?
- (a) At the side position
 - (b) At the front position
 - (c) At the random position
 - (d) At the rear position
7. In a Binary Search Tree (BST), what is the maximum number of children a node can have?
- (a) 0
 - (b) 1
 - (c) 2
 - (d) 3
8. How many times will a "do-while" loop execute even if the condition is initially false?
- (a) Zero times
 - (b) One time
 - (c) It depends on the specific programming language
 - (d) Infinite times
9. What is the output of the following code?

```
#include <stdio.h>

int main() {
    int num = 0;
    for (int i = 1; i <= 10; i++) {
        num += i;
    }
    printf("%d\n", num);
    return 0;
}
```

- (a) 22
- (b) 33
- (c) 44
- (d) 55

10. If a variable is a pointer to a structure, then which of the following operator is used to access data members of the structure through the pointer variable?

- (a) *
- (b) &
- (c) ->
- (d) /

Section B

Five Short Answer Type Questions of Two marks each.

5 X 2 = 10 Marks

- 11. List out any 4 datatypes in C.
- 12. Draw the flowchart diagram for the "do-while" loop control structure.
- 13. Write a C program using "do-while" to find and print the factorial of 5.
- 14. What is reference and dereference operator in C?
- 15. What is Linked List?

Section C

Seven Long Answer Type Questions of ten marks each. Answer any Five.

10 X 5 = 50 Marks

- 16. Explain using an example the Insertion Sort algorithm.
- 17. What is a Tree Data Structure? Why Tree Data Structure? Explain the following Tree Terminologies: Node, Edge, Root, Height of a Node, Depth of a Node.
- 18. Explain the Binary Search Method.
- 19. Write a C program to find the transpose of a 3x3 matrix and print the matrix and its transpose. (Note: any random value matrices can be taken)
- 20. Explain the steps involved in the deletion operation of a node between two nodes in a Linear Linked List.
- 21. Explain the functional components of a computer organization.
- 22. Differentiate between machine language, assembly language and high-level language.