

19. (a) Write short notes on:

- (i) Priority Queues
- (ii) Skip Lists

Or

(b) Define Circular Lists.

20. (a) What is Divide and Conquer Method? Write Binary Search steps to search an element 19 in the following list of numbers.

[0, 1, 2, 8, 13, 17, 19, 32, 42]

Or

(b) How Quick Sort is implemented to sort the following array elements.

[10, 80, 30, 90, 40, 50, 70]

S.No. 4400

NSCS 2

(For candidates admitted from 2018–2019 onwards)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

Part III – Computer Science – Major

DATA STRUCTURES AND ALGORITHMS IN C++

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20)

Answer ALL the questions.

1. Distinguish Structured from non-Structured Programming.
2. What inline Function?
3. What virtual Function?
4. What is polymorphism?
5. What is the role of a destructor?
6. Mention the use of a file pointer.
7. What are the operations performed on arrays?
8. What is composite data type? Give an example.

9. Define the term recursion.

10. What is balanced tree data structure?

PART B — ($5 \times 6 = 30$)

Answer ALL questions, choosing either (a) or (b) in each.

11. (a) Explain various C++ operators.

Or

(b) Explain the role of scope resolution operator.

12. (a) What are default argument values? How are they assigned?

Or

(b) What is meant by type conversion? Mention the methods of converting data types with examples.

13. (a) What are exceptions? Write examples.

Or

(b) Discuss on file pointers.

14. (a) Explain the applications of stack.

Or

(b) Compare arrays and linked lists.

15. (a) Lists the differences between graph and tree.

Or

(b) Write algorithm Analysis of sorting techniques.

PART C — ($5 \times 10 = 50$)

Answer ALL questions, choosing either (a) or (b) in each.

16. (a) Explain the structure of friend functions C++ program with an example.

Or

(b) Discuss on different types of parameter passing.

17. (a) Explain different inheritance types.

Or

(b) What is Polymorphism? Write and explain with an example program.

18. (a) Write a C++ program to count the number of lines, words and blank spaces of a given text files.

Or

(b) Discuss on C++ Templates.