

CBCS SCHEME

15EC661

USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sixth Semester B.E. Degree Examination, June/July 2019 Data Structures using C++

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss template function in C++. Write template function to swap two parameters with arguments being two integers or two float values. (06 Marks)
- b. Explain how dynamic memory allocation or de-allocation is performed in C++ with suitable example. (06 Marks)
- c. Write ADT specification for linear lists. (04 Marks)

OR

- 2 a. Briefly explain recursion. Write recursive function in C++ to find factorial of number. (06 Marks)
- b. Write class definition for arrayList. (05 Marks)
- c. Write a struct definition for chain node. (05 Marks)

Module-2

- 3 a. Write a C++ program to add two matrices. (06 Marks)
- b. Explain how parenthesis matching is carried out using stacks. Write a C++ function for the same. (10 Marks)

OR

- 4 a. Define sparse matrix and also explain the representation of sparse matrix using single linear list. (06 Marks)
- b. Explain the row-major representation of a multi-dimensional array. (06 Marks)
- c. Write a get function or method for diagonal matrix. (04 Marks)

Module-3

- 5 a. What is the advantage of circular queue over simple? With neat diagrams explain how array length can be doubled in a circular queue. (10 Marks)
- b. With the help of an ADT explain dictionaries. (06 Marks)

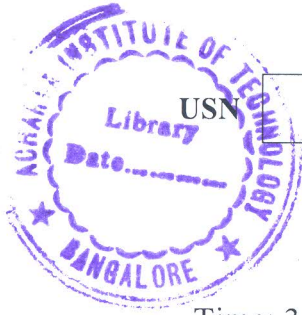
OR

- 6 a. Discuss problem description and solution strategy for rail road car rearrangement. (08 Marks)
- b. What is hashing? Explain the hashing functions and tables. (08 Marks)

Module-4

- 7 a. Define binary tree and also mention the essential differences between a binary tree and tree. (04 Marks)
- b. Draw the binary expression trees corresponding to each of the following expressions. (06 Marks)
- c. List and explain the different binary tree traversal methods. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



OR

- 8 a. Write short notes on Linked representations of binary trees. (10 Marks)
b. State and prove any three properties of binary trees. (06 Marks)

Module-5

- 9 a. Define a binary search tree and also write a function to search for an element in binary search trees. (08 Marks)
b. Explain the operations insertion and deletion for MaxHeaps. (08 Marks)

OR

- 10 a. Write a function for Heap sort and explain Heat sort with neat diagrams. (10 Marks)
b. Write a function to insert an element into a binary search tree. (06 Marks)

* * * * *