



DCCA103

Reg.No.

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

I Semester B.C.A. Degree Examination, April - 2023

**COMPUTER APPLICATIONS**

**Data Structures**

**Paper : CA-C3T**

**(NEP Scheme)**

**Time : 2½ Hours**

**Maximum Marks : 60**

**Instructions to Candidates:**

Answer any **Four** questions from each part.

**PART - A**

Answer any **Four** questions. Each question carries 2 marks.

**(4×2=8)**

1. What is Data Structure? List out its types.
2. Define : Flow (), Ceil ().
3. Define ADT.
4. What is AVL tree? Give an example.
5. Write any two difference between Binary tree and binary search tree.
6. Define any two collision Resolution methods in Hashing.

**PART - B**

Answer any **Four** questions. Each question carries 5 marks.

**(4×5=20)**

7. Explain Asymptotic notations.
8. Explain traversing operation in a singly linked list?
9. Write an algorithm for stack push and PoP operation and explain.
10. Write an algorithm for Pre - order traversal explain.
11. Construct a max heap for the given numbers : 13, 86, 43, 38, 54, 23, 08 and 63. Explain every step.
12. Write an algorithm for insertion sort and explain using given numbers.  
56, 23, 54, 12, 66, 46, 89.

**[P.T.O.]**



PART - C

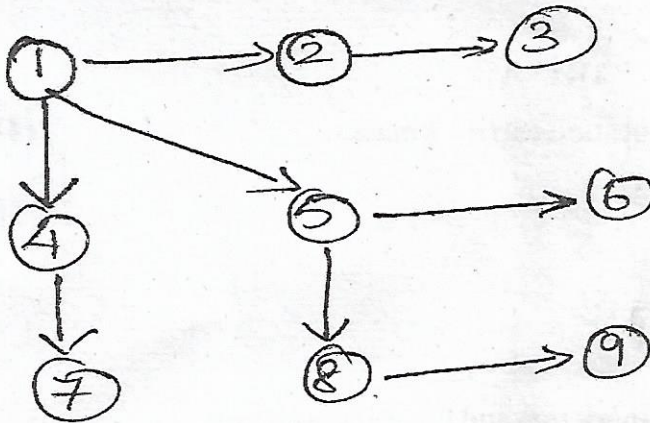
Answer any **Four** questions. Each question carries **8** marks.

(4×8=32)

- 13. Write an algorithm for linear search and binary search.
- 14. Write an algorithm to convert infix to postfix and explain by using the example below

$$A + (B * C - (D / E \uparrow F) * G) * H .$$

- 15. a. Distinguish between linear queue and circular queue. (3)
- b. Explain stack as ADT. How a stack can be represented using Arrays. (5)
- 16. Show the steps to sort the elements 45, 36, 15, 92, 35, 71 using bubble sort.
- 17. Explain stepwise BFS concept for the below graph.



- 18. a. Explain different ways of representing graphs. (4)
- b. Explain the technique to resolve Hash collision. (4)