



K22P 0906

Reg. No. : .....

Name : .....

**II Semester M.C.A. Degree (C.B.S.S. – Reg./Supple./Imp.) Examination, May 2022  
(2020 Admission Onwards)  
MCA2C01 : ALGORITHMS AND DATA STRUCTURE**

Time : 3 Hours

Max. Marks : 60

**SECTION – A**

Answer **all** questions. **Each** question carries **two** marks.

1. Which are the various steps in developing an algorithm ?
2. What is meant by a brute force approach in algorithmic design ?
3. What do you mean by asymptotic behavior of functions?
4. Define NP Hard and NP Complete problems.
5. What is a priority queue ?
6. List any four applications of stack.
7. What is a multiway search tree ?
8. List two types of hash functions.
9. Write the algorithm for linear search in an array.
10. What is a minimum spanning tree ?

**SECTION – B**

Answer **all** questions. **Each** question carries **eight** marks.

11. a) Compare Branch-and Bound technique and Backtracking approach in algorithm design.

OR

- b) Explain important problem types.

P.T.O.



12. a) Explain complexity classes with examples.

OR

b) Explain Merge sort with algorithm. Derive its complexity.

13. a) Write and explain the algorithm for evaluation of postfix expression with an example.

OR

b) Implement stack operations (PUSH and POP) using array and linked list.

14. a) Explain the array and linked representation of binary tree in memory.

OR

b) What is hashing ? Explain collision resolution techniques in hashing.

15. a) Explain the adjacency matrix representation of a graph in memory. Write the Depth First Traversal and Breadth First Traversal algorithms of a graph.

OR

b) Compare and explain selection sort and insertion sort with algorithms.



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SECTION - B

Answer all questions. Each question carries eight marks.

11. a) Compare Search and Bound technique and Backtracking approach in algorithm design.

OR

b) Explain important problem types.