

Madras University

M.C.A Data Structures Question paper

Time: Three hours

Maximum: 75 marks

PART A - [5 x 5 = Marks 25]

Answer ALL questions.

All questions carry equal marks.

1. (a) Explain the time and space complexity of algorithm.

Or

(b) What is primitive datatypes? Explain.

2. (a) Write deletion algorithm for a circular queue.

Or

(b) Explain the representation of multiple queues.

3. (a) Write an algorithm to concatenate two singly

Or

(b) What is linked stacks? Explain.

4. (a) Explain the threaded binary tree.

Or

(b) What is spanning trees? Explain.

5. (a) Explain the indexing structures.

Or

(b) What is ISAM? Explain.

PART B - [5 x 10 = Marks 50]

Answer any FIVE questions.

All questions carry equal marks.

6. Write the binary search algorithm. Calculate the time complexity of the above algorithm.
7. Explain the representations of arrays.
8. Write insertion and deletion algorithm for multi-queues.
9. Write insertion and deletion algorithm for the doubly linked lists.
10. Explain the allocation and deallocation algorithms for the dynamic memory management.
11. Write the non recursive binary tree in order traversal algorithm. Explain.
12. Write algorithm for the breadth first search.
13. Explain the following :
 - (a) Hashing techniques for direct files
 - (b) Multilists.