



BBA-MCA-1010

Seat No. _____

M. C. A. (Sem. I) Examination

July – 2021

Data Structure & File Structure

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction : Attempt any five of the following

- 1 (A) Attempt the following : 4
- (1) Define : Data Structure.
 - (2) Define : String
 - (3) What do you meant by pattern matching?
 - (4) What do you meant by string manipulation?
- (B) List out various operation that can be performed on Primitive data structure and explain any one in brief. 2
- (C) Explain Primitive data structure with its types in brief. 3
- (D) List out and explain various classification of data structure in detail. 5
- 2 (A) Attempt the following : 4
- (1) Define : Primitive Data Structure
 - (2) Define : Non-Linear Data Structure.
 - (3) What is text handling?
 - (4) List out various linear data structure
- (B) Differentiate Linear v/s non-linear data structure 2
- (C) List out various pattern matching functions and explain any one with its syntax and example. 3
- (D) Explain storage representation of string in detail 5

- 3 (A) Attempt the following : 4
- (1) Which data structure follows FIFO (Firs- in-first-out) method?
 - (2) What are the various operations that can be performed on array?
 - (3) Define : Stack.
 - (4) Define : Priority queue.
- (B) Compare Simple Queue and Circular Queue. 2
- (C) List out various applications of Linked list. 3
- (D) Write an algorithm for insertion and deletion in circular queue. 5
- 4 (A) Attempt the following : 4
- (1) Which data structure follows LIFO (Last-in-first-out) method?
 - (2) What are the various operations that can be performed on linked list?
 - (3) Define : doubly linked list.
 - (4) Define : Queue.
- (B) Compare Array and Linked List 2
- (C) Write an algorithm for stack operations Push and Pop. Assume stack is implemented using array. 3
- (D) Write an algorithm to insert at beginning and to delete last node operation in doubly linked list. 5
- 5 (A) Attempt the following : 4
- (1) Define : Complete binary tree
 - (2) Define : Root node
 - (3) Define : Height of tree.
 - (4) Define : Level of node.

- (B) Write a brief note on Multi-linked structure. 2
- (C) Explain sparse matrices in brief. 3
- (D) Can we convert general tree into binary tree? 5
If yes, How? Explain it by taking suitable example.
- 6** (A) Attempt the following : 4
- (1) Define : Tree
 - (2) Define : Leaf node.
 - (3) Define : depth of tree.
 - (4) Define : Binary Tree.
- (B) List out various applications of tree. 2
- (C) Explain tree traversal operation by taking suitable example 3
- (D) List out various representation of tree. Explain array representation methods of binary tree in detail. 5
- 7** (A) Attempt the following : 4
- (1) Define : sorting.
 - (2) Write best case time complexity of binary search.
 - (3) Define : m-ary.
 - (4) What is tree structure?
- (B) Compare binary search and linear search. 2
- (C) Explain heap sort by taking suitable example. 3
- (D) Write an algorithm for quick sort and also state its best, average and worst time complexity. 5
- 8** (A) Attempt the following : 4
- (1) Define : Searching
 - (2) Write best case time complexity of linear search.
 - (3) What do you meant 2-3 tree?
 - (4) Define : Binary search tree.

- (B) Explain binary searching by taking suitable example 2
- (C) Write a note on 2-3 tree. 3
- (D) Write an algorithm for selection sort and also state its best, average and worst time complexity. 5
- 9** (A) Attempt the following : 4
- (1) What is hashing?
 - (2) Define : File structure.
 - (3) Define : virtual hashing.
 - (4) Define : sequential file access.
- (B) Write a note on indexing structure 2
- (C) Explain Dynamic hashing. 3
- (D) Write a brief note on linear probing technique with example. 5
- 10** (A) Attempt the following : 4
- (1) What is hash function?
 - (2) What is collision?
 - (3) Define : linear hashing.
 - (4) Define : Multi-key file organization.
- (B) Write a note on hash table. 2
- (C) Explain sequential file organization in detail. 3
- (D) Explain Division method with its advantages and disadvantages as well as by taking suitable example. 5