8. a) What is sorting? Sort the following list using bubble sort. 2+5=7

52 20 34 13 5 19 85

b) Sort the following list using insertion sort. 5

55 60 2 11 25 70 95

c) What is the complexity of quick sort? 2

UNIT - V

9. Write short note on following: 4+10=14

i) Hash function

ii) Collision handling method.

10. a) Write an algorithm for DFS and how does DFS differ from BFS? 4+2=6

b) What is linear probing? 2

c) Write short note on file organization. 6

PG ODD SEMESTER (CBCS) EXAM., FEBRUARY 2021

COMPUTER SCIENCE

3rd Semester

COURSE NO. MCSCC - 303

(Data and File Structure)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer any five)

UNIT - I

1. a) What is Data Structure? Explain its operations. 2+3=5

b) What is array? How does linklist differ from array? 2+3=5

c) Explain how arrays are represented in the memory of a computer. 4

2. a) Write an algorithm to add two two dimensional array. 4

b) What is a link list? Write an algorithm to create a linklist and also write an algorithm to insert an element in the beginning of a one-way link list. 2+3+5=10

UNIT - II

3. a) What is stack write some application of stack. 2+2=4

b) Write short note on the following: 3+3=6

i) Polish notations

ii) Circular queue

c) Write an algorithm to implement priority queue. 4

4. a) What are the operations that can be performed on a stack? Give any two general examples for each operation. 2+5=7

b) Define queue. 2

c) Describe the similarities and differences between queue and stack. 5

UNIT - III

5. a) What is a tree? Discuss the concept of a binary tree. 1+3=4

b) Write an algorithm for insertion operation on binary tree. 5

c) Explain threaded binary tree with suitable example. Explain right in threaded binary tree. 3+2=5

6. a) A binary tree T has 11 nodes. The inorder and preorder traversals of T yield the following sequences of nodes.

In order D B F E A G C L J H K

Preorder A B D E F C G H J L K

i) Draw the tree T. 3

b) What is binary search tree. 2

c) Suppose the following eight numbers are inserted in order into an empty binary search tree T.

50, 33, 44, 21, 71, 35, 65, 40 4

Draw the tree.

d) Explain LR and LL rotation of AVL tree with examples. $2^1/_2+2^1/_2=5$

UNIT - IV

7. a) Differentiate between linear search and binary search. Write their algorithm. Also find the complexity for all cases. 3+4+4+3=14