

A
(21119)

Roll No.

Total Questions : 13]

[Printed Pages : 4

NP-3604

B.Sc. (Computer Science) IIIrd Semester
Examination, Nov., 2019

DATA STRUCTURE USING 'C' **(BCS-303)**

Time : 3 Hrs.]

[M.M. : 75

Note :- Attempt all the Sections as per instructions.

Section-A

(Very Short Answer Type Questions) 3×5=15

Note :- Attempt all the *five* questions. Each question carries 3 marks.

1. Compare Recursion and iteration.
2. Convert the following infix expression into its equivalent postfix expression :

$$A*(B + D) / E - F * (G + H/K)$$

ND-113

(1)

Turn Over

3. What do you mean by multilevel indexing ? State its application.
4. What is stack ? Explain its operations.
5. State any *two* applications of graph.

Section-B

(Short Answer Type Questions) 7½×2=15

Note :- Attempt any *two* questions out of the following three questions. Each question carries 7½ marks.

6. What is sparse matrix ? Implement sparse matrix as an array.
7. What is circular queue ? Write the implementation of circular using array. Also develop the routines to perform following operation on the circular queue :
 - (i) Insertion
 - (ii) Deletion
8. Sort the following data using heap sort procedure :
30, 55, 48, 37, 10, 91, 84, 2

ND-113

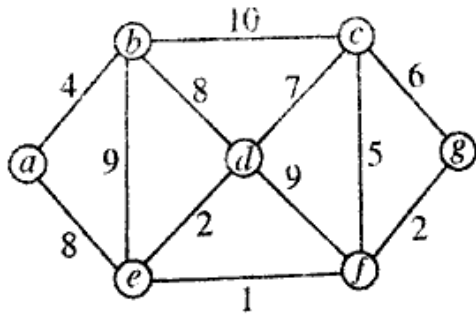
(2)

Section-C

(Long Answer Type Questions) 15×3=45

Note :- Attempt any *three* questions out of the following five questions. Each question carries 15 marks.

9. (i) Construct Binary search tree for following data. Show the tree at each step :
34, 91, 30, 31, 80, 85, 138
- (ii) How an AVL tree differ from Binary search tree ? Also explain how AVL trees are represented in memory. 7,8
10. Differentiate the following :
- (i) BFS and DFS
- (ii) Linear search and Binary search
- (iii) Quick sort and Merge sort 5×3=15
11. (i) Find the minimum cost spanning tree in given graph using Kruskal's Algorithm :



- (ii) Explain sequential access and random files organizations. 7,8
12. (i) Write an algorithm or program in 'C' to insert or delete a node from linked list.
- (ii) Write about polynomial representation. 10,5
13. Write short notes on any *three* of the following :
- (i) Tower of Hanoi
- (ii) B-tree
- (iii) Threaded Binary tree
- (iv) Hash functions
- (v) Calloc and Malloc function
- (vi) Doubly linked list 3×5=15