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)

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 develope 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

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 free 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

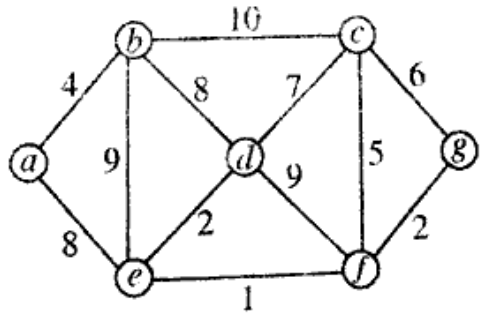
10. Differentiate the following :

(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 :



https://www.ccsustudy.com

(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 Hannoi

(ii) B-tree

(iii) Threaded Binary tree

(iv) Hash functions

(v) Calloc and Malloc function

(vi) Doubly linked list 3×5=15

https://www.ccsustudy.com