C 82658

Name...

Reg. No....................................

SECOND SEMESTER B.VOC. DEGREE EXAMINATION, APRIL 2020

(CUCBCSS—UG)

Software Development

SDC 2IT 05—DATA STRUCTURES

Time : Three Hours

Maximum : 80 Marks

Section A

Answer **all** *questions.*

1. A linear collection of data element given by mean of pointer is called ———————.

2. The operation of processing each element in the list is known as ———————.

3. Name the data structure in which element can be inserted or deleted at/from both ends.

4. Preorder equivalent of in order expression ((a*b)/c+d) is :

    a) *ab/+cd.

    b) +/*abcd.

    c) ab*c/d+.

    d) None.

5. A connected graph without any cycle is called ———————.

    a) Tree.

    b) Complete graph.

    c) Cyclic graph.

    d) None.

6. Position of largest element exist in a BST :

    a) At the root node.

    b) At left most node.

    c) At right most node.

    d) Can not be determined.

7. Graph traversal is different from tree traversal, because :

    a) trees are not connected.

    b) Graphs may have loops.

    c) trees have root.

    d) None of these.

8. ——————— solves the problem of finding the single source shortest path in a graph.

    a) Kruskal's algorithm.

    b) Prim's algorithm.

    c) Dijkstra algorithm.

    d) Bellman ford algorithm.

Turn over

9. What is sorting ?

10. Name any *two* hashing method.

<div align="right">(10 × 1 = 10 marks)</div>

Section B

Answer any **eight** *questions*

11. Briefly explain row major and column major representation of multidimensional array .

12. Compare and contrast static and dynamic list.

13. Define a node in a linked list.

14. Explain the benefit of circular queue compared to other simple queue.

15. Explain sparse matrix representation using sample data.

16. Write short note recursion ? Compare direct and indirect recursion.

17. What is an AVL tree ?

18. Explain the linear representation of binary tree.

19. Compare and contrast search and traversal.

20. Compare and contrast kruskal and prim's algorithm for minimum cost spanning tree.

21. Write algorithm for linear search.

22. Write short note on hashing.

<div align="right">(8 × 2 = 16 marks)</div>

Section C

Answer any **six** *questions.*

23. Explain in detail, the concept of traversal in singly linked list.

24. What are the application stack ?

25. Explain with stack status , evaluation of post fix expression using stack.

26. Write in detail with suitable example , binary search tree .

27. Define the following term with respect to graph :

    (a) Digraph.

    (b) Dense graph.

    (c) Complete graph.

28. Explain various tree traversal technique ?

29. What is collision ? Explain any *two* collision handling method ?

30. Write an algorithm for shortest path problem.

31. Write a programme / algorithm to perform bubble sort.

(6 × 4 = 24 marks)

Section D

Answer any **two** *questions from the choice*

32. What is queue ? Explain linked list Implementation queue and its primitive operations.

Or

33. Write in detail BFS and DFS with algorithm and example.

34. Write Kruskal's algorithm for finding minimum cost spanning tree. Explain with example.

Or

35. Write a program /algorithm to perform quick sort. Show the result for each exchange for the following initial array of elements 55 54 2 18 33 15 35 78.s

(2 × 15 = 30 marks)