

SECOND SEMESTER B.VOC. DEGREE EXAMINATION, MAY 2018

(CUCBCSS—UG)

Software Development

SDC 2IT 05—DATA STRUCTURES

Time : Three Hours

Maximum : 80 Marks

Section A

Answer all questions.

1. List any two non-linear data structures.
2. Rearranging the content of a data structure into certain order is called _____.
3. Name the data structure which allows deletion at both ends but insertion at only one end.
4. What is the post fix expression corresponding to infix expression $b * c + (d / e)$?
 - (a) $b*cde/+.$
 - (b) $bcd*e/+.$
 - (c) $bc*de/+.$
 - (d) $bc*de+/.$
5. What is the number of leaf nodes in a fully binary tree of height h ?
 - (a) $2 \wedge h.$
 - (b) $2 \wedge (h + 1).$
 - (c) $2 \wedge (h - 1).$
 - (d) $h.$
6. Which of the following is not true for traversal ?
 - (a) LDR.
 - (b) DLR.
 - (c) LRD.
 - (d) RLD.
7. A graph is a collection of _____.
 - (a) Edges.
 - (b) Vertices.
 - (c) Edges and Vertices.
 - (d) None.
8. Dijkstra algorithm is also called the _____ shortest path problem.
 - (a) Multiple source.
 - (b) Single source.
 - (c) Single destination.
 - (d) Multiple destination.
9. Explain the property of input data set in binary search.
10. Define hash function.

(10 × 1 = 10 marks)

Section B

Answer any eight questions.

11. Define data structure. List out basic classification of data structure.

Turn over

12. Write in detail sparse matrix and its representation.
13. Write short note on doubly linked list.
14. Write short note on static and dynamic list
15. Write short note on priority queue and dequeue
16. What is binary search tree ?
17. Compare and contrast search and traversal.
18. List out various operation on threaded binary trees.
19. What is a complete graph ?
20. Briefly explain linear search with suitable example.
21. Explain the representation of graph using adjacency matrix.
22. Explain various application of stack.

(8 × 2 = 16 marks)

Section C

Answer any six questions.

23. Write in detail PUSH and POP operation in queue.
24. Briefly explain the algorithm for inserting an element in to an array.
25. Explain with example, evaluation of post fix expression using stack.
26. Write short note on :

(a) Tree.	(b) Path in a tree.
(c) Depth of a node.	(d) Binary tree.
27. Briefly explain Dijkstra's algorithm.
28. Write in detail AVL tree.
29. Compare linear probing and double hashing.
30. How to insert a new item in binary search tree.
31. Show the quick sort result for each exchange for the following initial array of elements 35 54 12 18 23 15 45 38.

(6 × 4 = 24 marks)

Section D

Answer any two questions from the choice.

32. What is stack ? Explain linked list implementation stack and its primitive operations.
Or
33. What are the tree traversal technique ? Explain with algorithm and example.
34. Write Prim's algorithm for finding minimum cost spanning tree. Explain with example.
Or
35. What is hashing ? Explain various hashing techniques in detail.

(2 × 15 = 30 marks)