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Second Semester B.C.A. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Applications

Core Course

CP 1243 — DATA STRUCTURES

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer) (**one** word to maximum of **two** sentences. Answer **all** questions)

1. In ———— sort, adjacent pair of elements is compared.
2. Space Complexity of stack is ————
3. An infix expression can be converted into postfix using ———— data structure.
4. An element in a list called ————.
5. Define dummy node.
6. Define child node.
7. ———— is node which doesn't have a parent.
8. Binary tree is a tree with degree ————.
9. In G =< V, E >, V stands for ————.
10. Expand DFS.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

[Short Answer Type] (not to exceed **one** paragraph. answer any **eight** questions. each question carries **two** marks)

11. Write a note on analysis of linear search.
12. What do you mean by column-major-order in two dimensional array?
13. Define hash table.
14. Write a note on FIFO.
15. Write a note on RPN.
16. What are the three steps involved in insertion of a node in linked list?
17. List the components of a node in Singly linked list.
18. Write the role of TOP pointer in stack.
19. Compare height and depth of a tree.
20. Define complete binary tree.
21. Write a note on Expression Tree.
22. What are the methods to notate a binary tree?
23. Write in short about undirected graph.
24. What do you mean by self loop in terms of graph?
25. Write the role of adjacency list.
26. Write a note on deletion operation on graph.

(8 × 2 = 16 Marks)

SECTION – C

[Short Essay Type) (Not to exceed **120** words. Answer any **six** questions. Each question carries **4** marks)

27. Write a note on complexity of Binary Search.
28. Describe hashing in short.

29. Discuss the condition for overflow in Circular Queue.

30. Write a note on Input Restricted Deque.

31. What are Static Data Structures? Explain.

32. What are the disadvantages of array data structure?

33. Explain about heap trees.

34. Write a note on full binary tree.

35. Explain in detail about linear representation of a Binary Tree.

36. Write a note on DFS.

37. Elaborate the linked representation of a graph in detail.

38. Differentiate with the support of example: Directed graph, Undirected graph.

(6 × 4 = 24 Marks)

SECTION – D

[Long Essay Type] (answer any **two** questions. each question carries **15** marks)

39. Discuss the Binary Search algorithm in detail.

40. Write a note on operations on queue.

41. Explain in detail about applications of linked list.

42. Write a detailed note on Circular Linked List.

43. Explain the algorithm for searching in a Binary Search Tree.

44. Explain about different type of representations of graph.

(2 × 15 = 30 Marks)
