Q.P. Code – 42235

Second Semester B.Sc. Degree Examination, April/May 2019

(CBCS Scheme)

Computer Science

Paper 2.1 – DATA STRUCTURE USING C++

Time : 3 Hours] *[Max. Marks : 90*

Instructions to Candidates : Answers ALL the Sections.

SECTION – A

Answer any **TEN** of the following. **(10 × 1 = 10)**

1. Give any two examples for non linear data structure.
2. What is the use of head or start pointer in a linked list?
3. What is circular linked list?
4. What do you mean by polish notation?
5. Define Circular queue.
6. What is Binary tree?
7. Define Internal node.
8. Define Sorting.
9. What do you mean by complete graph?
10. Define degree of a node.
11. What do you mean by circuit?
12. What is meant by self loop in a graph?

Answer any **FIVE** of the following. **(5 × 3 = 15)**

13. Explain the operations on primitive data structure.

14. Write the difference between static and dynamic memory allocation.

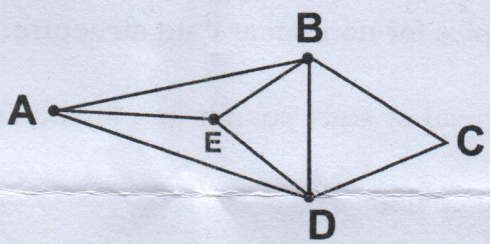
15. Write an algorithm for pop operation.

16. Write a function code to insert on item into a queue.

17. Explain linked list representations of binary tree.

18. Briefly explain isolated and pendant vertex with a graph example.

19. Find out walk, trial, path by following graph.



SECTION – C

Answer any **SIX** of the following. **(6 × 5 = 30)**

20. Explain the classification of data structure.

21. Write an algorithm to delete an item at specific position in a singly linked list.

22. Write an algorithm for evaluation of postfix expression.

23. Write a program to implement tower of Hanoi.

24. Explain the different types of queues.

25. Explain tree traversal techniques.

26. Explain linear search technique with an example program.

27. Explain spanning tree and rooted tree with an example.

SECTION – D

Answer any **FIVE** of the following. **(5 × 7 = 35)**

28. Write a program to create and display doubly linked list. **(7)**

29. (a) Explain different types of linked list with the help of suitable diagram.

(b) Mention any two advantages of circular linked list. **(4 + 3)**

30. (a) Convert $(A-B)/(C+D)$ into prefix and postfix expression.

(b) Mention the application of stack B. **(4 + 3)**

31. (a) Write a program to array representation of queues.

(b) Discuss linked list representation of queue. **(5 + 2)**

32. What is binary search tree? Write a program to create and display binary search tree. **(7)**

33. (a) Write a program to sort n array elements using insertion sort.

(b) Write an algorithm for bubble sort. **(4 + 3)**

34. (a) Explain the linked list representation of graph.

(b) Explain adjacency matrix to represent a graph, with a suitable example. **(2 + 5)**
