THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2020

(CUCBCSS-UG)

CC17U BCS3 B04 - DATA STRUCTURES USING C

(Computer Science – Core Course)

(2017, 2018 Admissions – Supplementary/Improvement)

Time: Three Hours   Maximum: 80 Marks

PART A

Answer *all* questions. Each question carries 1 mark.

1. Give an example for linear data structure.

2. A step by step instruction used to solve a problem is known as _____

3. _____ data structure can't store the non-homogeneous data elements.

4. _____ linked list comprises the adjacently placed first and the last elements.

5. The best data structure to check whether an arithmetic expression has balanced parentheses is a _____

6. Identify the data structure which allows deletions at both ends, but insertion at only one end.

7. The postfix form of $A * B + C/D$ is _____

8. The number of edges from the root to the node is called _____ of the tree.

9. _____ data structure is useful in traversing a given graph by breadth first search.

10. _____ is a collision resolution strategy for open addressing.

(10 x 1 = 10 Marks)

PART B

Answer *all* questions. Each question carries 3 marks.

11. Differentiate between linear and nonlinear data structures.

12. Define complexity of an algorithm.

13. What are the advantages of linked lists over arrays?

14. Give any four applications of stack

15. What do you mean by a priority queue?

(5 x 3 = 15 Marks)

PART C

Answer any *five* questions. Each question carries 5 marks.

16. Explain any four string operations with examples.

17. Evaluate the following postfix expression 1 4 18 6/3 + +5/+

18. Write an algorithm to delete a node from the beginning of the linked list.

19. Explain insertion and deletion operations in a queue.

20. A, B, C, D, and E are pushed in a stack, one after the other starting from A. The stack is popped four times and each element is inserted in a queue. Then two elements are deleted from the queue and pushed back on the stack. Now one item is popped from the stack. Find the popped item?

21. Explain the algorithm for binary search.

22. Explain insertion sort with an example.

23. Draw the adjacency matrix of the following graph
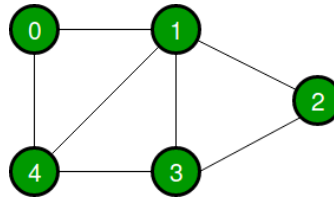
24. What do you mean by hashing? What are its applications?

(5 x 5 = 25 Marks)

PART D
Answer any *three* questions. Each question carries 10 marks.

25. Why stack is called a LIFO data structure? Explain PUSH and POP operations in a stack with algorithms and suitable examples.

26. What are the advantages of circular linked lists? Explain algorithms for insertion in a circular linked list.

27. Explain tree traversal algorithms. Also find the inorder, preorder and postorder traversals for the following tree.
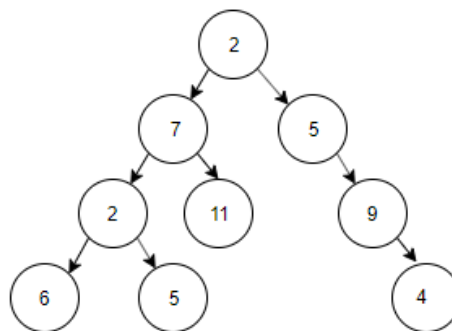
28. What is the difference between open addressing and chaining? Explain linear probing quadratic probing and double hashing techniques.

29. Explain the algorithm for DFS in a graph with suitable example.

(3 x 10 = 30 Marks)

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