

17U327

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Name:

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2018

(CUCBCSS-UG)

CC17U BCS3 B04 - DATA STRUCTURES USING C

(Computer Science – Core Course)

(2017 Admission Regular)

Time: Three Hours

Maximum: 80 Marks

PART A

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

1. The worst case time complexity of linear search algorithm is _____
2. An example of a non linear data structure is _____
3. If a user tries to remove an element from empty stack, it is called _____
4. The data structure required for Breadth First Traversal on a graph is _____
5. Linked list is considered as an example of _____ type of memory allocation.
6. The quick sort algorithm uses _____ design technique.
7. The result of evaluating the postfix expression 5, 4, 6, +, *, 4, 9, 3, /, +, * is _____
8. The data structure suitable to represent hierarchical relationship between elements is _____
9. A full binary tree with $2n+1$ nodes contain _____ non leaf nodes.
10. _____ is an example of external sorting.

(10 x 1 = 10 Marks)

PART B

Answer *all* questions. Each question carries 2 marks.

11. Mention any two areas in which data structures are applied extensively.
12. Define dynamic data structures.
13. State the advantages of using postfix notations.
14. Define a Dequeue.
15. Differentiate between stack and queue.
16. Define height of a tree.
17. What is a weighted graph?
18. What is a path in graph?

(8 x 2 = 16 Marks)

PART C

Answer any *six* questions. Each question carries 4 marks.

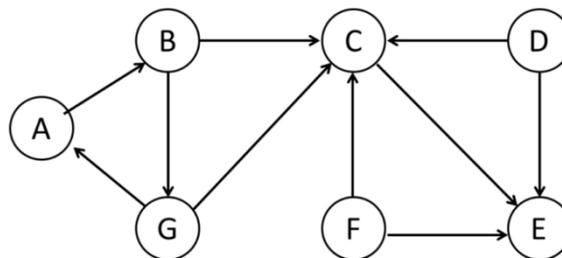
19. What do you mean by complexity of an algorithm? Define Big O Notation.
20. Explain how you will perform binary search with suitable example.
21. Explain how the following infix expression is evaluated with the help of stack :
$$5 * (6 + 2) - 12 / 4$$
22. Explain selection sort with the help of an example.
23. Write the algorithm for converting infix expression to postfix expression.
24. Explain linked list implementation of queue.
25. What is Circular Linked List? State the advantages and disadvantages of Circular Link List over Doubly Linked List and Singly Linked List.
26. Give short note on Expression Trees.
27. Explain the two basic techniques for Collision-resolution in Hashing with example.

(6 x 4 = 24 Marks)

PART D

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

28. What is a data structure? Explain different types of linear and non linear data structures with its applications.
29. Explain quick sort algorithm with a set of numbers 3, 0, 2, 4, 5, 8, 7, 6, 9.
30. Explain algorithms for inorder and postorder tree traversal. Construct a tree for the given inorder and postorder traversals.
Inorder : DGBAHEICF
Postorder : GDBHIEFCA
31. Perform Breadth First Search and Depth First Search on the following graph:



32. What is Hashing? Explain different Hash function methods in detail.

(3 x 10 = 30 Marks)
