D 72940 **(Pages : 2)** **Name**

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2014

(CUCSS)

Computer Science

CSS 1C 02—ADVANCED DATA STRUCTURES

(2014 Admissions)

Time : Three Hours **Maximum : 36** Weightage

Part A

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

1. What do you mean by abstract data type ?
2. What are the objectives of an algorithm ?
3. Compare recursive and non-recursive function.
4. What is priority queue ? Give example.
5. What is pairing heap ?
6. What are the advantages of doubly linked list ?
7. Write recursive algorithm for preorder traversal.
8. What is tower of Hanoi problem ?
9. What is balanced tree?
10. Define BST.
11. What is rehashing ?
12. What is splay tree ?

(12 x **1 = 12** Weightage)

Part B

Answer any **six** *questions.*
Each question carries 2 *weightage.*

13. What are the different asymptotic notations? Give example.
14. Write an algorithm to delete a node at the end of singly linked list.
15. Differentiate between row major and column major order data representation.
16. Explain binomial heap.

Turn over

17. Convert the following infix to prefix and postfix

$$((P + ((Q \wedge R) - S)) * (T - (U/V)))$$

18. Explain basic operation of stack using linked list.

19. Define circular queue. Write an algorithm that will reverse all the elements in a circular queue using an array.

20. Explain different searching techniques with example.

21. What are the advantages of threaded binary tree ?

(6 x 2 =12 weightage)

Part **C**

Answer any **three** *questions.*
Each question carries 4 *weightage.*

22. (a) Explain time and space complexity of an algorithm with example.

(b) Explain different types of data structures with example.

23. State and explain the algorithm to implement quick sort. Give its complexity.

24. Write notes on : (a) Binomial queue (b) Representation of tree in memory.

25. (a) Differentiate between B and B + trees.

(b) Explain Huffman algorithm.

26. Define hash function. What is meant by perfect hash function ? Discuss various methods used for solving hash collision.

27. (a) What is Min-Max heap ? Explain its application in sorting.

(b) Explain Fibonacci heap in detail.

(3 x 4 = 12 weightage)