17P164 (Pages:2)

Name: ....

Reg.No...........................

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2017
(CUCSS-PG)

CC17P CSS1 C02 - ADVANCED DATA STRUCTURES
(Computer Science)

(2017 Admission regular)

Time: Three Hours

Maximum: 36Weightage

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

1. Define Abstract Data Type?
2. Distinguish between time and space complexity of an algorithm.
3. What data structure do we used to perform recursion?
4. What are the advantages of linked list over arrays?
5. Convert the infix expression (a+b*c-d)/(e*f-g)
6. List the applications of Stack and Queue.
7. What is Sparse Matrix?
8. What is the maximum number of nodes in a binary tree of depth d?
9. What is rehashing?
10. Assuming the data in a max-heap are distinct, what are the possible locations of the second-largest element?
11. What will be the order of resultant binomial heap after merging two binomial tree of order k?
12. What is the degree of a graph?
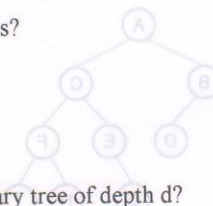
(12 x 1 = 12 Weightage)

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

13. Compare and contrast binary search and linear search technique, in brief.
14. Compare any two sorting algorithms with respect to their best, average and worst cases.
15. How the enqueue and dequeue operations are performed in queue.
16. Explain liner probing, in brief?
17. Write an algorithm to insert , delete and find minimum and maximum element from a binary search tree.

18. What is Graph traversals? Explain Depth First and Breadth First traversal techniques with suitable example.

19. Explain tries insertion with suitable example.

20. What are Binomial Heaps? What are its applications?

21. Explain why Fibonacci heaps allow for constant time merging. What does this mean for the insert operation? (2017 Admission regular)

(6 x 2 = 12 Weightage)

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

22. Explain the array and linked list implementation of Stack, in detail.

23. Explain different tree traversal algorithms in detail. You may use the tree given beneath, while illustrating the concepts.
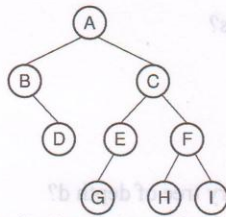
24. Explain, in detail, the different operations in AVL tree.

25. Construct a Min and MAX heap for the following values.

23,67,1,45,7,89,56,35

26. Explain how merging and splitting operations is done on a Splay Tree.

27. Describe, in detail, the different implementation technique of hashing.

(3 x 4 = 12 Weightage)

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