

**B.E., DEGREE EXAMINATIONS: NOV/DEC 2012**

Third Semester

**CSE201: DATA STRUCTURES AND ALGORITHMS**

(Common to ECE, EEE, EIE)

**Time: Three Hours**

**Maximum Marks: 100**

**Answer All Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Modular Design approach is
  - a. Top down approach
  - b. Object oriented
  - c. Unstructured
  - d. None
2. Implementation involves
  - a. Design
  - b. requirements gathering
  - c. Coding
  - d. Analysis
3. Static memory allocation is done during
  - a. Run time
  - b. Compile time
  - c. coding
  - d. a&c
4. Most appropriate data structure for Polynomial representation is
  - a. Stack
  - b. Queue
  - c. Tree
  - d. Linked list
5. Which data structures time complexity is less for search operation?
  - a. Binary tree
  - b. Single Linear list
  - c. Binary search tree
  - d. Doubly linked list
6. Number of hash function output decides
  - a. The size of the hash table
  - b. Number of buckets
  - c. Number of integers
  - d. a&b
7. External sort is used when
  - a. Primary memory size is not adequate
  - b. Internal sorting is not suitable
  - c. needs less time for sorting
  - d. none of the above
8. Average case time complexity of merge sort is
  - a.  $O(N \log N)$
  - b.  $O(N^2)$
  - c.  $O(\log N)$
  - d.  $O(N^2 \log N)$
9. Select the single source shortest path algorithm
  - a. Dijkstra's
  - b. Floyd's
  - c. Kruskal's
  - d. Prim's
10. Which search technique reaches the leaf node first
  - a. DFS
  - b. BFS
  - c. Preorder
  - d. b&c

**PART B (10 x 2 = 20 Marks)**

11. What are the parameters used to analyze an algorithm?
12. Define any two problem solving methods
13. Define ADT for an array
14. List out the advantages and disadvantages of a linked list

15. Write a routine to do in-order traversal
16. Define linear probing.
17. Construct binary search tree for the input: 14, 35, 76, 13, 8 and 3.
18. Why do we need external sort? Mention the name of any two external sorting algorithm.
19. Define spanning tree.
20. List any two applications for finding the shortest path.

**PART C (5 x 14 = 70 Marks)**

21. a) (i) Distinguish between top down and bottom up approach (7)  
(ii) Discuss about efficiency of an algorithm (7)

**(OR)**

b) What do mean by problem solving. Explain the steps in problem solving?

22. a) Write any four basic operations on stack and explain.

**(OR)**

b) Write an algorithm to create the singly linked list, to add an item, delete an item and search an item in the linked list.

23. a) Write algorithm to create and to perform all operations on the binary search tree.

**(OR)**

- b) (i) Explain about separate chaining and open addressing in hashing (10)  
(ii) Write an algorithm for post order traversal for the binary search tree for the  
input : 24,90,56,34,12,78 (4)

24. a) Explain quick sort with an example

**(OR)**

- b) (i) Explain insertion sort. (7)  
(ii) Discuss about any one external sorting (7)

25. a) Write Prim's algorithm and explain with an example.

**(OR)**

- b) Explain the following  
(i) Any one graph Traversal method. (7)  
(ii) Topological sort (7)

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