

**M. Sc. DEGREE EXAMINATION, NOVEMBER 2013**  
**INFORMATION TECHNOLOGY**  
**FIRST SEMESTER**

**COURSE : MAJOR CORE**  
**PAPER : ALGORITHMS AND DATA STRUCTURES**  
**TIME : 3 HOURS** **MAX. MARKS: 100**

**SECTION-A**

**Answer ALL the questions.**

**10x2=20**

1. Define Time Complexity.
2. Define Abstract data type List
3. Why is Dijkstra's shortest path algorithm greedy?
4. Define Binary search tree.
5. What is Hashing?
6. What is a Heap?
7. What is Internal sorting?
8. What are the various sorting techniques?
9. Define a Graph.
10. What is Breadth first search?

**SECTION-B**

**Answer any SIX of the following questions:**

**6x5=30**

11. Write the algorithms to push & pop in a stack.
12. Explain Infix to Postfix expression conversion using stack.
13. Explain the Greedy method to solve the Knapsack Problem.
14. Write the algorithm & explain any two Tree Traversals.
15. Discuss any two hash functions.
16. Explain the divide and conquer strategy applied in Quicksort.
17. Write the Heap sort algorithm.
18. Write the Dijkstra's shortest path algorithm with an example.

**SECTION-C**

**Answer any FIVE of the following questions:**

**5x10=50**

19. Discuss the steps in the development of an algorithm.
20. What are Queues? Explain the operations possible on a queue.
21. Explain Divide and Conquer strategy with an example.
22. Write the algorithm to delete from a Heap.
23. Explain Mergesort Algorithm with example.
24. Write the Kruskal's algorithm for Minimum spanning tree.
25. Write the algorithm for Depth First Search & explain with example.

\*\*\*\*\*