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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Sixth Semester

Branch : Electronics and Communication Engineering

EC 010 606 L01 – DATA STRUCTURES AND ALGORITHMS (Elective – I) (EC)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Explain how circular queue overcomes the disadvantage posed by queue data structure.
2. Explain binary search tree property.
3. Why is insertion sort the most efficient when the input list is almost in sorted order?
4. What is dynamic programming?
5. What is an NP-complete problem?

(5 × 3 = 15 marks)

Part B

Answer all questions.

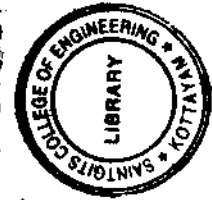
Each question carries 5 marks.

6. Write an algorithm to sort the elements of a linked list.
7. Write an algorithm to insert an element into a binary search tree.
8. Discuss insertion sorting algorithm. Illustrate its working with an example.
9. Explain greedy strategy for problem solving. Give an example for a problem that can be solved using greedy strategy.
10. Analyse binary search algorithm.

(5 × 5 = 25 marks)

Turn over



**Part C**

Answer all questions.

Each question carries 12 marks.

11. Discuss an algorithm to add two polynomials represented using linked lists.

Or

12. Discuss an algorithm to implement two stacks using a single one dimensional array.

13. Illustrate with the help of an example, graph traversal using Depth First Search

Or

14. Discuss about the different representations of a binary tree and a graph.

15. Discuss heap sort algorithm. Illustrate its working with the help of an example.

Or

16. Discuss radixsort algorithm. Illustrate its working with the help of an example.

17. Explain the different notations used to denote the time complexity of an algorithm.

Or

18. Explain how divide and conquer approach is used to perform merge sort.

19. Explain travelling salesman problem. Suggest one method of solving it.

Or

20. Analyse the performance of bubble sort, quick sort and merge sort.

(5 × 12 = 60 marks)