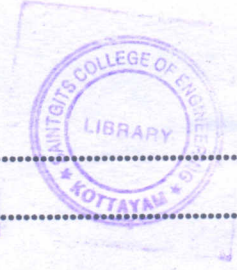


G 1259

(Pages : 2)

Reg. No.....

Name.....



**B.TECH. DEGREE EXAMINATION, MAY 2015**

**Sixth Semester**

Branch : Electronics and Communication Engineering

EC 010 6060 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. Differentiate between a linear data structure and a non-linear data structure.
2. Explain the term connected graph. Give an example.
3. What is a heap data structure ? Give an example.
4. Analyse the best, worst and average case of a linear search algorithm.
5. Explain traveling salesman problem.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Write an algorithm to delete an element from a queue represented using :
  - (i) array representation ;
  - (ii) linked list representation.
7. Discuss the following terms related to a binary search tree with proper examples :
  - (a) Complete binary tree ;
  - (b) Full binary tree ;
  - (c) Height of a binary tree.
8. Discuss bubble sorting algorithm. Illustrate its working with an example.
9. Explain dynamic programming strategy for problem solving. Give an example for a problem that can be solved using dynamic programming.
10. Analyse merge sort algorithm.

(5 × 5 = 25 marks)

**Turn over**



**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

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

*Or*

12. Discuss an algorithm to implement insertion and deletion operation in a stack represented using double linked list.

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

*Or*

14. Discuss the deletion and insertion operations in a binary search tree.

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

*Or*

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

17. Explain brute force, greedy and divide and conquer methods of problem solving.

*Or*

18. Explain the importance of complexity analysis in algorithm development.

19. Discuss in detail about the class of NP-complete problems.

*Or*

20. Analyse the performance of binary search, insertion sort and heap sort.

(5 × 12 = 60 marks)

