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THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2008

CS 2K 302/IT 2K 302/PTCS 2K 302—DATA STRUCTURE AND ALGORITHMS

Time : Three Hours   Maximum : 100 Marks

Part A

1. Describe the Primitive Data types.

2. Explain the concept of data Abstraction.

3. Write an algorithm for inserting an element into a list implemented using an array.

4. Explain the procedure to delete an element from a Queue.

5. Describe the various operations of sets with examples.

6. Explain the various representations of graphs.

7. Explain the best and worst complexities of quick sort.

8. Write a procedure to implement bubble sort.

(8 × 5 = 40 marks)

Part B

1. (a) Write an algorithm to perform matrix multiplication and calculate the space and time complexity.

   Or

   (b) Explain Recursion with an example and analyse it.

2. (a) Write an Algorithm to perform various stack operations using linked list.

   Or

   (b) Write a procedure to insert and delete the elements from a single linked list.

3. (a) Explain the various tree traversals with examples.

   Or

   (b) Explain the Prim's and Kruska'ls algorithms for constructing minimal spanning tree.

4. (a) Explain the various hashing functions and collision resolution strategies.

   Or

   (b) Write a procedure for merge sort and explain with example.

(4 × 15 = 60 marks)