Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

# C 3198

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2008.

Third Semester

Electrical and Electronics Engineering

CS 1211 — DATA STRUCTURES AND ALGORITHMS

(Common to Electronics and Instrumentation Engineering and
Instrumentation and Control Engineering)

(Regulation 2004)

Time : Three hours                                    Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define ADT.

2. Explain the scope of variables in C.

3. List the few applications of Queue.

4. What do you mean by Priority Stack?

5. Convert the following infix expression into Postfix notation.
   a * b – c – d + e * f – g / h * i

6. Illustrate the array representation for a binary tree.

7. Write the time complexities of Quick sort.

8. Explain Radix Sort.

9. Define Transitive Closure of a graph.

10. How do you implement an Adjacency List?

PART B — (5 × 16 = 80 marks)

11. (a) Write a C program, which accepts the details of an employee and stores it in a file. Also it must be able to retrieve the details of a particular employee when his employee id is provided. (Use Structures in C)  (16)

Or

(b) (i) Implement a two dimensional array using ADT with proper insertion and deletion operations.  (8)

(ii) Discuss the impact of pointers in Functions with an example.  (8)

12. (a) (i) Write suitable routines to perform insertion and deletion operations in a priority queue.  (8)

(ii) Write a procedure to evaluate the postfix expression as an application of Stack.  (8)

Or

(b) Write suitable ADT operations to perform insertion and deletion in a Doubly linked list.  (16)

13. (a) (i) Explain the Search and Delete operations in Threaded Binary Trees.  (12)

(ii) Discuss the applications of Binary Trees.  (4)

Or

(b) Write suitable ADT's to perform the various Binary tree Traversals.  (16)

14. (a) (i) Write suitable ADT operations for Heap Sort.  (8)

(ii) Discuss the advantages of Binary Search over Sequential search with suitable examples.  (8)

Or

(b) (i) Explain Merge Sort in detail with suitable examples and proper ADT operations.  (10)

(ii) Sort the following numbers using Shell Sort.

49  58  25  63  47  14  78  96  84  10  2  43.  (6)

15. (a) (i) Write suitable ADT operation for shortest path problem using Dijkstra's algorithm. (8)

(ii) Compare the efficiency of Graph Traversal algorithms. (8)

Or

(b) (i) How do you construct a minimum cost spanning tree with Kruskal's algorithm? (8)

(ii) Write short notes on Round robin algorithm. (8)

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