AM/DS 212 (R-22)

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II/IV B. Tech. DEGREE EXAMINATIONS, AUGUST - 2024

First Semester

AM / DS

DATA STRUCTURE & ALGORITHMS

Time : **Three Hours** Maximum : **70** Marks

Answer ONE Question from each Unit. 5x14=70 M

All Questions carry equal marks.

UNIT - I

1. a) What do you mean by time complexity of the algorithms ? How do you find complexity.

   b) Explain the operations in data structures.

(OR)

2. Explain in detail about array data structures.

UNIT - II

3. a) What is an abstract data types ? Explain in detail.

   b) Define Stack ? Explain operations performed on stack.

(OR)

4. a) How can you use stack to convert an infix expression to postfix ? Convert infix expression (A + B)*(C - D) to postfix using stack.

   b) Define about ADT queue and different types of queues.

UNIT - III

5. a) What do you mean by linked list ? Write a function to insert and delete a node in linked list.

   b) Write a C program to reverse a linked list by traversing it only once.

(OR)

6. a) Define list ? What are the types of linked list. What are the advantages and disadvantages of linked list and application of linked list.

   b) Write a complete program in C to create a singly linked list. Write function to do the following operations. (i) Insert a new node at the end (ii) Delete the first node.

P.T.O.

UNIT - IV

7. a) What is linear search ? Write the application areas that use a linear search.

   b) Write about hashing and its functions.

(OR)

8. a) Explain briefly about Quick sort.

   b) Explain in detail about Merge sort.

UNIT - V

9. a) Define Graph ? Explain about graph Traversal.

   b) Explain briefly about AVL trees.

(OR)

10. a) Write about basic terminologies and representation about Graphs.

    b) Explain in detail about different types of trees.