Total No. of Questions-8] [Total No. of Printed Pages-2

B.E. V Semester Examination

BE - V/12(A)

233884

COMP. ENGG.

Course No :COM - 502

(Data Structures)

Time Allowed- 3Hours *Maximum Marks-100*

Note: Attempt any **five** Questions in all selecting at least **two** questions from each **Section.**

SECTION - A

1. a) Define data structure. Discuss the commonly used data structure in computer science. **(10)**

   b) What do you mean by sparse matrix? Explain with the help of an example. **(10)**

2. a) Write a program in C or C++ to implement the stack data structure using linked list. **(10)**

   b) Write an algorithm to evaluate postfix expression using stack. **(10)**

3. a) How an item is located in a linked list? Write a C-code. Also write some practical applications of a linked list. **(15)**

   b) Define the term generalized list and its application. **(5)**

4. a) What are queues? How will you implement deque operations on queue? **(10)**

   b) Write an algorithm to insert and delete an item in a circular list. **(10)**

SECTION - B

5. a) Draw a binary search tree for the following data:
12, 15, 25, 30, 40, 50, 67. Traverse it in Inorder. Preorder and Postorder. **(10)**

b) What are the advantages and disadvantages of threaded binary tree over binary tree. **(10)**

6. a) Write an algorithm to calculate shortest path between two vertices in a graph. **(10)**

b) Write a program for radix sort in C. **(10)**

7. a) Write an algorithm for Depth First Search traversal technique of a graph. **(10)**

b) Write an algorithm to arrange the numbers using merge sort technique. **(10)**

8. Write down notes on :-

i) Linear probing

ii) B - tree

iii) Optimum search tree. **(7,7,6)**

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