SECTION – E

8. Explain quick sort algorithm with example and compare quick sort with bubble sort. 15

9. What is a minimum spanning tree ? Explain Krushkal's algorithm with the help of an example. 15

Roll No. .....

3128

B. Tech. (CSE) 3rd Semester Examination – February, 2022

DATA STRUCTURES & ALGORITHMS (w.e.f. March-2021)

Paper : PCC-CSE-203-G(A)

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Section-A is ***compulsory***, attempt ***one*** question each from Sections-B, C, D and E. All questions carry equal marks.

SECTION – A

1. Explain the following : $2.5 \times 6 = 15$

   (a) Priority queue

   (b) Sparse matrices

   (c) Binary search tree

P. T. O.

(d) Doubly link list

(e) Memory representation of graphs

(f) Multidimension arrays

SECTION – B

2. (a) What do you mean by data structure ? Give examples of linear, non-linear, homogenous, heterogeneous data structures. Also explain time and space complexity. 8

(b) Write an algorithm to find out transpose of a matrix. 7

3. (a) What is an array ? Explain various operations that can be performed on the arrays. 8

(b) Explain recursive and non recursive algorithm of binary search. 7

SECTION – C

4. (a) What do you mean by stack ? Describe dynamic implementation (linked list based) of stack. Also write algorithm to perform push and pop operation on stack. 8

(b) Write an algorithm to transform infix expression into postfix expression. 7

5. Explain :

(a) Types of queues

(b) Implementation of queue using arrays

SECTION – D

6. Discuss inorder, preorder and postorder tree traversal. Construct a tree for the given inorder and preorder traversals. 15

Preorder : G B Q A C K F P D E R H

Inorder : Q B K C F A G P E D H R

7. Write following algorithms for circular link list : 15

(a) Insert at First Position

(b) Insert at Last Position

(c) Insert in Ordered Linked List

(d) Delete Element