U.S.N

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec. - 2019

Data Structures

Time: 3 hrs   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a.	Define ADT. Develop an ADT for varying length character string.	6
b.	Define stack. Develop functions to perform various operations on stack.	8
c.	Develop a recursive program for Tower of Hanoi problem.	6
2 a.	Develop a program to convert infix expression to postfix expression.	10
b.	Develop a program to evaluate a given postfix expression.	10

UNIT - II

3 a.	Develop a 'C' function to create an ordered linked list.	10
b.	Develop a 'C' function to delete a node at the specified position.	10
4 a.	Develop a 'C' function to insert a node ; i) After the key ii) Before the key using DLL	10
b.	Develop a 'C' function to delete all nodes whose information field is specified as a key using DLL with header node.	10

UNIT - III

5 a.	Develop a 'C' function to add two polynomials.	10
b.	With example, develop a 'C' program to perform various operations on circular queue.	10
6 a.	Define priority queue. Develop a 'C' function to implement Ascending Priority Queue.	10
b.	Define DEQUE. Explain the various operations on DEQUE with example.	10

UNIT - IV

7 a.	Define the following with example :
	  i) Complete binary tree ii) Almost complete binary tree
	  iii) Degree of a node iv) Height of a tree
		10

b.	Define BST. Develop a 'C' function to insert an element into BST.	10
8 a.	Explain different tree traversal techniques with examples.	10
b.	Develop a 'C' function to insert a node into a threaded Binary tree.	10

UNIT - V

9 a.	Develop a program to sort the element using quick sort.	10
b.	Develop a program to sort the elements using merge sort.	10
10 a.	Develop a program to search for an element using Probability Search.	10
b.	Develop a program to search for an element using Ordered list search.	10

✳ ✳ ✳