Semester	**3**
Paper Code	**C2CS230312T / C2CS230312P**
Course	**MAJOR**
Paper Title	**DATA STRUCTURES**
No. of Credits	**4**
Theory/ Practical / Composite	**Composite**
Minimum No. of preparatory hours per week a student has to devote	5
Number of Modules	One
Syllabus	1. Concept of different data structures, ADT 2. Basic ideas on complexity analysis, Big-Oh, Small-Oh, Big-Omega, Small Omega, Big-Theta notations 3. Different representation and applications of array, address translation 4. Linear and binary searches, advantages and disadvantages 5. Representation of linked lists, different types, different operations on each of the types 6. Definition of stack, array and linked list representations of stack, reverse polish notation 7. Definition of queue, array and linked list representations of queue, different types 8. Definition of binary tree, quantitative properties, types, array and linked representation, different traversals, definition of threaded binary tree, advantages 9. Definition of binary search tree, properties, different operations, definition and properties of AVL tree 10. Different sorting algorithms – Bubble, Selection, Insertion, Shell, Merge, Quick and Heap
Learning Outcomes	1. To impart the concepts of different kinds of data structures and their real life applications and make students understand different sorting and searching algorithms 2. To convey the approach of solving unknown problems with the help of fundamental data structures and to understand basic concepts about stacks, queues, lists, trees and graphs. 3. To impart the basic concepts application of data structures and algorithms and to understand concepts about searching and sorting techniques and its usability in real life. 4. Ability to summarize searching and sorting techniques. 5. Ability to analyze algorithms and its correctness, complexity analysis in different stages. 6. To understand about writing algorithms which is a finite step by step approach in solving problems with the help of fundamental data structures.

Reading/Reference Lists	1. Fundamentals of Data Structures in C by Horowitz and Sahni 2. Data Structures using C – Reema Thareja 3. Data Structures Through C in Depth – Srivastava and Srivastava 4. Data Structures and Program Design in – C. R. Kruse 5. Data Structures using C – A. M. Tenenbaum 6. Data Structures with C – S. Lipschutz

	Theory	Practical
Evaluation	CIA: 12 Attendance: 3 Semester Exam: 45	CA: 38 Attendance: 2
Paper Structure for Theory Semester Exam	Answer 3 out of 5 of 15 marks each	