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| |  |  |  | | --- | --- | --- | | 13CS2104 | - | ADVANCED DATA STRUCTURES | | | | | | | | |
|  |  | |  | | | | |
| Hours / Week | : | 4 | |  | Sessional Marks | : | 40 |
| Credits | : | 4 | |  | End Examination Marks | : | 60 |

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| **UNIT – I** |
| Concept of ADT, The List ADT-array based implementation and linked list implementation, Single Linked List, Doubly Linked List, Circular Linked list. |
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| **UNIT – II** |
| **The Stack ADT**: array based implementation, linked list implementation, applications of stacks.  **The Queue ADT**: array based implementation, linked list implementation, applications, circular queues, Dequeues.  **Priority Queues**: implementation, Binary heap, applications of priority queues. |
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| **UNIT – III** |
| **Tree**: Definition and Properties, ADT.  **Binary Tree**: Definition and Properties, ADT, Implementation, traversals-recursive, non-recursive.  **Binary Search Tree**: Definition and Properties, applications. |
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| **UNIT – IV** |
| **Balanced Search Trees**: **AVL trees**: definition, implementation and operations, **Red-Black Trees**: definition, implementation and operations, **2-3 Trees**: definition, implementation and operations. **Splay Trees**: Definition, implementation and operations. |
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| **UNIT - V** |
| Heap Sort, shell sort, radix sort, External Sorting- Model for external sorting, Multiway merge, Polyphase merge. |
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| TEXT BOOKS |
| 1. Data Structures and Algorithm Analysis in JAVA, Mark Allen Weiss, Pearson Education, Third edition. 2. Data structures Algorithms and Applications, S.Sahni, University press (India) pvt ltd, 2nd edition, |
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| REFERENCE BOOKS |
| 1. Data Structures Using Java, YedidyahLangsam, Moshe Augenstein, Aaron M.Tenenbaum, Pearson Education. 2. Data Structures And Algorithms in Java, 2nd edition, M.T.Goodrich and R.Tamassia, John Wiley and Sons, Inc. 3. Data Structures and Algorithms in Java, 2nd edition, A.Drozdek, Thomson. 4. Data Structures and Java Collections Frame Work, W.J.Collins, McGraw Hill. 5. The Complete Reference Java J2SE, 5th Edition, Herbert Schildt, TMH. |