

- 1. Complexity Analysis & Elementary Data Structures 9**

Asymptotic notations – Properties of big oh notation – asymptotic notation with several parameters – conditional asymptotic notation – amortized analysis – NP-completeness – NP-hard – recurrence equations – solving recurrence equations – arrays – linked lists – trees.
- 2. Heap Structures 9**

Min-max heaps – Deaps – Leftist heaps – Binomial heaps – Fibonacci heaps – Skew heaps - Lazy-binomial heaps.
- 3. Search Structures 9**

Binary search trees – AVL trees – 2-3 trees – 2-3-4 trees – Red-black trees – B-trees – splay trees – Tries.
- 4. Multimedia Structures 9**

Segment trees – k-d trees – Point Quad trees – MX-Quad trees – R-trees – TV-trees.
- 5. Applications 9**

Huffman coding – Garbage collection and compaction – Topological sort – Mincut maxflow algorithm – Activity networks – Set representation – Set union and find operations – Counting binary trees.

TOTAL = 45

References:

1. E. Horowitz, S.Sahni and Dinesh Mehta, Fundamentals of Data structures in C++, Galgotia, 1999.
2. Adam Drozdex, Data Structures and algorithms in C++, Second Edition, Thomson learning – vikas publishing house, 2001.
3. G. Brassard and P. Bratley, Algorithmics: Theory and Practice, Printice –Hall, 1988.
4. V.S. Subrahmanian, Principles of Multimedia Database systems, Morgan Kaufman, 1998.
5. Thomas H.Corman, Charles E.Leiserson, Ronald L. Rivest, "Introduction to Algorithms", Second Edition, PHI 2003.