

II B. Tech II Semester Supplementary Examinations, Dec - 2015
ADVANCED DATA STRUCTURES
 (Com. to CSE, IT)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **THREE** Questions from **Part-B**

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**PART-A**

1. a) Why collisions occur in hashing? Give suggestions to avoid collisions?  
 b) Give different types of imbalances that occur while deleting an element from an AVL tree?  
 c) Create heap for the following data 8,10,2,5,20,1,3,15  
 d) With an example discuss about tree, back and cross edges?  
 e) What is stable sorting? Give example?  
 f) Write about special characters in files? (4M+4M+3M+4M+4M+3M)

**PART B**

2. Following elements are inserted into an empty hash table 112, 249, 3417, 3132, 7122, 5199, 5344, 6796, and 1893 and a hash function  $h(x) = x \text{ mod } 11$ . Show the contents of hash table
  - a) open addressing using quadratic probing.
  - b) Open addressing using Linear probing
  - c) Number of comparisons to search each element in above two cases (4M+4M+8M)
3. a) Construct an AVL tree using the following data entered in sequence.  
 7, 14, 2, 5, 10, 33, 56, 30, 15, 25, 66, 70, 4  
 b) Explain about different types of imbalances and their corresponding corrections in an AVL Tree? (8M+8M)
4. a) Write a procedure and pseudo code for Joining (merging) of two binomial queues?  
 b) What is binary heap? Give applications of the Binary Heap? (8M+8M)
5. a) Explain Kruskal's algorithm with example.  
 b) Explain Flyod's algorithm with example. (8M+8M)
6. a) Discuss about lower bound on worst case complexity?  
 b) Compare quick sort and merge sort? Discuss their time complexities? (8M+8M)
7. a) Give the fail indexes used by the KMP algorithm for the following patterns.  
 (i) AAAB (ii) AABAACAABABA  
 (iii) ABRACADABRA (iv) ASTRACASTRA  
 b) Discuss about field and record organization in files in detail with examples? (10M+6M)

