

**II B. Tech II Semester Supplementary Examinations, April - 2021**  
**ADVANCED DATA STRUCTURES**  
 (Computer Science and Engineering)

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 **FOUR** Questions from **Part-B**

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**PART -A**

1. a) What are the two phases of external sorting? Briefly explain. (3M)
- b) What is dynamic hashing? (2M)
- c) What are lazy binomial queues? (2M)
- d) Define an AVL tree. (2M)
- e) What is the advantage of having more than one element in a B tree node? (3M)
- f) What is a header node in Patricia? (2M)

**PART -B**

2. a) Why  $2k+2$  buffers are desirable for k-way merge instead of minimum  $k+1$  buffers. (7M)
- b) Discuss about run generation for best performance of external sorting. (7M)
3. a) Explain some hash functions for strings. (7M)
- b) How chaining helps in resolving hash collisions? Explain with an example. (7M)
4. a) Explain steps for delete min operation in a binomial heap, with an example. (7M)
- b) Explain how priority queues are helpful in solving the selection problem. (7M)
5. a) Explain different rotations associated with AVL tree insertion. (7M)
- b) Start with an empty red-black tree and insert the following keys in the given order: 20, 10, 5, 30, 40, 57, 3, 2, 4, 35 (7M)
6. a) Write code for search operation in a 2-3-4 tree. (7M)
- b) Discuss the merits and demerits of replacing the double linked list of data nodes in  $B^+$  tree with a single linked list. (7M)
7. a) Present the procedure for inserting an element into Patricia. Give an example. (7M)
- b) Discuss different sampling strategies used in multiway tries. (7M)