

**National Institute of Technology Calicut**  
**Department of Computer Science and Engineering**  
**CS3095D DATABASE MANAGEMENT SYSTEMS LABORATORY**  
**B Tech (25-11-2022)**

**Time: 30 minutes**

**6 Marks**

**B Tree/B+ Tree**  
**SET A**

1. Consider the following statements associated with a B+ Tree of order 3:

- I. A non-leaf node should have at least 1 key.
- II. Both the leaf nodes as well as the internal nodes can have at most 3 keys.

Then, which among the following is correct.

- a. Both I and II are TRUE
- b. I is TRUE, but II is FALSE
- c. I is FALSE, but II is TRUE
- d. Both I and II are FALSE

(1 mark)

2. B+ Trees show more efficiency in sequential access. Is the statement TRUE? Explain with proper justification.

(1 mark)

3. With the help of an example, explain the following cases associated with the insertion and deletion of keys in a B Tree:

- a. Case I: The height of the tree gets increased by one (1 mark)
- b. Case II: The height of the tree gets decreased by one (1 mark)

4. Consider the following B+ Tree with an order of 5. Delete the following keys (in order) from the tree: (Note that you need to delete the occurrences of the keys in internal nodes also)

- a. 75 (0.5 marks)
- b. 89 (0.5 marks)
- c. 73 (1 mark)

