National Institute of Technology Calicut
Department of Computer Science and Engineering
CS3095D DBMS Lab
Test II

Time: 60 mins **Submission III – B+ Tree** **Total Marks: 8**

Set A

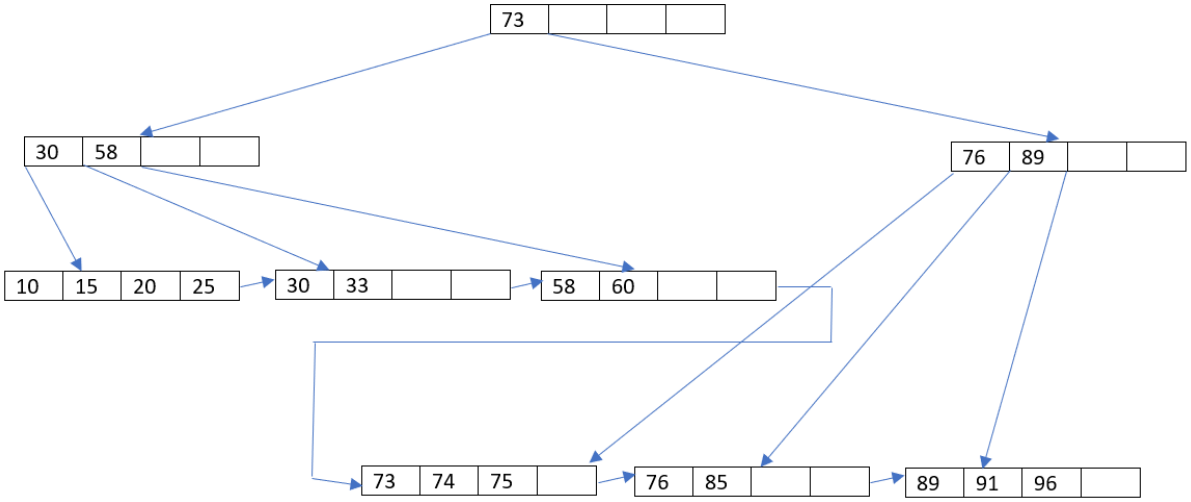
Part A

Answer all questions

1. Consider a database for storing the details of employees working in a company. Suppose, you need to retrieve the details of employees with an experience of at least 10 years. In this case, will the B+ Tree show better performance as compared to the B Tree. Support your answer with proper justification. **(1 mark)**

2. Suppose you are given a B+ Tree of order 6. Then, which among the following statements is FALSE.
   a. The root node should have at least one key and two child pointers.
   b. The minimum number of keys in a non-leaf node (other than the root) is 3.
   c. The maximum number of keys that a node can have is 5.
   d. The maximum number of data pointers in a leaf node is 5. **(1 mark)**

3. 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)**



Part B

(*Use C/C++ for implementing the following question. Two test cases will be provided during evaluation. Each test case carries 2 marks.*)

Question: Implement a B+ Tree, **of order 4**, which **uses alphabets (A to Z) as its key values**. The B+ Tree should incorporate the following functionalities:

Insert – To insert a key value into the B+ Tree

Search – To search for a key value in the B+ Tree. If the key value is found, return TRUE. Else, return FALSE.

Print – To display the elements, including the duplicates, currently present in the B+ Tree (**in-order traversal**)

(2 x 2 = 4 marks)