National University of Computer and Emerging Sciences, Lahore Campus

	Course:	Advanced Database Concepts	Course Code:	CS451
	Program:	BS(Computer Science)	Semester:	Spring 2017
	Date:	27-Mar-2017	Total Marks:	
			Weight:	
	Section	A	Page(s):	1
	Quiz:	3 (Indexing)		

Instruction/Notes:

Consider a relation R(a,b,c) with 20,000 records, 2,000 blocks (10 records fit on each block), and where *a* is a non-negative integer primary key. How many blocks will be read from disk to answer the selection query $\sigma_{a>25000}(R)$ in each of the following scenarios? Assume that 200 records match the selection predicate.

Q1. Relation R is stored in an unordered (heap) file.

Q2. Relation R is stored in an ordered (sequential) file sorted on *a* and there is a B^+ tree index with search key *a*. All index blocks are already in main memory.

Q3. Relation R is stored in an ordered (sequential) file sorted on *a* and there is a B^+ tree index with search key *a*, height $x=3$ and order $p_{leaf} = 60$. Assume index blocks are not in main memory.

Q4. Relation R is stored in an unordered (heap) file. There also exists a B^+ tree index with search key *a*. All Index blocks are already in main memory.

Q5. Relation R is stored in an unordered (heap) file. There also exists a B^+ tree index with search key *a*, height $x=3$ and order $p_{leaf} = 60$. Assume index blocks are not in main memory.