ICS 321 Data Storage & Retrieval — Ex#17 Name:_____

Adapted from Exercise 9.5 Ramakrishnan & Gehrke: Consider a disk with a sector size of 512 bytes, 2000 tracks per surface, 50 sectors per track, five double-sided platters, and an average seek time of 10 msec.

1. What is the capacity of a track in bytes ? What is the capacity of each surface ? What is the capacity of the disk ?
2. How many cylinders does the disk have ?
3. Give exampes of valid block sizes. Is 256 bytes a valid block size ? 2048? 51,200?
4. If the disk platters rotate at 5400 rpm (revolutions per minute), what is the maximum rotational delay ?
5. If one track of data can be transferred per revolution, what is the transfer rate ?
6. If block size is 3072 bytes, and a DBMS page is 3072 bytes, what is the average I/O time to fetch a random page from disk ?
7. Suppose an employee table is stored in 8 pages and these 8 pages are laid out contiguously on disk on the same track. What is the I/O time required to perform a point query on employee if the data is not sorted ?
8. What is the I/O time required to perform a point query if the data is sorted according to the query condition ? (You may assume that only one initial seek is required).