Name:_____

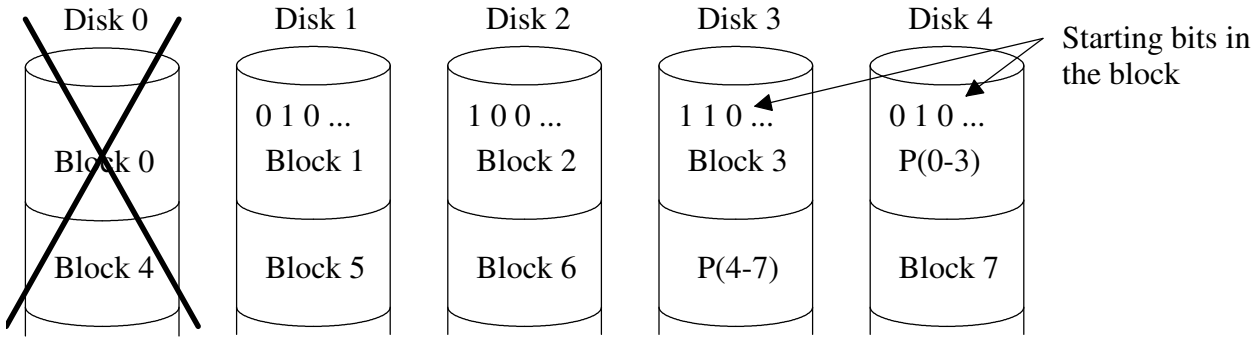
1) Disk-access time = (seek time) + (rotational delay) + (date transfer time).

a) How is each component of the disk-access time effected by the disk's RPM (revolutions per minute)?

b) How is each component of the disk-access time effected by the sector size?

2) Suppose we have a 5 disk RAID 5 (block-level distributed parity) array.

a) If Disk 0 crashes, reconstruct the first three bits of block 0. Assume even parity is being used.



b) Assume that Disk 0 has crashed. If you write a new block of data starting with bits 0 1 1 ... to Block 3, then can Blocks 5 and 6 be read at the same time as the write for Block 3 is occurring? (Justify your answer)

Name:_____

3) Suppose we have an 10 disk RAID array with each disk having a 100 MB/sec data transfer rate. Complete the following table **assuming none of the disks are faulty.**

RAID Level	Maximum number of concurrent, independent READs	Maximum number of concurrent, independent WRITEs	Data Transfer Rate for a single large READ
RAID 0 (no redundancy with **large strips**)			
RAID 1 (Mirroring with **large strips**)			
RAID 3 (bit-interleaved parity)			
RAID 5 (block-level distributed parity)			

4) Suppose we have an 10 disk RAID array with each disk having a 100 MB/sec data transfer rate. Complete the following table **assuming ONE of the disks is faulty.**

RAID Level	Maximum number of concurrent, independent READs	Maximum number of concurrent, independent WRITEs	Data Transfer Rate for a single large READ
RAID 0 (no redundancy with **large strips**)			
RAID 1 (Mirroring with **large strips**)			
RAID 3 (bit-interleaved parity)			
RAID 5 (block-level distributed parity)			