**PREPARATION FOR QUIZ 3** Calculation Exercises, Examples

Please review all formulas on pg # 299-310 Chapter 10.

**Magnetic Disks**

What is the capacity of a hard drive (in GB) consisting of 120,000 tracks, 4,000 sectors, and 4 surfaces? Assume each block has 512 bytes.

**Sol: On one surface, the size is 120,000 x 4,000 x 512 bytes = 245,760,000,000 bytes**

**Convert to GB: 245,760,000,000 bytes per surface \*(1G / 2^30 bytes) = 228.9 GB per surface**

**Total capacity of drive is [4 surfaces] \* [228.9 GB / surface] = 916 GB**

**==========================================================**

What is the average rotational latency of a hard drive rotating at 7,200 RPM or 120 revolutions per second? (Give your answer in milliseconds)

1 1

**Sol: Formula from text: average latency time = ---------- x ----------------------------**

**2 rotation speed**

**Change rotational speed to revolution per sec: 7200 rev/min x [1 min / 60 sec] = 120 rev/sec**

**1 1**

**Average latency time = ---------- x ------------------ = 0.004167 sec or 4.167 ms**

**2 120 rev/sec**

What is the transfer time for a hard drive rotating at 7,200 RPM or 120 revolutions per second? Assume there are 30 sectors per track. (Give your answer in milliseconds)

1

**Sol: From formula in text: Transfer time = --------------------------------------------**

**Number of sectors x rotational speed**

**1 1**

**Transfer time = --------------------- x ----------------------- = .000278 sec or .278 ms**

**30 sector/track 120 rev/sec**