**3 (A) –“ A multiplattered hard disk is divided into 1100 sectors and 40,000 cylinders. There are six platter surfaces. Each block holds 512 bytes. The disk is rotating a rate of 4800 rpm. The disk has an average seek time of msec. What is the total capacity of this disk?”**

***Answer:***

135168000000 bytes

capacity= number of sectors\*number of cylinders\* platter surfaces\*size of block

1100\*40000\*6\*512=135168000000 bytes

**4 (A)- “The average latency on a disk with 2200 sectors is found experimentally to be 110 msec. What is the rotating speed of the disk?**

***Answer:***

average latency = (1/2) x (1/ rotational speed)rotational speed= 1/2 average latency rotational speed = 1/ (2\*110)rotational speed = 0.0045

**[I] For a display of 1920 pixels by 1080 pixels at 16 bits per pixel how much memory, in megabytes, is needed to store the image?**

**Answer:**

1920 \* 1080 = 2073600 pixels

2073600 pixels \* 2 bytes/pixels = 4147200 bytes

Convert to megabytes:

4147200 bytes (1 MB / 1048576 bytes)

= 3.955MB 1MB = 2^20 B = 1048576

**[II] 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)**

**Answer:**

Average Latency = (1/2) \* (1/ rotational speed) Change rotational speed to revolution per sec:

7200 rev/min \* (1min/60sec) = 120 rev/sec Average Latency time = (1/2) \* (1/120) sec =

0.004167 sec = 4.17ms.

**[III] 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)**

**Answer:**

Transfer time = 1/Number of sectors x rotational speed Transfer time = (1/30) \* (1/120)sec =

0.278 ms.