

$$\text{Rotational Speed} = 7200 \text{ RPM}$$

$$\text{Track} = 200 \text{ Sectors}$$

$$\text{Avg. Seek} = 8 \text{ ms}$$

$$\text{Sector} = 512 \text{ bytes}$$

Avg. Access time ?

$$\text{Rotations Speed per Second} = \frac{7200}{60} = 120 \text{ RPS.}$$

$$\text{Rotations time in (Milli-seconds)} = \frac{1000}{120} = 8.33 \text{ ms.}$$

$$\text{Avg. Rotational Latency} = \text{Time of Half Rotations}$$

$$= \frac{8.33}{2} = 4.17 \text{ ms.}$$

$$\text{Avg. Access time} = \text{Seek time} + \text{Avg. Rotational latency} + \text{data read time (Transfer time)}$$

$$= 8 \text{ ms.} + 4.17 + \left(\frac{32}{200} \times 8.33 \right)$$

$$= 8 + 4.17 + 1.33$$

$$= 13.5 \text{ ms.}$$

PPT NAME: INTRODUCTION

- ① Seek Time = 4 ms
- ② Rotational Speed = 15000 RPM
- ③ 1 Sector = 512 Bytes
- ④ 1 Track = 500 Sectors

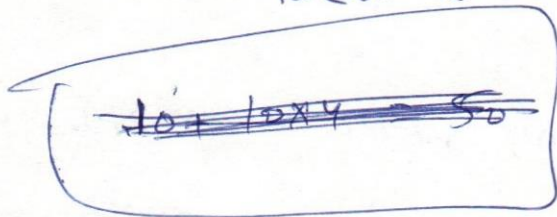
Total time for the Transfer = ?

$$\text{Rotation \& time in milliseconds} = \frac{1000}{\frac{15000}{60}} = 4 \text{ ms.}$$

$$\text{Avg Rotational delay} = \frac{4 \text{ ms}}{2} = 2 \text{ ms.}$$

Read time for 500 Sectors = 4 ms

$$\text{Total time} = 4 + 2 + 4 = 10 \text{ ms. } \checkmark$$



$$\boxed{2500}$$

$$\begin{aligned}
 &= 500 + 500 + 500 + 500 + 500 \\
 &\quad \downarrow \\
 &= 10 \text{ ms.} + \boxed{500 \times 4} \\
 &= 10 \text{ ms.} + (6 \text{ ms.} \times 4) \\
 &= 10 + 24 = \boxed{34 \text{ ms.}}
 \end{aligned}$$