Latsol Tutor FMK 4   24/09/2021

1. $m = 200$ gram $= 0,2$ kg
   $f = 75$ rpm $= \dfrac{75}{60} = 1,25$ hz

   l tali $= 50$ cm $= 0,5$ m

   a. V linear $= 2\pi r f$
      $= 2 \cdot 3,14 \cdot 1,25 \cdot 0,5$
      $= 3,925$ m/s

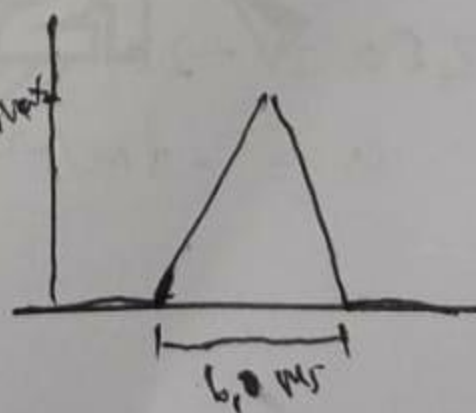   b. $T = \dfrac{m v^2}{r}$
      $= 0,2 \cdot 3,925^2 / 0,5$
      $= 6,16225$ N

2. $m = 250$ gram $= 0,25$ kg   f net
   $h_1 = 4$ m
   $h_2 = 3,5$ m
   $t = 6$ ms $= 6.10^{-3}$ s

6,0 ms

$Vt_1^2 = 2gh_1$
$Vt_1^2 = 2 \cdot 10 \cdot 4$
$Vt_1 = \sqrt{80} = 8,9$ m/s

$\begin{cases} Vt_2^2 = Vt_1^2 - 2gh \\ Vt_2^2 = 80 - 2 \cdot 10 \cdot 3,5 \\ Vt_2^2 = 80 - 70 = 10 \\ Vt = \sqrt{10} = 3,16 \text{ m/s} \end{cases}$

$$\therefore F \cdot \Delta t = M \cdot \Delta V$$

$$F \cdot 6 \cdot 10^{-3} = 0,25 \cdot (3,16 - 8,9)$$

$$F = \frac{-5,74}{24 \cdot 10^{-3}}$$

$$F_{avg} = -239,16 \ N$$

$$F_{max} \cdot 3 \cdot 10^{-3} = \frac{1}{4} \cdot (-5,74)$$

$$F_{max} = -478,3 \ N$$

3- $m_{silinder} = 1 \ kg$ r skinder $= 4 \ cm$

$M_{earter} = 2 kg$

$h = 1 m$ $g = 10 m/s^2$

$$M_{on} \cdot g = -\frac{1}{2} M_{sil} \cdot a - M_{earth} \cdot g$$

$$2 \cdot a = -\frac{1}{2} \cdot 1 \cdot a - 2 \cdot 10$$

$$2,5 \, a = -20$$

$$a = -8 \, m/s^2$$