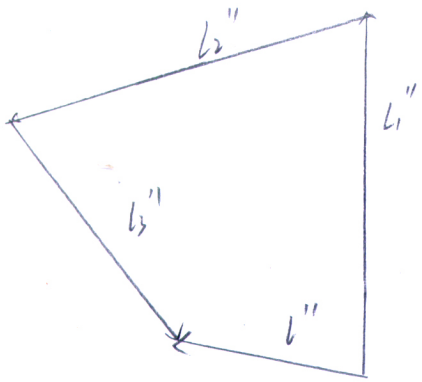
(2) 相当于回转件上的静平衡.

$m_1r_1 = 480\ kg\cdot mm$, $m_2r_2 = 500\ kg\cdot mm$, $m_3r_3 = 400\ kg\cdot mm$

以 $l_1'' = 48mm$ 代表 m_1r_1, 根据比例尺画矢量图



$\therefore l'' = 21.3\ mm$, $\therefore mr = 213\ kg\cdot mm$.

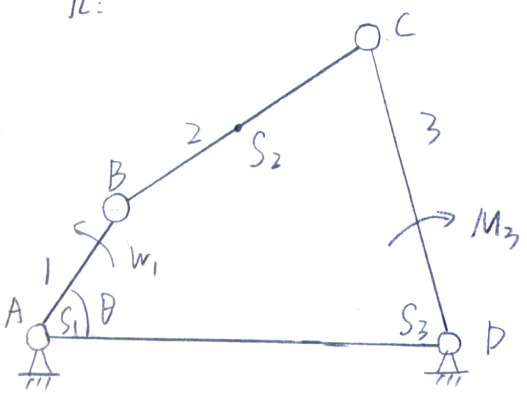
$\therefore$ 应在 mr 的反方向, 且半径为 r_b 上加上质量 m_b 才能保证平衡.

$m_b r_b = mr$ $\therefore m_b = mr/r_b = 213/200 = 1.065\ kg$

八: 求效率:

① $i_{AB} = \dfrac{z_3z_2}{z_1z_2'}$ ② $\eta = \eta_1^2\cdot\eta_2^4 = 0.95^2\cdot 0.98^4 = 0.83$. ③ $W_{输入} = W_{输出}/\eta = 2.4\ kW$

九:



解: 该题应用速度图解法求解.

$\vec{V_C} = \vec{V_B} + \vec{V_{CB}}$

方向: $\perp CD$ $\perp AB$ $\perp CB$

大小: ? w_1l_{AB} ?

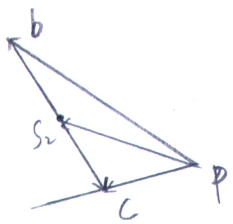
$V_B = w_1 l_{AB} = 0.15\ w_1$

设 w_1 为单位1. $\therefore V_B = 0.15\ m/s$

以 pb 矢量, $\overline{pb} = 30mm$ 代表 V_B

$\therefore \mu_v = \dfrac{V_B}{\overline{pb}} = 0.005\ m/s\cdot mm$

画速度影像图



$\therefore \overline{bc} = 24mm$, $\overline{pc} = 14mm$, $\overline{ps_2} = 20mm$

$\therefore V_C = 0.7\ m/s$, $V_{CB} = 0.12\ m/s$

$\therefore w_3 = V_C/l_{CD} = 0.4\ rad/s$, $w_2 = V_{CB}/l_{BC} = 0.23\ rad/s$

① $\therefore$ 等效力矩 $M_1 = M_3\dfrac{w_3}{w_1} = 0.4M_3 = 120\ N\cdot m$

② 由速度影像图有 $V_2 = \mu_v\overline{ps_2} = 1\ m/s$

$$J_A = J_{S_1} + J_{S_2}\left(\frac{w_2}{w_1}\right)^2 + m_2\left(\frac{V_2}{w_1}\right)^2 + J_{S_3}\left(\frac{w_3}{w_1}\right)^2$$

$$= 0.1 + 0.2\left(\frac{0.23}{1}\right)^2 + 20\left(\frac{1}{1}\right)^2 + 0.2\left(\frac{0.4}{1}\right)^2$$

$$= 20.14\ kgm^2$$