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1. (6)

$t = l/v.$

$t_1 = l/u + L/v$

$t_2 = (L - l)/u.$

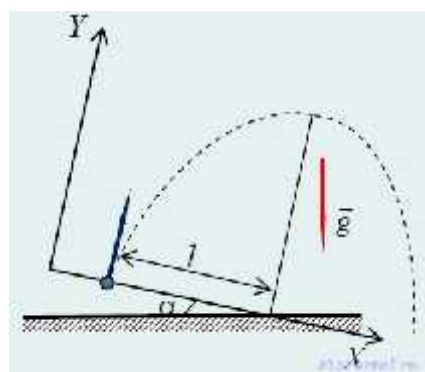
$(L - l)/u > l/u + L/v$) $t_2 > t_1,$

$l/L > (1/2) \times (1 - u/v).$ (1)

$t_1 = l/u + L/v$

$t_2 = (L - l)/u,$

2. (10)



t_n

$y = h,$

$v_{oy} + a_y t_n = 0, v_{oy} t_n + \frac{a_y t_n^2}{2} = h,$

$\mathbf{a}_y = -g \cos \alpha$ $\mathbf{v}_{oy} =$
 \mathbf{Y} .

$$h = \frac{v_{oy}^2}{2g \cos \alpha}$$

VO

$\mathbf{v}_{oy} = \mathbf{v}_o$

$$\cos \alpha = \frac{v_{oy}^2}{2gh} \approx 0,87, \quad \alpha = \arccos \frac{v_{oy}^2}{2gh} \approx 30^\circ$$

\mathbf{X} \mathbf{t}_n

$$l = \frac{a_x t_n^2}{2}$$

$\mathbf{a}_x = g \sin \alpha$

$$l = \frac{v_{oy}^2 \sin \alpha}{2g \cos^2 \alpha}$$

$l = 30$

3. (6)

100
 1^0

$Q = cm$

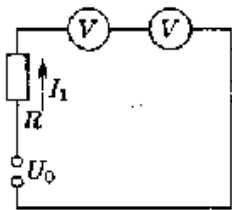
$$t = \frac{Q}{W} = \frac{cm \cdot 1^0 C}{W} = \frac{4200 \cdot 1 \cdot 1}{100} = 42c$$

4. (8)

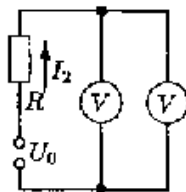
r.

R

$I_1 = \frac{U_0}{R + 2r}, \quad I_2 = \frac{U_0}{R + \frac{r}{2}}$



a)



b)

$I_2/2$

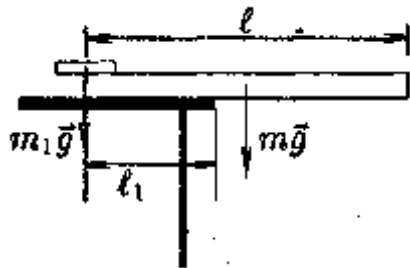
$$V = \frac{U_0}{R + 2r} \cdot r, \quad V = \frac{1}{2} \frac{U_0}{\left(R + \frac{r}{2}\right)} \cdot r,$$

откуда $R + 2r = 2R + r$, т.е. $r = R$ и $U_0 = 3V = 30 \text{ В}$.

5. (10)

(. .).

$$m_1 l_1 = m \left(\frac{l}{2} - l_1 \right), \quad \frac{m}{m_1} = \frac{2l_1}{l - 2l_1}.$$



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