

Soal 1.

Dik:

$$v_1 = 34 \frac{m}{s} = 15 \frac{m}{s}$$

$$a_2 = 5 \frac{m}{s^2}$$

$t_1 = ?$

$v_2 = ?$

$$S_1 = S_2$$

$$v \cdot t = a \cdot \frac{t^2}{2}$$

$$2v \cdot t - a \cdot t^2 = 0$$

$$t \cdot (2v - a \cdot t) = 0$$

$$t_1 = 0$$

$$t = \frac{2v}{a_2} = \frac{2 \cdot 15}{5} = 6s$$

$$v = a_2 \cdot t = 5 \cdot 6 = 30 \frac{m}{s}$$

$$D_{rel} = 6s ; 30 \frac{m}{s}$$

Soal 2

$$F_{APX} = mg - F_{comp}$$

$$F_{APX} = (m + m)g - F_{comp}$$

$$2F_{APX} = 2mg + mg$$

$$m = 2 \frac{F_{APX} \cdot mg}{g} = 2(V_m) = 2\left(\frac{4}{3}R^3\rho - m\right)$$

Soal 3

$$E_{pot, max} < E_{kin, min}$$

$$mgh_{max} < m \frac{v_{min}^2}{2}$$

$$mg \cdot \frac{g(V_0 \sin \alpha)^2}{2} < m \frac{(V_0 \cos \alpha)^2}{2}$$

$$(\sin^2 < \cos^2)$$

$$0^\circ < \alpha \leq 90^\circ, \sin \alpha > 0, \cos \alpha \geq 0$$

$$\sin \alpha < \cos \alpha$$

$$\tan \alpha > 1$$

$$0^\circ < \alpha < 45^\circ$$

Задача 4.

$$R_{123} = \frac{1}{\frac{1}{R} + \frac{1}{2R}} = \frac{2R}{3}$$

$$R_{\text{норм}} = R + R_{123} = \frac{5R}{3}$$

$$I = \frac{\mathcal{E}}{R_{\text{норм}}} = \frac{\mathcal{E}}{R + R_{123}} = \frac{3\mathcal{E}}{5R}$$

$$I_{12} = \frac{I}{3} = \frac{\mathcal{E}}{5R}$$

$$U_{12} = I_{12} R = \frac{\mathcal{E}}{5} = 1,8 \text{ В}$$

Отв: 1,8 В

108

Задача 5.

$$Q_{\text{норм}} = Q_{\text{леген}}$$

$$hNt = pcqt(t_2 - t_1)$$

$$q = \frac{hN}{pc(t_2 - t_1)} = \frac{0,8 \cdot 5000}{1000 \cdot 4200 \cdot 26} \approx 3,60 \cdot 10^{-5} \frac{\text{м}^3}{\text{с}}$$

$$\approx 2,2 \frac{\text{л}}{\text{секунда}}$$

108

Отв: 2,2 $\frac{\text{л}}{\text{секунда}}$

188