

A1 $V = \frac{S}{t} = \frac{30}{0.6} = 50 \text{ (м/с)} \quad (2)$

A2 $A = F \cdot S \cdot \cos \alpha = 30 \cdot 100 \cdot \frac{\sqrt{3}}{2} = 1500\sqrt{3} \text{ (Дж)} \quad (3)$

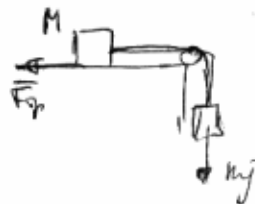
A3 $(2) \vec{F}_{1,2} = -\vec{F}_{2,1}$

A4 $\mu = \frac{F_y}{F_x} = 0.2 \quad (1)$

A5 $d = F_1 - F_2 = 7.5 \text{ (Н)} \quad (3)$

A6 $(1) \vec{P} = \vec{P}_1 + \vec{P}_2$

A7 $d = \frac{1}{2\pi} \sqrt{\frac{g}{\rho}} \quad (2)$

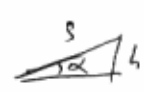
A8 

$$m_y - F_{sp} = (M+m)g$$

$$m_y - \mu Mg = (M+m)g$$

$$m = \frac{M(g + \mu g)}{g - g}$$

$$= 1.6 \frac{2 + 0.2 \cdot 10}{10 - 2} = 0.8 \text{ (кг)} \quad (3)$$

A9 $\frac{mv_0^2}{2} = \frac{mv^2}{2} + mgh \Rightarrow h = \frac{v_0^2 - v^2}{2g} = 2.5$
 $s = \frac{h}{\sin \alpha} = 50$  (3)

A10 $P = \frac{P}{\omega} R \omega \Rightarrow \mu = \frac{P R \omega}{P} = 28 \text{ (с/сек)} \quad (4)$

A11 $P = \frac{2}{3} h \rho g$ (1)

A12 $d = \frac{PV}{R\omega} = \frac{10^5 \cdot 8.31 \cdot 10^{-3}}{8.31 \cdot 400} = 0.25 \text{ (мол)} \quad (2)$

A13 $c = \frac{Q}{m_{\text{от}}} = 130 \frac{\text{Дж}}{\text{кг}} \quad (1)$

A14 $dU = Q - A = \frac{3}{2} R \Delta T \quad (3)$

A15 (1)

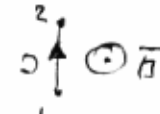
A16 (4)

A17 (2)



A18 $\varepsilon = \gamma(r+k) = 2(1+4) = 10 \text{ (м)} \quad (4)$

A19 $A = \gamma U t = 2 \cdot 60 \cdot 3 = 360 \text{ (Дж)} \quad (4)$

A20  (1)

A21 (3)

A22 $(1) F < d < 2F \Rightarrow f > 2F$

A23 $\varepsilon = \phi'_e = 15.5 \text{ (В/м)} \quad (4)$

A24 $d = \frac{1}{2\pi \sqrt{2} c} \quad (2)$

A25 (2)

A26 $p_0 = \frac{h}{\lambda} = \frac{h \nu}{c} = \frac{6.6 \cdot 10^{-34} \cdot 2 \cdot 10^{14}}{3 \cdot 10^8} = 4.4 \cdot 10^{-28} \text{ (кг/с)} \quad (4)$

A27 $d = d_0 2^{-k} \Rightarrow 2^{-k} = \frac{d}{d_0} = \frac{1}{4} = 2^{-2} \Rightarrow t = 6T \quad (4)$

A28 $237 \text{ (с)} \rightarrow x_2^4 + y_2^0 + z_2^0 + 83 \text{ (с)}$

$\left. \begin{aligned} 237 &= 4x + 20y \\ 93 &= 2x - y + 83 \end{aligned} \right\} \Rightarrow x = 7 \quad y = 4 \quad x+y = 11 \quad (2)$

A29 $E_1 = E_{\phi} - A = h\nu - A = 6.6 \cdot 10^{-34} \cdot 3 \cdot 10^{15} - 5.4 \cdot 10^{-19} = 1.44 \cdot 10^{-19}$

$E_2 = 2E_{\phi} - A = 3.4 \cdot 2 \cdot 10^{-19} > 2 \cdot 1.44 \cdot 10^{-19} \quad (2)$

A30 (2)

B1 $mgh = F_{sp} \cdot s \Rightarrow F_{sp} = \frac{mgh}{s} = 60 \text{ (Н)} \quad (60)$

B2 $Q = A + dU \quad dU = \frac{3}{2} R \Delta T = \frac{3}{2} P \Delta t = \frac{3}{2} A$
 $\Rightarrow Q = A + \frac{3}{2} A = \frac{5}{2} A = \frac{5}{2} P \Delta t = \frac{5}{2} \cdot 10^5 \cdot 0.4 = 10^5 \text{ (Дж)} = 100 \text{ (кДж)} \quad (100)$

B3 $mg = F_{sp} = qE = q \frac{Q}{d} \Rightarrow d = \frac{qQ}{mg} = \frac{8 \cdot 10^{-11} \cdot 5000}{4 \cdot 10^{-6} \cdot 10} = 0.01 \text{ (м)} = 1 \text{ (см)} \quad (1)$

B4 $T = \frac{\lambda}{c} \quad \omega = \frac{c}{h} \Rightarrow \nu = \frac{\lambda \cdot h}{c} = \frac{12 \cdot 10^{-3} \cdot 6.6}{3 \cdot 10^8} = 6 \cdot 10^{-12} \text{ (с)} = 6 \text{ (пс)} \quad (6)$