

A1 $v = v_0 - gt \Rightarrow v_0 = v + gt = 25 \text{ м/с}$ (3)

A2 $A = (m_1 + m_2)gh = 11,5 \cdot 10 \cdot 10 = 1150 \text{ Дж}$ (1)

A3 $\vec{F} = m\vec{a}$ (3)

A4 $F_g = \mu a = \mu mg \Rightarrow \mu = \frac{F_g}{mg} = 0,12$ (3)

A5 $P = \rho gh = 10^3 \cdot 10 \cdot 6 = 60 \text{ кПа}$ (2)

A6 $E = \frac{mv^2}{2} = \frac{0,16 \cdot 10^2}{2} = 8 \text{ Дж}$ (4)

A7 $t = \frac{r}{v} = \frac{400}{330} = 1,2 \text{ с}$ (2)

A8 $F_g = ma_z \Rightarrow \mu mg = m \frac{v^2}{R} \Rightarrow R = \frac{v^2}{\mu g} = \frac{18^2}{0,4 \cdot 10} = 81 \text{ м}$ (1)

A9 $\frac{kse^2}{2} = mgh \Rightarrow \Delta l = \sqrt{\frac{2mgh}{k}}$ (4)

A10 $\frac{pV}{T} = \text{const} \Rightarrow T_A = \frac{p_A V_A}{p_B V_B} T_B = 300 \text{ К}$ (1)

A11 $p = \frac{2}{3} n \epsilon_{\text{kin}} \Rightarrow$ (4)

A12 $T = \text{const} \quad v \downarrow$ (4)

A13 $Q = cm\Delta t \Rightarrow c = \frac{Q}{m\Delta t} = \frac{200 \cdot 10^3}{4 \cdot 100} = 500 \frac{\text{Дж}}{\text{кг} \cdot \text{К}}$ (3)

A14 $Q = A + a4 \quad A = -A' = -300 \Rightarrow Q = -300 + 100 = -200 \text{ Дж}$ (4)

A15 $A = 0 \text{ или } V = \text{const} \Rightarrow$ (2)

A16 $w = \frac{c v^2}{2} \Rightarrow \frac{w_2}{w_1} = \frac{c \cdot (38)^2}{30 \cdot 8^2} = 3$ (3)

A17 $F_1 = k \frac{q_1 q_2}{r^2} \quad F_2 = k \frac{q_0^2}{r^2}$ (4)

$q_0 = (q_1 + q_2) / 2 = 2 \text{ нКл} \Rightarrow \frac{F_1}{F_2} = \frac{12}{4} = 3$

A18 $R = \frac{U}{I} = \frac{\Delta U}{\Delta I} = \frac{3,6}{0,36} = 10 \text{ (Ом)} \Rightarrow \Delta U = 10 \cdot 0,2 = 2,2 \text{ (В)}$ (2)

A19 $A = P \cdot t = 20 \cdot 600 = 12000 \text{ (Дж)}$ (1)

A20 $w = \frac{2U^2}{2} = \frac{3 \cdot 10^{-4} \cdot 6^2}{2} = 5,4 \cdot 10^{-3} \text{ (Дж)}$ (3)

A21 $d \sin \varphi = k \lambda \Rightarrow \frac{d}{\lambda} = \cos \varphi \Rightarrow \lambda_1 > \lambda_2 > \lambda_3 \Rightarrow d_1 > d_2 > d_3$ (2)

A22 (3)

A23 $\epsilon_u = \frac{\Delta \Phi}{\Delta t}; \Phi = \Delta J \Rightarrow$ (1)

A24 (4)

A25 (2)

A26 (1)

A27 $z = 94 + 139 + 3 \cdot 1 + 5 \cdot 0 - 235 = 11 \text{ н} \quad x = 36 + 56 + 3 \cdot 0 + 5 \cdot 0 - 92 = 0 \text{ н}$ (3)

A28 (3)


A29 $E = E_p - A = 6,2 - 2,5 = 3,7 \text{ эВ}$ (1)

A30 (4)

B1

A	B	B
2	1	3

$T = 2\pi \sqrt{\frac{m}{k}} = \frac{1}{5}$
 $E = \frac{kA^2}{2}$

B2  $m_1 v_1 = m_2 v_2 \sin \alpha = 0$
 $\frac{m_1}{m_2} = \frac{v_2 \sin \alpha}{v_1} = \frac{100 \cdot 0,5}{50} = 1$

B3 $\Delta m \cdot \lambda = mc \Delta t \quad \Delta m = \frac{mc \Delta t}{\lambda} = \frac{1 \cdot 4200 \cdot 44}{33 \cdot 10^5} = 0,56 = 560 \text{ г}$

B4 $\epsilon = \beta \rho v = \gamma R \Rightarrow \beta = \frac{\gamma R}{v \cdot \rho} = \frac{40 \cdot 10^{-3} \cdot 2}{0,2 \cdot 1} = 0,4 \text{ м}$