,

.

1

$$S_2 = v_0 t + \frac{1}{2} a t^2; \qquad S_1 = l_1 + v_0 t; \qquad S_3 = (l_1 + l_2) - v_0 t \quad (1)$$

$$S_1 = S_2 = S_3 = S$$

t

$$S = v_0 t + \frac{1}{2} a t^2; \qquad S = (l_1 + l_2) - v_0 t \quad (2)$$

$$S = l_1 + v_0 t = (l_1 + l_2) - v_0 t \rightarrow t = \frac{l_2}{2 v_0} \quad (3)$$

(2).

$$l_1 + v_0 t = v_0 t + \frac{1}{2} a t^2; \quad a = \frac{2 l_1}{t^2} = \frac{8 v_0^2 l_1}{l_2^2}; \qquad a \approx 1{,}4 \text{м/сек}^2 \quad (4)$$

$$v_{об} = v_0 + a = v_0 \left(1 + 4 \frac{l_1}{l_2} \right); \quad v_0 = \frac{100}{6} \frac{\text{м}}{\text{сек}}; \ v_{об} = 66 \frac{\text{км}}{\text{час}} \quad (5)$$

2.

t − .

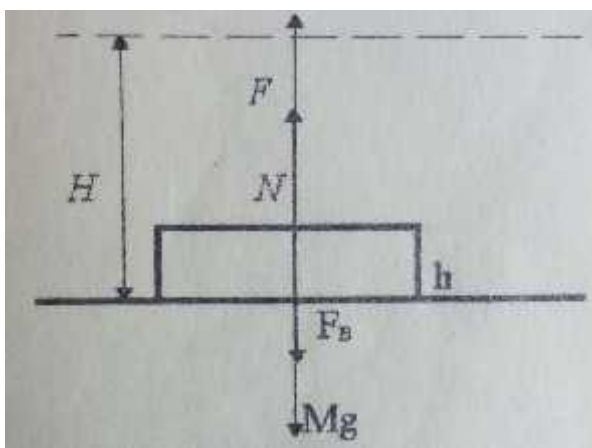$$Q = m_2 + m_2 c_2 (t_2 - t) \quad (1)$$

. , ,

$$Q = m_2 c_2 (t_2 - t) + m_2 = {}_1 V_1 {}_1 (t - t_1) \quad (2)$$

,

$$t = \frac{m_2 (c_2 t_2 + \lambda) + p_1 V_1 c_1 t_1}{p_1 V_1 c_1 + m_2 c_2} = 23.4°C \quad (3)$$

t $t_k = 100°$,

. . (4)

3.

$: \vec{F} -$

$; \vec{N} -$;

$M\vec{g} -$; $\vec{F}_{в} -$

1

,

$$\vec{F} + \vec{N} + M\vec{g} + \vec{F_B} = 0 \qquad (1)$$

.

$$F + N = Mg + (P_0 + pg(H-h))a^2, \qquad (P_0 + pg(H-h))a^2 = |F_B| \quad (2)$$

$$N = 0$$

$$F = Mg + (P_0 + pg(H-h))a^2 \qquad (3)$$

. . $F > Mg = F_0$ (4),   .

4.

,   ,   ,

.   ,

,   ,   ,   :

$$\frac{M_1 + m}{V} = \rho_{воды} \qquad (1)$$

V   :

$$V = \frac{M_1}{\rho} + \frac{m}{\rho_{свинца}} \qquad (2)$$

$$M_1 + m = \rho_{воды}\left(\frac{M}{\rho_{льда}} + \frac{m}{\rho_{свинца}}\right) \qquad (3)$$

$$M_1 = m\frac{(\rho_{свинца} - \rho_{воды})\rho_{льда}}{(\rho_{воды} - \rho_{льда})\rho_{свинца}} = 58{,}2 \text{ г} \qquad (4)$$

$$\Delta m = M - M_1 = 100г - 8.2 \cdot 5 = 59 \qquad (5)$$

$$Q = \lambda\Delta M = 19{,}5 \cdot 10^3 \quad . \qquad (6)$$

5.

,   ,
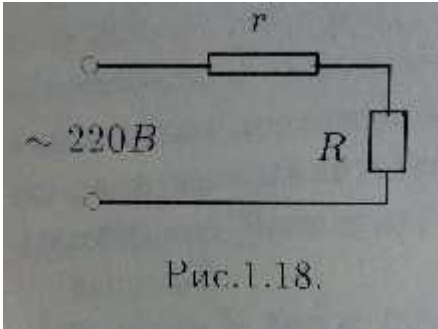
$$P = I^2R \quad (1)$$

R–   , I–   ,

.

(. 1.18),

$$I = \frac{U}{R + r} \qquad (2)$$

U –   , r–   , R+r –
.

$$R^2 + \frac{2r - U^2}{P} R + r^2 = 0 \qquad (3)$$

(1)   (2)   I,
,   R

(3),   ,
R:

$$R_1 = \frac{2P - U^2}{2P} + \frac{\sqrt{U^4 - 4PU^2 r}}{2P} , \qquad (4)$$

$$R_2 = \frac{2P - U^2}{2P} - \frac{\sqrt{U^4 - 4PU^2 r}}{2P} . \qquad (5)$$

,   (4)
(5)   .   U, P, r,
R₁=21   , R₂=0,05   .
R₂=0,05   I   209,5
$P_r = I^2 r = 43895$, . .   20
.

,
.

,
R = 21   .

3