Итого 26 б.

17.

№1. Дано:

$X_m = X$

$m_{m_2} = 1{,}5X$

$\nu - ?$

$mg \cdot 2X_m = \frac{k 2X_m^2}{2}$

$X_m = \frac{mg}{k}$

$\frac{k 2X_m^2}{2} = mg 2X_m' + k\frac{(2X' - 2X_m)^2}{2}$

$X'_m = 1{,}5 X_m$

$m' = \frac{kX_m}{2g} = \frac{m}{2}$ 10 б

$\nu' = \omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{2k}{m}} = \sqrt{2}\,\omega$

$\approx 1{,}4$ раза

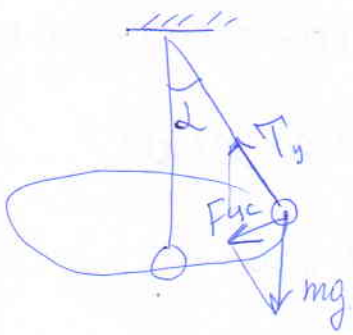
№2. $m = 1$ кг

$L = 1$ м.

$a = 1\ м/с^2$

$F_{упр} - ?$

$\alpha - ?$



$ma_{ус} = T_y - mg$

$ma_x = T_x$

$T_x = T\sin\alpha$

$T_y = T\cos\alpha$

10 б

$\frac{\cos\alpha}{\sin\alpha} = \frac{g + a_y}{a_x}$

$a_x = \omega^2 L \sin\alpha$

$\cos\alpha = \frac{g+a}{\omega^2 L} \approx 0{,}27$

$\alpha \approx 74^\circ$

$T = m\omega^2 L \approx 40$ Н

3) Дано:

$P = 1000$ Вт

$m = 1$ кг

$t = 1$ с

$h = 0{,}001$ м

$D = 4$ Гц

$R = 0{,}1$ м

Q - ?

$$\lambda m = P - \frac{h\nu}{R}$$

$$\lambda m = 1000 - \frac{9001 \cdot 4}{0{,}1}$$

$$\lambda m = 999{,}96$$

$Q = 0{,}00043$ т

2 б.

Ответ $4{,}3 \cdot 10^{-4}$ Дж.

4) -

5) $h = 2$ м

$\mu = 0{,}2$

$P = 60$ Н

$l = 2{,}83$ м

F_{comp}

$$F_A - F + F_{тр} = F_{comp}$$

$$V = ab$$

$$\rho g V = P + P_\mu$$

$$a = \sqrt{c^2 - b^2}$$

$$a = \sqrt{8{,}0089 - 4} \approx \sqrt{4} \approx 2 \text{ м}$$

$$V = 2 \cdot 2 \cdot 0{,}83 = 3{,}32 \text{ м}^3$$

$$F_{comp} = (1000 \cdot 10 - 3{,}32) - (60 + 60 \cdot 0{,}2) =$$

$= 33128$ Н ≈ 34 кН

4 б

Ответ 34 кН