PROBLEMI – 20 gennaio 2020

FOGLI DI BRUTTA

Q2 - 2013

$n = 2\ mol$

$T_0 = 100\,°C = 373{,}15\ K$

$Q = 2 \cdot 10^4\ J$

$T_f = 1000\,°C = 1273{,}15\ K$

$L = ?$

$\Delta U = Q - L$

$\Delta U = n\, c_p\, \Delta T = n \cdot \left(\frac{3}{2} R\right) \Delta T$

$$L = Q - \frac{3}{2} n R \Delta T = 2 \cdot 10^4\ J - \frac{3}{2} \cdot 2\ mol \cdot R \cdot (900\ K) =$$

$$= -2449{,}05\ J = -2{,}4 \cdot 10^3\ J$$

Q6 - 2013

gas 1 $V_1 = 5\ l$, $p_1 = 100\ kPa$

gas 2 $V_2 = 2\ l$, $p_2 = 200\ kPa$

5 l	2 l
100 kPa	200 kPa

si mischiano → $p_f = ?$

$p_1 \cdot V_1 = n_1 R T$; $p_2 V_2 = n_2 R T$ || $p_f (V_1 + V_2) = (n_1 + n_2) R T$

$$p_f = \frac{(n_1+n_2)RT}{V_1+V_2} = \frac{p_1V_1 + p_2V_2}{V_1+V_2} = \frac{100\,kPa \cdot 5\,l + 200\,kPa \cdot 2\,l}{7\,l}$$

$$p_f = 128{,}57\ kPa = \boxed{1{,}29 \cdot 10^2\ kPa}$$

$\boxed{1 \cdot 10^2\ kPa}$

METTERE SEMPRE 3 CIFRE SIGNIFICATIVE

Q. 9 - 2012

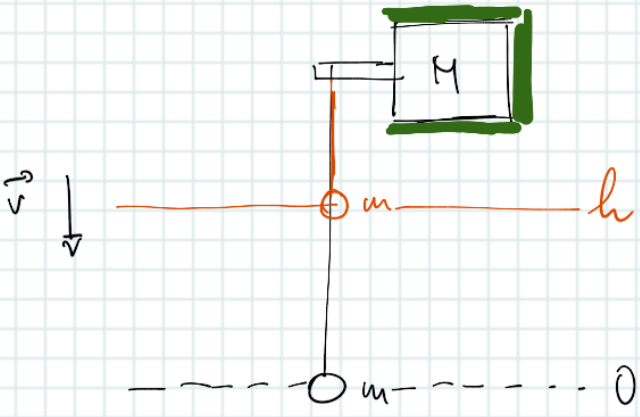
$C = 67\ J/K$

$m = 3{,}5\ kg$
$h = 1{,}5\ m$
$t = 48\ s$

$i = 1{,}02\ A$

$\Delta V = 4{,}85\ V$

$\boxed{\Delta T = ?}$



$P = i \cdot \Delta V$

$\Delta E = i \cdot \Delta V \cdot \Delta t$ → parte energia potenziale mgh
→ parte calore

$Q = i \cdot \Delta V \cdot t - mgh$ + lavoro della forza

$Q_{TOT} = i \cdot \Delta V \cdot t - mgh + mgh$ $\quad L = mgh$

$Q_{TOT} = i\,\Delta V \cdot t = 1{,}02\ A \cdot 4{,}85\ V \cdot 48\ s = 237{,}46\ J$

$$\Delta T = \frac{Q}{C} = \frac{237{,}46\ J}{67\ J/K} = 3{,}54\ K$$