

Termologia – FUVEST 2ª fase 1991 a 2018: Resolução

Prof. Rogério Vogt

32.

a) $\Delta E = E_c^f - E_c^i$

$$\Delta E = \frac{m v_f^2}{2} - \frac{m v_i^2}{2}$$

$$\Delta E = \frac{60(0)^2}{2} - \frac{60(10)^2}{2}$$

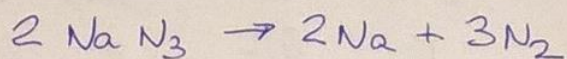
$\therefore \Delta E = -3000 \text{ J}$

b) $a_m = \frac{\Delta V}{\Delta t}$

$$a_m = \frac{0 - 10}{0,2}$$

$\therefore a_m = -50 \text{ m/s}^2$

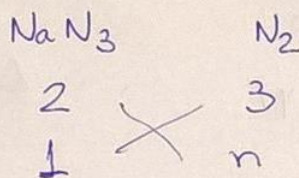
c) Química



d) Azida de sódio

$$M = 23 + 3(14) = 65 \text{ g/mol}$$

Logo: $65 \text{ g} \rightarrow 1 \text{ mol}$ de azida de sódio



$\therefore n = 1,5 \text{ mol}$

$$PV = nRT$$

$$1 \cdot V = 1,5 \cdot 0,08 \cdot 300$$

$\therefore V = 36 \text{ l}$

33. a) Vela

J	g
$3,6 \cdot 10^4$	1
E	0,1

$$\therefore E = 3,6 \cdot 10^3 \text{ J}$$

$$P = \frac{E}{\Delta t}$$

$$P = \frac{3,6 \cdot 10^3}{60}$$

$$\therefore P = 60 \text{ W}$$

b) Vela

J	g
$3,6 \cdot 10^4$	1
E	2,5

$$\therefore E_T = 9 \cdot 10^4 \text{ J}$$

$$c) Q = n \cdot c_{\text{molar}} \cdot \Delta T$$

$$9 \cdot 10^4 = \frac{750}{25} \cdot 30 \cdot \Delta T$$

$$\therefore \Delta T = 100 \text{ K}$$

$$d) PV = nRT$$

$$P \cdot 750 = \frac{750}{25} \cdot 0,08 \cdot 25$$

$$\therefore P = 1,28 \text{ atm}$$

ou

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$\frac{1}{300} = \frac{P_2}{400}$$

$$\therefore P_2 \approx 1,33 \text{ atm}$$

34.

$$a) R = 3 \cdot 10^{-8} \frac{\text{L}}{\text{A}}$$

$$R = \frac{3 \cdot 10^{-8} \cdot 500 \cdot 10^{-9}}{100 \cdot 10^{-9} \cdot 50 \cdot 10^{-9}}$$

$$\therefore R = 3 \Omega$$

$$b) P = I^2 \cdot R$$

$$P = (10 \cdot 10^{-6})^2 \cdot 3$$

$$\therefore P = 3 \cdot 10^{-10} \text{ W}$$

$$c) E = P \cdot \Delta t$$

$$E = 3 \cdot 10^{-10} \cdot 10^6 \cdot 5$$

$$\therefore E = 1,5 \cdot 10^3 \text{ J}$$

$$d) P = \frac{E}{\Delta t} \quad \leftarrow Q = \underbrace{mc}_{C} \Delta T$$

$$1 \cdot 10^6 \cdot 3 \cdot 10^{-10} = \frac{5 \cdot 10^{-5} \cdot 300}{\Delta t}$$

$$\therefore \Delta t = 50 \text{ s}$$

