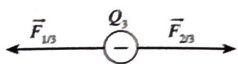
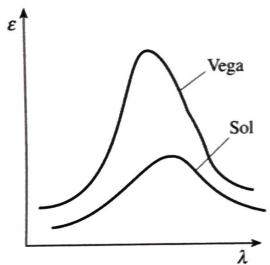
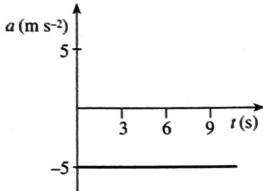
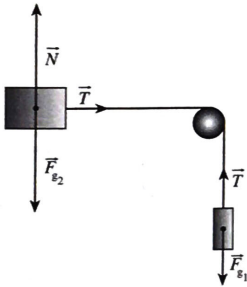


Guia de correcção

Perg.	Resposta	Cotação	
		Parc.	Total
1. a)		10	
b)	$Q_1 = 36 \mu\text{C} = 36 \times 10^{-6} \text{ C}$ $r_{1/3} = 6 \text{ cm} = 6 \times 10^{-2} \text{ m}$ $Q_2 = -16 \mu\text{C} = -16 \times 10^{-6} \text{ C}$ $r_{2/3} = 4 \text{ cm} = 4 \times 10^{-2} \text{ m}$ $Q_3 = -2 \mu\text{C} = -2 \times 10^{-6} \text{ C}$ $F_R = F_{1/3} - F_{2/3}$ $F_R = K Q_3 \left(\frac{Q_1}{r_{1/3}^2} - \frac{Q_2}{r_{2/3}^2} \right)$ $F_R = 9 \times 10^9 \times 2 \times 10^{-6} \left(\frac{36 \times 10^{-6}}{(6 \times 10^{-2})^2} - \frac{16 \times 10^{-6}}{(4 \times 10^{-2})^2} \right) \Leftrightarrow$ $\Leftrightarrow F_R = 180 - 180 \Leftrightarrow F_R = 0 \text{ N}$	5 10 5 5	35
2. a)	$\lambda_{\text{máx}} = 300 \text{ nm} = 3 \times 10^{-7} \text{ m}$ $T = \frac{b}{\lambda_{\text{máx}}}$ $T = \frac{3 \times 10^{-3}}{3 \times 10^{-7}} \Leftrightarrow T = 10\,000 \text{ K}$	5 5 5	
b)		20	35
Obs.: Não é necessário indicar valores. É necessário observar as leis de Wien e de Stefan-Boltzmann.			
3. a)	${}^6_3\text{Li} + {}^2_1\text{D} \rightarrow {}^4_2\text{He} + {}^4_2\text{He}$	10	
b)	$\Delta m = 2 \times 4,003 - (6,015 + 2,014) \Leftrightarrow$ $\Leftrightarrow \Delta m = 0,023 \text{ u.m.a.}$ $E = 931 \times \Delta m$ $E = 931 \times 0,023 \Leftrightarrow E = 21,4 \text{ MeV}$	5 5 5 5	30

Guia de correcção

Perg.	Resposta	Cotação	
		Parc.	Total
4.	a) BC: Movimento rectilíneo uniformemente acelerado CD: Movimento rectilíneo uniforme	5	
		5	
	b)		
	 $a = \frac{v_f - v_i}{\Delta t} \Rightarrow$ $\Rightarrow a = \frac{-30 - 15}{9 - 0} \Leftrightarrow a = -5 \text{ m s}^{-2}$	15	
	c) Nota: A área subentendida pelo gráfico $x(t)$ é igual ao deslocamento.	3	
	$\Delta x = \frac{15 \times 3}{2} = 22,5$	4	
	$v_m = \frac{\Delta x}{\Delta t}$	3	35
	$v_m = \frac{22,5}{3} \Leftrightarrow v_m = 7,5 \text{ m/s}$		
5.	a)		
		5 × 3	
	b) $m_1 = 5 \text{ kg}$ $m_2 = 10 \text{ kg}$		
	$\begin{cases} T = m_2 a \\ F_{g1} - T = m_1 a \end{cases}$	10	
	$\Rightarrow m_1 g = a (m_1 + m_2) \Rightarrow$	5	
	$\Rightarrow a = \frac{5 \times 10}{5 + 10} \Leftrightarrow a = \frac{10}{3} \text{ m s}^{-2}$	10	40
6.	$k = 400 \text{ N/m}$ $v = 10 \text{ m/s}$ $m = 4 \text{ kg}$ $x = ?$		
	$E_c + E_{pg} = E_{pel}$	5	
	$\frac{1}{2} m v^2 + m g h = \frac{1}{2} k x^2 \Rightarrow$	5	
	$\Rightarrow \frac{1}{2} \times 4 \times 10^2 + 4 \times 10 \times 15 = \frac{1}{2} \times 400 \times x^2 \Leftrightarrow$	5	
	$\Leftrightarrow x = \sqrt{4} \Leftrightarrow x = 2 \text{ m}$	5 + 5	25