VESTIBULAR ESTADUAL 2018

03/12/2017

FÍSICA

PADRÃO DE RESPOSTAS

(VALOR POR QUESTÃO: 2,00 PONTOS)

Questão	Resposta
1	$A_1 = \Delta v \rightarrow \frac{1 \times 10}{2} \rightarrow \Delta v = 5$ m/s $A_2 = I = \Delta Q \rightarrow \frac{20 \times 10}{2} = 100$ N.s $\Delta Q = m \times \Delta v \rightarrow 100 = m \times 5 \rightarrow m = 20$ kg
2	$T = E - P$ $T = \mu_{Liq} \times V_{Liq} \times g - m \times g$ $T = 10^3 \times 5{,}7 \times 10^{-3} \times 10 - 0{,}45 \times 10$ $T = 57 - 4{,}5 = 52{,}5$ N
3	f = 60 cm → identificação desse ponto como ponto focal $\frac{1}{f} = \frac{1}{p} + \frac{1}{p'} \rightarrow \frac{1}{60} = \frac{1}{180} + \frac{1}{p'}$ $\frac{1}{p'} = \frac{1}{60} - \frac{1}{180} = \frac{3-1}{180} = \frac{2}{180} \rightarrow p' = 90$ cm
4	Ondas de rádio. $v = \lambda f \rightarrow \lambda = \frac{v}{f} = \frac{3 \times 10^8}{3 \times 10^6} = 1{,}0 \times 10^2$ m
5	$P_{ot} = F_R \times v = m \times a \times v = \frac{P}{g} \times a \times v$ $132 \times 10^3 = \frac{2 \times 10^4}{10} \times a \times 20$ $a = \frac{132}{40} = 3{,}3$ m/s²
6	Não. $v = v_o + a \times t \rightarrow 25 = 10 + a \times 5 \rightarrow a = 3$ m/s² Uma das justificativas: • $v^2 = v_o^2 + 2 \times a \times \Delta s \rightarrow 25^2 = 10^2 + 2 \times 3 \times \Delta s \rightarrow \Delta s = 87{,}5$ m • $s = s_o + v_o \times t + \frac{a \times t^2}{2} \rightarrow \Delta s = 10 \times 5 + \frac{3 \times 5^2}{2} \rightarrow \Delta s = 87{,}5$ m
7	$A_1 = \tau_1 \rightarrow \frac{8 \times 2}{2} = 8$ J $A_2 = \tau_2 \rightarrow \frac{4 \times (-1)}{2} = -2$ J $\tau_{Total} = \tau_1 + \tau_2 = 8 + (-2) = 6$ J
8	$F_E = F_R \rightarrow \frac{K \times q_1 \times q_2}{d^2} = m \times a$ $\frac{9 \times 10^9 \times 10^{-6} \times 10^{-6}}{1^2} = 10^{-3} \times a$ $a = \frac{9 \times 10^9 \times 10^{-6} \times 10^{-6}}{10^{-3}} = 9$ m/s²

9	$F_{grav} = F_C \rightarrow \frac{GMm}{R^2} = \frac{mv^2}{R} \rightarrow v = \sqrt{\frac{GM}{R}}$ $\frac{V_X}{V_Y} = \sqrt{\frac{G \times M}{R_X} \times \frac{R_Y}{G \times M}} = \sqrt{\frac{4R}{9R}} \rightarrow \frac{V_X}{V_Y} = \frac{2}{3}$
10	$\Delta V_{ap} = V_0 \times \gamma_{ap} \times \Delta\theta$ $3{,}2 = 400 \times \gamma_{ap} \times 40 \rightarrow \gamma_{ap} = \frac{3{,}2}{400 \times 40} = 200 \times 10^{-6}\ °C^{-1}$ $\gamma_{liq} = \gamma_{ap} + \gamma_{rec} \rightarrow \gamma_{liq} = 200 \times 10^{-6} + 36 \times 10^{-6} = 236 \times 10^{-6}\ °C^{-1}$