Physics 1210-02 Exam 1

14 March 2019

This test is closed-note and closed-book. No written, printed, or recorded material is permitted. Calculators are permitted but computers are not. No collaboration, consultation, or communication with other people (other than the administrator) is allowed by any means, including but not limited to verbal, written, or electronic methods. Sharing of calculators is prohibited. If you have a question about the test, please raise your hand. For multiple choice, you may choose two answers, and if one is correct, receive half credit, etc. For full credit on written problems, show the full thought process from basic equations to final results including a diagram and basic starting equations. Additional blank paper will be provided to utilize for scratch work and for more submission room on written problems. Please ensure your name is on the top of the next page, this page can be ripped off for your convenience.

$v_{\text{avg}} = \frac{x_2 - x_1}{t_2 - t_1} = \frac{\Delta x}{\Delta t}$, $a_{\text{avg}} = \frac{v_2 - v_1}{t_2 - t_1} = \frac{\Delta v}{\Delta t}$, Quadratic formula $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x_1 = x_0 + v_0 t + \frac{1}{2} a t^2$, $v_1 = v_0 + at$, ${v_1}^2 = {v_0}^2 + 2a(x_1 - x_0)$

$a_{\text{rad}} = \frac{v^2}{R} = \frac{4\pi^2 R}{\text{T}^2}$, $\sum \vec{F} = m\vec{a}$

$W_F = \vec{F} \cdot \vec{s} = Fs \cos\varphi$, $\text{W}_{\text{tot}} = \text{KE}_2 - \text{KE}_1$, $\text{KE} = \frac{1}{2} m v^2$

$\text{F}_{spr} = kx$, $W_{spr} = \frac{1}{2} k x_2^2 - \frac{1}{2} k x_1^2$

Potentially useful unit conversions

1mile=5280 ft=1609 m, 1 ft = 0.3048 m

2.2lbs=1 kg

1Calorie=4200J