

Name:

Student ID Number:

# Physics 10: Midterm Exam

May 2, 2008

Version A

- Be sure to write your name at the top of each page
- Multiple Choice problems are worth 2.5 points each for a total of 50 points
- True/False problems are worth 2.5 points each for a total of 25 points
- Short Answer Problems total 25 points
- Show your reasoning, write formulas where appropriate
- Use  $10 \text{ m/s}^2$  in lieu of  $9.8 \text{ m/s}^2$  in all calculations
- If you miss one part of the short answer, but need the number for the next part, make up a number and proceed

## Formula List:

- $x = x_0 + v_0t + \frac{1}{2}at^2$
- $v = v_0 + at$
- $v_{avg} = \frac{1}{2}(v_{final} + v_{initial})$
- $P.E. = mgh$
- $K.E. = \frac{1}{2}mv^2$
- $W = F \cdot d$
- $p = mv$
- $a = v^2/r$
- $F_{drag} = 0.65Av^2$
- $F_{friction} = \mu F_{normal}$
- weight =  $mg$ , with  $g = 9.8 \text{ m/s}^2 \approx 10 \text{ m/s}^2$
- and last but not least is  $F = ma$

## Complex Units:

- Newtons:  $N = \text{kg}\cdot\text{m/s}^2$
- Joules:  $J = N\cdot\text{m} = \text{kg}\cdot\text{m}^2/\text{s}^2$
- Watts:  $W = J/\text{s} = \text{kg}\cdot\text{m}^2/\text{s}^3$