

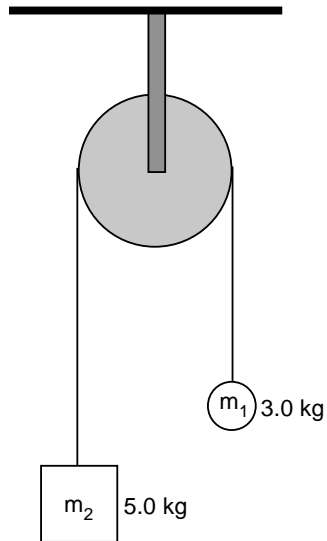
**DO NOT TURN THIS PAGE!!!!**

Name: \_\_\_\_\_

Physics 2A  
Winter 2011  
Exam 2

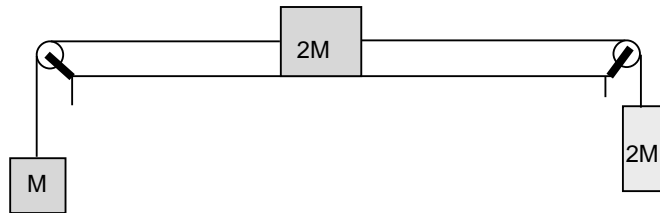
**MAKE SURE TO SHOW ALL WORK IN COMPLETE DETAIL. NO CREDIT WILL  
BE GIVEN IF NO WORK IS SHOWN. EXPRESS ALL ANSWERS IN SI UNITS.**

1. Consider the Atwood's Machine system shown below. Assume massless, frictionless pulley. (10 pts)



- a) Calculate the acceleration of the blocks. Which direction does the 3.0 kg move?  
b) Calculate the tension in the string.

2. For the system shown below, when the blocks are released from rest, they acquire an acceleration of  $0.70 \text{ m/s}^2$ . Calculate the coefficient of kinetic friction between the block and the table-top. (10 pts)



3. A 70 kg person goes on a Ferris Wheel ride in a vertical circle of radius 10.0 m and moving at a constant speed of 7.0 m/s. (15 pts)
- Calculate the period of rotation.
  - Calculate the magnitude and direction of the normal force exerted on the person by the seat at the **highest** and **lowest** point on the ride.
  - Calculate the minimum speed of the ride so that a person not wearing his seatbelt is not "thrown off" the ride.

4. Define the following terms **conceptually** without any mathematical definitions:  
(2 pts each)

a) Mass –

b) Newton's First Law –

c) Free-Body Diagram –

d) Centripetal Acceleration –

e) Equilibrium -