**LAWS OF MOTION: FRICTION II**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

I. Answer the following. Show all your work to get full credit. Use a=g=±10m/s2.

1. A m1=10kg block rests initially on a table. The coefficient of sliding friction between the block and the table is 0.3. If a second block of mass m2= 5kg is connected on the other side of the cable,

 **a. Find the acceleration of the system a= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **b. Find the tension in the cable T= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



2. A floor buffer consists of a heavy base (m=15kg) attached to a very light handle. A worker pushes the buffer by exerting a force P directly down the length of the handle. If the coefficient of friction between the buffer and the floor is $µ=0.36$,

 a. Draw the Free Body Diagram

b. What is the magnitude of the force P needed to keep the buffer moving at a **constant velocity**? (Hint: Substitution) P=\_\_\_\_\_\_\_\_\_\_\_

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3. Three blocks are part of a system as shown. The blocks are connected by two cables, cable 1 & 2. The coefficient of friction is 0.20. Use the following information:

 m1=12kg m2=5kg m3=6kg Ɵ=30°

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**a. Draw a Free Body Diagram for each block.**

 **m1 m2 m3**

**b. Find the acceleration of the system. a= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**c. Find the values for tension 1 and tension 2.**

**T1= \_\_\_\_\_\_\_\_\_\_\_\_\_**

 **T2= \_\_\_\_\_\_\_\_\_\_\_\_\_**

**4. A 17,340kg bus moving at a velocity of 55km/h comes to a sudden stop in 50m. What is the coefficient of friction acting on the brakes? µ=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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