

Name _____ Instructor name _____

You must show and explain all work neat and organized to receive credit. Please show each step for calculations. YOU MUST TURN IN THIS SHEET to have your assignment graded.

1. What two conditions must be met for an object to be in equilibrium? What is meant by the term “lever arm?” Please give detailed explanations. (5pts)

2. (a) What is meant by an object’s “center of mass”? (b) Do you think the center of mass of the torque bar used in Experiment 11 is at the center of the bar? (c) If not, to which end is it the closest, L or R and why? (Refer to the figure in Experiment 11 to answer this question.) (5 pts)

3. For the torque bar on the figure below, write detailed symbolic equations for static equilibrium conditions, choose point *A* for the pivot. Make sure to use the right coordinate system. What additional complication arises if you choose a pivot point at the left end of the torque bar? State if torque around points *A*, *D*, and center of mass are positive, negative, or zero. Explain your answers. (10 pts)

