

## **Prelab Questions**

### **Lab1**

#### Measurement of Density and Kinematic Viscosity

(To be turned in at the beginning of the laboratory class period)

1. Name three quantities that will be measured or calculated in this laboratory.
2. Derive the expression for kinematic viscosity given in Equation 4 of the lab handout using Equations 1, 2, and 3.
3. What instrument is used to measure the diameters of Teflon and steel spheres and what is its bias error?
4. What is done in the experiment to obtain precision limits?
5. Sample calculations: Calculate the density of the fluid inside the cylinder based on the following known quantities. (Hint: use the data reduction equation for the density of the fluid.) For the Teflon sphere: diameter 6.35mm, fall time 24.36sec, and Teflon density  $2148\text{kg/m}^3$ . For the steel sphere: diameter 3.59mm, fall time 9.31sec, and steel density  $7991\text{kg/m}^3$ .