**Tutorial Sheet**

**No. 1**

**Q1)** Convert the following:

a. A density of 7*gm/cm³* to *slug/ft3*.

b. A dynamic viscosity of 25*dyne.sec/cm²* to *lb.sec/ft²*.

c. A dynamic viscosity of 10*gm/cm.sec* to *slug/ft.sec.*

**Q2)** A block of dimensions 30x30x30cm and mass 30kg slides down a plane inclined at 30º to the horizontal, on which there is a thin film of oil of viscosity 2.3x10-3 N.s/m². Determine the speed of the block if the film thickness is estimated to be 0.03mm.

**Q3)** A thin plate weighing 125gm takes 3.3sec. to fall a distance of one meter in a liquid with a specific gravity of 0.9 between two vertical boundaries 0.5cm apart, the plate moves at a distance of 0.2cm from one of them. If the surface area of the plate is 1.5m². What is the dynamic viscosity of the liquid in poises and the kinematic viscosity in stokes.

**Q4)** The equation of a velocity distribution over a plate is u=1/3 y - y2 in which the velocity in m/s at a distance y meters above the plate, determine the shear stress at y=0 and y=0.1 m. Take μ= 8.35 poise

**Q5)** A plate, 0.001 in. distant from a fixed plate, moves at 2 ft/sec and requires

a force of 0.04 lb/ft2 to maintain this speed. Determine the fluid viscosity of the

substance between the plates, in English units.

**Q6)** A fluid has a viscosity of 6 centipoises and a density of 50 lb,/ft3. Determine

its kinematic viscosity in English units and in atokes.

**Q7)** The density of a substance is 2.94 gm/cm3. What is its (a) specific

gravity, (b) specific volume, and (c) specific weight?

**Q8) A** plate, 0.001 in. distant from a fixed plate, moves at 2 ft/sec and requires

a force of 0.04 lb/ft2 to maintain this speed. Determine the fluid viscosity of the

substance between the plates, in English units