

Q107) Alcohol SG = 0.79

$$\text{Density in Slugs/ft}^3: 0.79(1.94) = 1.53 \text{ slugs/ft}^3$$

$$\text{Density in g/cm}^3: 1.53/1.94 = 0.79 \text{ g/cm}^3$$

End Chapter 1 HW

Chapter 2 Problems: (17, 18, 27, 35, 61)

Q17) Toothpaste, Paint, Blood, Shampoo

$$\text{Q18) Water @ } 40^\circ\text{C} = [6.51 \times 10^{-4} \text{ n(Pa}\cdot\text{s)}]$$

$$\text{Q27) Hydrogen @ } 40^\circ\text{F} = [1 \times 10^{-5} \text{ n(N}\cdot\text{s/m}^2)]$$

$$\text{Q35) SAE 30 oil @ } 210^\circ\text{F} = [2.2 \times 10^{-4} \text{ lb}\cdot\text{s/ft}^2]$$

$$\text{Q61) } \mu = \left(\frac{\rho_g}{\rho_{oil}} - 1 \right) (\rho_{oil}) (g) \frac{d^2}{18\nu_s}$$

$$g = 9.81 \text{ m/s}^2$$

$$d = 1.6 \times 10^{-3} \text{ m} = 0.0016 \text{ m}$$

$$\rho_{oil} = 0.94(1000) = 940 \text{ kg/m}^3$$

$$\rho_{ball} = 7710 \text{ N/m}^3 = 7,849.13 \text{ kg/m}^3$$

$$\nu_s = \frac{250 \times 10^{-7}}{10.4} = 0.024 \text{ m}^2/\text{sec}$$

$$\mu = \left(\frac{7,849.13 \text{ kg/m}^3}{940 \text{ kg/m}^3} - 1 \right) (940 \text{ kg/m}^3) (9.81 \text{ m/s}^2) \left(\frac{0.0016^2}{18(0.024 \text{ m}^2/\text{sec})} \right)$$

$$[\mu = 0.402 \text{ Pa}\cdot\text{s}]$$

End Chapter 2 HW