College of Engineering & Technology

Department: Mechanical Engineering Marks: 10
Lecturer: Dr. Rola Afify Time: 9:30 – 10:10
Course Code: ME362 Date: 25/3/2015

Name: R. N.:

Answer the following questions:
Question one (5 marks)

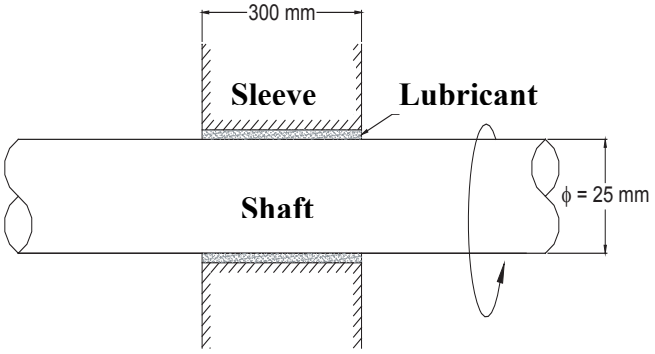
A) Define:

- Specific weight:

- Vapor pressure of liquid:

- Viscosity:

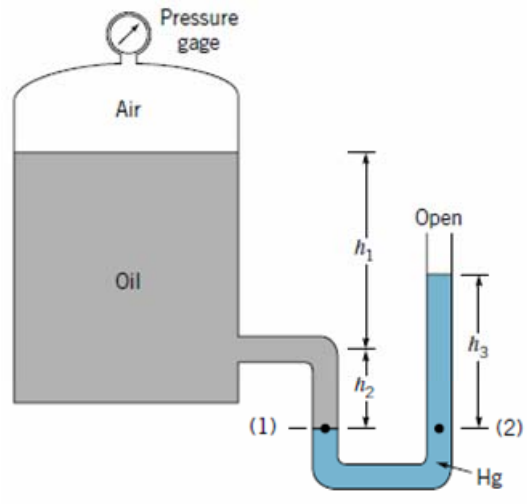
B) A 25mm diameter shaft is rotated in a 26.2mm diameter 300mm long sleeve containing oil (μ = 0.44 Pa.s) as shown in Figure. Estimate the torque required to rotate the shaft at a speed of 1800 rpm. Also, determine the power lost in viscous friction.



Question two (5 marks)

A) State the relation between absolute, atmospheric and gage pressure.

B) A closed tank contains compressed air and oil (γ_{oil} = 0.9) as shown in figure. A u-tube manometer using mercury ($\gamma_{mercury}$ = 13.6) is connected to the tank as shown. For column heights h_1 = 91 cm, h_2 = 15 cm, h_3 = 22 cm, determine the pressure gage's reading.



Dr. Rola Afify