ASSIGNMENT 3

FLOW THROUGH A CIRCULAR PIPE

INSTRUCTION

You are to submit this assignment through the link ; rominiyiol@abuad.edu.ng and engromslawani @ yahoo.com

DEADLINE : On or before 25 th April, 2020;;; 12 midnight

Any assignment submitted after the deadline may not be graded

QUESTION 1

Glycerine of viscosity 0.9Ns/m^2 and density 1260 kg/m^3 is pumped along a horizontal pipe 65m long and 10mm diameter at a flow rate of 180 Lit/min. (a) Determine the nature of flow (b) Compute the pressure loss due to frictional effect.

QUESTION 2

Given the following specifications:

Viscosity = 800 cp

Specific gravity = 0.85

Pipe diameter = 65 mm

Pressure drop = 2000 kN.m^2

Length of the pipe = 95 m

Determine : (a) Rate of flow of oil

(b) Centre line velocity

(c) Total frictional drag over the entire length of the pipe

(d) Power required to maintain the flow

(e) Velocity gradient at the pipe wall

(f) velocity and shear stress at 60 mm from the wall.