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MATRIC NO: 17/ENG06/080

DEPT: MECHANICAL ENGINEERING

# ASSIGNMENT 3

1. Given µ= 0.9, g/, ,
   1. From continuity equation

q = A.u

where

Because Re < 2000, the flow is laminar

1. Given cp=0.8Ns/m^2, G = 0.85, ,

, D = 65mm = 0.065m , L = 95m

Rate of flow, Q = A.u

Where

* 1. Centre line velocity =

But,

s

* 1. otal frictional drag, fD

Where

* 1. Power required to maintain flow

636.645×3.474

s

* 1. Velocity gradient at the pipe wall
  2. Velocity and shear stress 60mm from wall

and y=60mm=0.06m

The shear stress can be found as;