GUJARAT TECHNOLOGICAL UNIVERSITY

3rd Semester Civil Engineering – PDDC

Subject Code & Name : X30604 - Advanced Fluid Mechanics

Assignment - 4 (Turbulent Flow)

Date : 16-10-2014

Theory :

1. Explain hydro dynamically smooth and rough pipe
2. Obtain an expression for the velocity distribution for turbulent flow in smooth pipe.
3. Explain Prandtle's mixing length theory.

Examples :

1. A smooth cast iron pipe 0.4 m in diameter conveys crude oil at a velocity of 3 m/s. calculates the loss of head per km length of pipe. Kinematic viscosity of oil 0.42 stokes and S=0.9

2. Water flowing through a rough pipe of diameter 600 mm at the rate of 550 litres/second. The wall roughness is 3 mm. Find the power lost for 1.2 km length of pipe