2008 NATIONAL INSTITUTE OF TECHNOLOGY
B.TECH III SEMESTER MID TERM EXAMINATIONS
MOMENTUM TRANSFER
(CHEMICAL ENGINEERING)

TIME: 2 HOUR
MARK: 60

Answer All The Questions

1. Write a note on the Rheological classification of fluids.

2. A differential manometer is connected at the two points A & B of two pipes. The pipe A contains a liquid if specific gravity 1.5 while pipe B contains a liquid if specific gravity 0.9.The pressure at A& B is 1 kgf/cm2 & 1.8 kgf/cm2 respectively. Find the difference in mercury level in the differential manometer.

3. Derive the equations for Flow through a horizontal circular pipe.

4. What is the viscosity of a fluid which requires 40sec for flow of 16cc through a capillary tube viscometer having a tube diameter of 2mm & length of 30cm? The pressure difference is equivalent to 20cm of water.

5. Explain Prandtl's mixing length theory.

6. Water is flowing through a 3cm inner diameter tube. The pressure drop resulting is 0.1 gmf/cm2 per cm length of the tube. Find the point velocity, Eddy diffusivity & Prandtl mixing length at y = R/2 where R is the radius of the tube. Viscosity of water may be taken as 1 C.P & density as 1 gmf/cm2 .