**BBDNITM**

**MECHANICAL DEPARTMENT**

**SESSION(2018-19)**

**Subject- Fluid Mechanics [ RCE-303]**

**Assignment no. 4**

1. What are the characteristics of laminar flow? Derive the equation of laminar flow through pipes ?
2. Prove that maximum velocity in a circular pipe for viscous flow is equal to two times the average velocity of flow?
3. Derive Hagen poiseuilli equation for laminar flow?
4. Derive an expression for the loss of head due to friction in viscous flow in terms of Reynolds number?
5. Discuss when a laminar flow will change to turbulent flow?
6. Obtain the equation for velocity distribution for turbulent flow in smooth pipe?
7. Derive Karman prandtl equation for velocity distribution near hydro dynamically rough boundaries?
8. Write a short note on losses in pipes and fittings?