DIGITAL ASSIGNMENT-3

MOSF

1. A reducer bend having an outlet diameter of 15 cm discharges freely. The bend, connected to a pipe of 20 cm diameter, has a deflection of 60^0 and lies in a horizontal plane. Determine the magnitude and direction of force on the anchor block supporting the pipe when a discharge of 0.3 m^3/s passes through the pipe.
2. A nozzle is fitted at the end of a pipe of diameter *D* carrying water. Show that for maximum kinetic energy to be supplied by the nozzle, the diameter of the nozzle *d* is given by $d = \left(\frac{D^5}{2fL} \right)^{\frac{1}{4}}$, where f=friction factor and L= length of the pipe.

3. Water flows up a tapered pipe as shown in Fig. 1. Find the magnitude and direction of the deflection *h* of the differential mercury manometer corresponding to a discharge of 120 L/s. The friction in the pipe can be completely neglected.

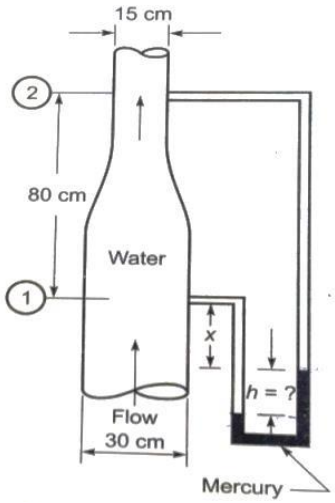

Fig.1