## Homework 5

| Questions No. | 1 | 2 | 3 | Total |
|---|---|---|---|---|
| Score | 30% | 40% | 30% | 100% |

**Q5.1** Determine the volumetric flow and the pressure in the pipe at A if the height of the water column in the Pitot tube is 0.3 $m$ and the height in the piezometer is 0.1$m$.
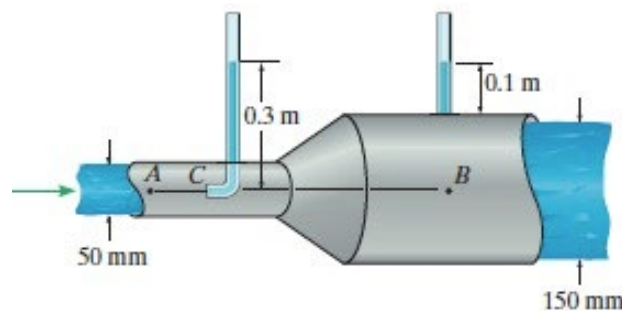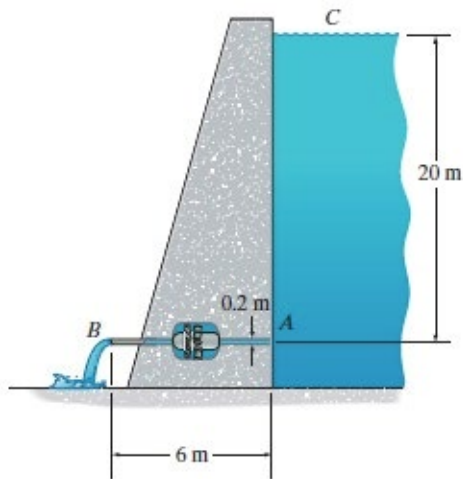


**Q5.2** Oil flows through the constant-diameter pipe such that at A the pressure is 50 $kPa$, and the velocity is 2$m/s$. Plot the pressure head and the gravitational head for AB using a datum at B. Take $\rho_0 = 900kg/m^3$. Assume oil flow is compressible which is a reasonable assumption.
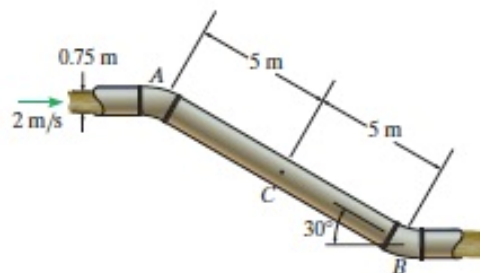


**Q5.3** Water in the reservoir flows through the 0.2-m-diameter pipe at A into the turbine. If the discharge at B is 0.5$m^3/s$, determine the power output of the turbine. Assume the turbine runs with an efficiency of 65%, and there is a head

loss of $0.5m$ through the pipe.