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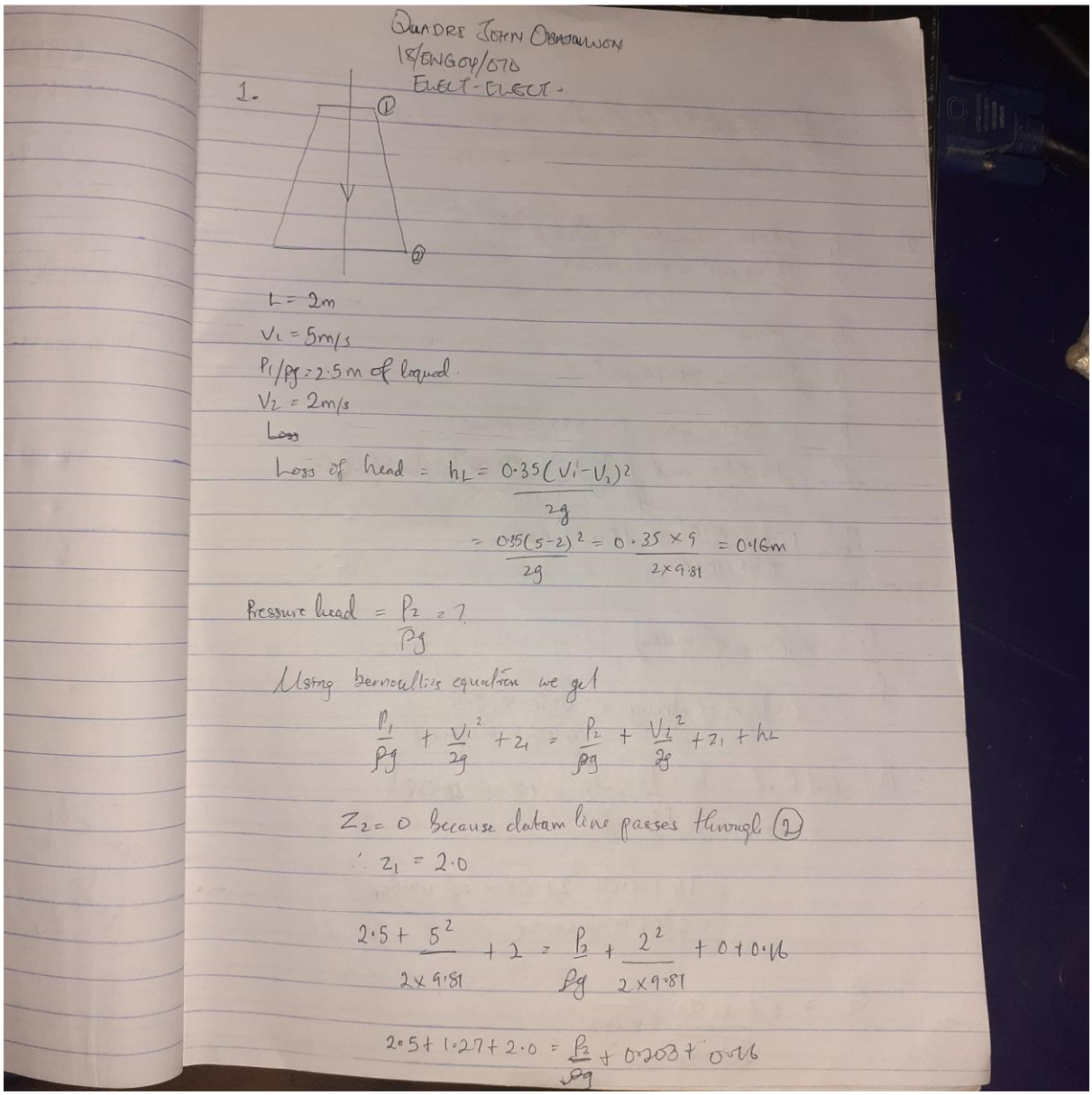
18/ENG04/070

ELECT-ELECT

ENG 214



$\therefore \frac{P_2}{\rho g} = 5.407\text{m of fluid.}$

2. $d_1 = 20\text{cm}$ (diameter of inlet)

$a_1 = \frac{\pi}{4} \times (20)^2 = 314.16\text{cm}^2$

$d_2 = 10\text{cm}$

$a_2 = \frac{\pi}{4} \times 10^2 = 78.74\text{cm}^2$

$P_1 = 17.658\text{N/cm}^2 = 17.658 \times 10^4\text{N/m}^2$

$\rho = 1000\ \frac{\text{kg}}{\text{m}^3}$ and $\frac{P_1}{\rho g} = \frac{17.658 \times 10^4}{9.81 \times 1000} = 18\text{m of water}$

$\frac{P_1}{\rho g} = \frac{17.658 \times 10^4}{9.81 \times 1000} = 18\text{m of water}$

$\frac{P_2}{\rho g} = -30\text{cm of mercury}$

$= 0.30\text{m of mercury} = -0.30 \times 13.6$

$= -4.08\text{m of mercury}$

$\therefore$ Diffrential head $= h = \frac{P_1}{\rho g} - \frac{P_2}{\rho g} = 18 - (-4.08)$

$= 18 + 4.08 = 22.08\text{m of water}$

$= 2208\text{cm of water.}$

$Q = \frac{C_d a_1 a_2}{\sqrt{a_1^2 - a_2^2}} \times \sqrt{2gh}$

3. dia

dia

Sp

Hea

$\therefore$

$= 0.98$

Q. $x = 170mm = 0.17m$

$S_g = 13.6$

$S_o = 1.026$

$$h = x\left[\frac{S_g}{S_o} - 1\right] = 0.17\left[\frac{13.6}{1.026} - 1\right] = 2.0834m$$

$$\therefore V = \sqrt{2gh} = \sqrt{2 \times 9.81 \times 2.0834} = 6.393 m/s$$

$$= \frac{6.393 \times 60 \times 60}{1000} km/hr$$

$$= 23.01 km/hr$$