OBSERVATIONS AND CALCULATIONS

Table 1. Results of flow through Mouthpiece experiment (Variable head)

S.NO	Head (m)		Time (t)	$\sqrt{h_1} - \sqrt{h_2}$	Coefficient of
			sec		discharge, C _d
	h ₁	h ₂	-	(m)	

Diameter of Mouthpiece, d =

Dimensions of balancing tank =

Experiment No:

Roll No:

Date :

2. DETERMINE THE DISCAHRGE FROM A GIVEN TANK PRESENET IN TATA CHEMICAL LABORATORY (using MOUTHPIECE)

AIM

To determine the coefficient of discharge of mouth piece by variable head method

BASIC CONCEPT

A mouth piece is a short tube fitted to a circular orifice provided to the bottom of the tank. The length of the tube is usually two to three times its diameter. It is usually required to know the actual flow rate and the time required for emptying a tank through a mouth piece

Time required for the liquid to descend from h₁ to h₂, (t) = $\frac{2A(\sqrt{h_1} - \sqrt{h_2})}{C_d a \sqrt{2g}}$

a = cross –sectional area of orifice h_1 = initial liquid level in the orifice tank h_2 = final liquid level in the orifice tank g = acceleration due to gravity A = internal plan area of the balancing tank = L x B = C_d = coefficient of discharge of orifice

APPARATUS

Mouth piece fitted to a tank

Piezometer

Meter scale

Callipers

Stop watch

MODEL CALCULATIONS

PROCEDURE

- 1. The diameter of the mouth piece and the internal plan dimensions of the mouth piece tank are measured.
- 2. Water is allowed in to the mouthpiece tank so that the head above the centre of the mouth piece is h_1 .
- 3. The supply valve is completely closed and the water level in the mouth piece tank is allowed to descend to h₂.
- 4. Note down the time taken (t) to descend the water level from h_1 to h_2
- 5. The above procedure is repeated for different values of h_1 and h_2 .

GRAPHS

A graph is drawn by taking t on y - axis and $\sqrt{h_1} - \sqrt{h_2}$ on x-axis.

t vs ($\sqrt{h_1} - \sqrt{h_2}$)

RESULT

The coefficient of discharge of mouth piece, C_d = (from experiment) The coefficient of discharge of mouth piece, C_d = (from graph)

INFERENCE