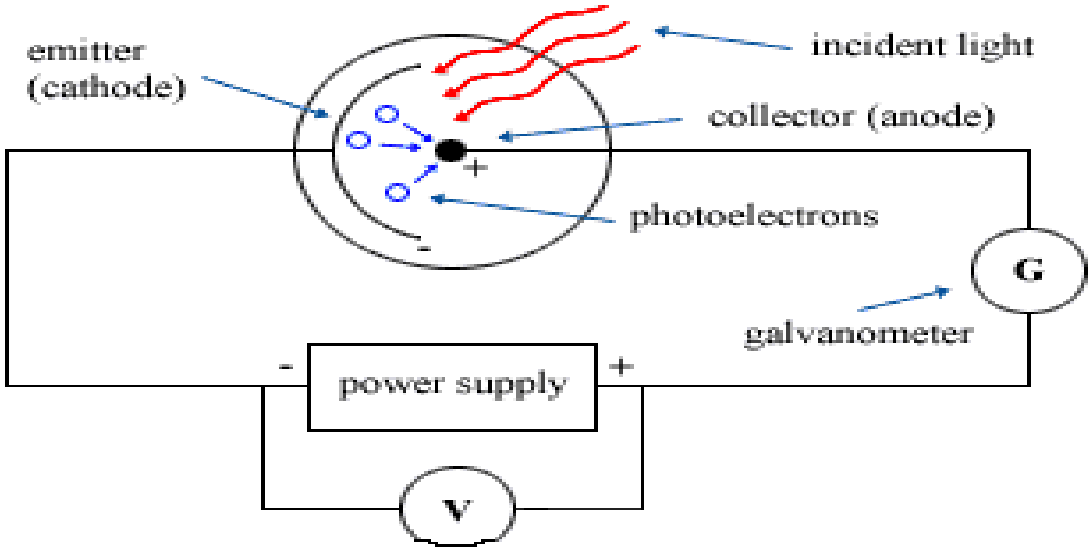
NAME-ATISHAY JAIN **E.NO.-NBTG10420** **BATCH-F1**

EXPERIMENT NO.-4

AIM- To study the Photoelectric effect.

1. Draw Negative potential vs Photo-current (V-I) for different wavelengths and determine the value of Planck's constant 'h'.
2. Draw V-I curve for different Intensities.
3. Draw V-I curve for different Metals.

SET UP:



FORMULA USED:

If $\lambda_1 and \lambda_2$ be the wavelengths of light used to illuminate the cathode and $V_1 \& V_2$ be their respective stopping potentials then,

$$h\upsilon_1 = \phi + eV_1$$

$$h\upsilon_2 = \phi + eV_2$$

$$h(\upsilon_2 - \upsilon_1) = e(V_2 - V_1) \qquad (2)$$

We know that $\upsilon = \frac{c}{\lambda}$

Therefore above equation (2) becomes,

$$hc\frac{(\lambda_1 - \lambda_2)}{\lambda_1\lambda_2} = e(V_2 - V_1) \qquad \Rightarrow h = \frac{e(V_2 - V_1)\lambda_1\lambda_2}{c(\lambda_1 - \lambda_2)} \; J - s \qquad (3)$$

We shall use this formula to find value of Planck's constant.

OBSERVATION-

Table 1: V-I for different wavelengths and calculation of h.

SAMPLE-COPPER PLATE AREA- 0.1cm^2

INTESITY OF LIGHT- 5 w/m^2

S.NO. (18 readings)	NEGATIVE ANODE POTENTIAL (VOLT.)	CORRESPONDING PHOTO CUURENT (uA)	
		100nm	200nm
1	0.0		
2	0.5		
3	1.0		
4	1.5		
5	2.0		
6	2.5		
7	3.0		
8	3.5		
9	4.0		
10	4.5		
11	5.0		
12	5.5		
13	6.0		
14	6.5		
15	7.5		
16			
17			
18			