	_ 8				
2	$\cap$ $\cap$	SF	A	7	-
		<b>7</b> E	$\mathbf{C}$	2	2

	Enperiment-10	J. C.
	Hall Effect	+01 =
#	Alm ->	
*	To study hall effect in semiconduction and determine the hall coefficient of charge carriers. This enperiment demonstrates the effect of Corent	unt
#	Apparatus: Two solenoids, constant power to maintain magnet Mace proke with verniconductor sample, worrent rupply with ammeter and Crows meter.	constant
#	Formula Used ->  Ru = Ey = Vnd - 0	V <sub>H</sub> → Hall  Voltage  R <sub>U</sub> → Hall
	$IB \qquad IB$ $V_{H} = R_{H}BI \qquad \bigcirc$	coefficient I -> cuocent
	$m = R_{H}B/d$ $R_{H} = md/B$	Ey -> Electric field (trans verse)
	$\begin{bmatrix} R_{H} = 1 \\ q_{N} \end{bmatrix} - \bigoplus$	a → charge of the carrier
•	n-> carrier density in the	m -> slope

	Table 1'-	or the transfer	)	
*	Data jou	calculation	g Ry and de for the suly	40 1 ° 1
	Q char	ge caraser	for (n. sul	nn ty
	to a	lined mas	high of	e cted
		y rade mag.	quea.	
	Parameters			
			ledge Hed wester	
(a)	Coverent 1	herough the so	lemmid = 10	
(6)	Resultant	magnetic line	12 187 - 0-1407	<u></u>
(c)		of the mate	(d (B) = 0.1482	
(d)	Charge of	the cauxin	rial (d) = 0.000 (191) = 1.602	19 - 19 C
()	0 0	, a contra	(141) - 1.602	LX 10 (
7 50 3	3 31000	a submar		
S.No.	Malf Current  II (mA)	May Voltage	Hay coefficient	Density
	II (mA)	VH (mV)	(hH)	of
			(sim or m3)	Charge
			T C	n (1/m3)
		C.	(from eq 3)	n (1/m3)  (from er
A POV	-	Ky - Y	· I - WA	(9)
1	1.0	28.756		
2	1.5	43.133		
3	2.0	57.511	0.0194	3.21763
4	2.5	71.889		×
S	3.0	86.267	A second	1020
6	3.5	100.645	Y	
7	4.0	115.023		
	a Charles	many many and the state of the	14.1	
		A A A		

		Fin the		Date :	
		Table 2:-	S. A. S. Charles	1. 24 . S. 18	
		lowent throw	gh the solchoid	= 2.5A	
	200	Resultant mag	netic field (B)	= 0.3706T	
		Thickness of 11	ne material (d)	1 = 0.0003m	
				1797 7 5 6	
_		Charge of 1	the carrier (10	91) = 1.602 XI	0-176
	S. No.	Mall (werent I (mA)	Mall Voltage	Mall	Density
		I (mA)	Vn (mv)	coefficient,	· Chas
		The state of the s		By (stu or m)	duy
		8.77 f. 12	127.85 X	(fr om slope,	n(1/2)
				e ~ 3)	gran 400
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ent (RH):	Party of French	eng
			2 - 2 - 2		Trade determined by the contract of the contra
	1	(,0)	23.963		2 2
	2	1.5	35.945	0.0194	3.2176
	3	2.01.8	47.926		X
	4	2.5	59.908		10,50
	5	3.0	71-889		
	6	3.5	83.871		
	7	4.0	95.852		
)		1 47 3 200	of Vapored)	the state of the s	

	Calculations ->
	Table 1 ->
-	
	$n_1 = 1.0 \times 10^{-3} A$ $y_1 = 28.76 \times 10^{-3} V$
	$n_2 = 2.0 \times 10^{-3} A$ $y_2 = 57.51 \times 10^{-3} V$
	Slope (m) = 42-41
	72-74
	$=(57.51-28.76)\times 10^{-3}$
	$\frac{(2.0-1.0)\times 10^{-3}}{}$
	(2.0 - 1.0) × 10-3
	m = 28.75
	Nall loegsicient (Rn):
	$R_{H} = md$
	B
1	= 28.75 x 0.001
y= 1.	0.1482
	Ru = 0.0194 SLm/T
	Density of Charge Caucier (n).
	n = 1 = 1
	Rn 9 0.0194 X1.602 X10-19
	$n = 3.21763 \times 10^{20} \text{ m}^{-3}$

Date . .....

Calculation for Table 2 $n_1 = 1.0 \times 10^{-3} A$  ;  $y_1 = 23.96 \times 10^{-3} V$   $n_2 = 2.0 \times 10^{-3} A$  ;  $y_2 = 47.93 \times 10^{-3} V$ Slope (m) = 12-41  $=47.93-23.96 \times 10^{-3}$ m = 23.97nay conficient (Rn):  $R_{\text{H}} = \text{md} = 23.97 \times 0.0003$  0.3706Rn = 0.0194 -2m/T Density of charge carrier (11): n = 1Rng 0.0194 × 1.602 × 10-19

n = 3.21763 × 1020 m-3

Date : ..... Repult -> Mean Ry = 0.0194 52m/T Mean n = 3.21763 × 1020 m-3



