Maulana Azad National Institute of Technology Bhopal

DEPARTMENT OF PHYSICS

PHYSICS LABORATORY OBSERVATION BOOK

Name of the Student : ………………………………………………

Scholar Number : ………………………………………………

Roll Number : ………………………………………………

Year & Semester : ………………………………………………

Section : ………………………

Subject & Code : Physics Laboratory (PHY-24122)

INDEX

S.No	Name of the Experiment	Page No	Date of the Experiment	Signature of the Faculty
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Exp No : ……………. **Date : …………….**

EXPERIMENT: NEWTON'S RINGS

Aim: To determine the radius of curvature of a lens by Newton's Ring method

Apparatus Required: Newton's Ring apparatus; which consist of a plano-convex lens of large radius of curvature and a plane glass plate, traveling microscope, and Light reflecting unit, Reading lens and Sodium vapor lamp.

Formula:
The radius of curvature of a lens is calculated from the formula,

$$R = \frac{D_{n+p}^2 - D_n^2}{4\,p\,\lambda} \quad \text{(in cm)}$$

Here,

D_n is diameter of n^{th} bright fringe.
D_{n+p} is diameter of $(n+p)^{th}$ bright fringe.
R the radius of the curvature of the lens.
p is an integer numbers of the ring.
λ is the wavelength of Sodium vapor lamp ($5893\ A^o$).

Diagram:

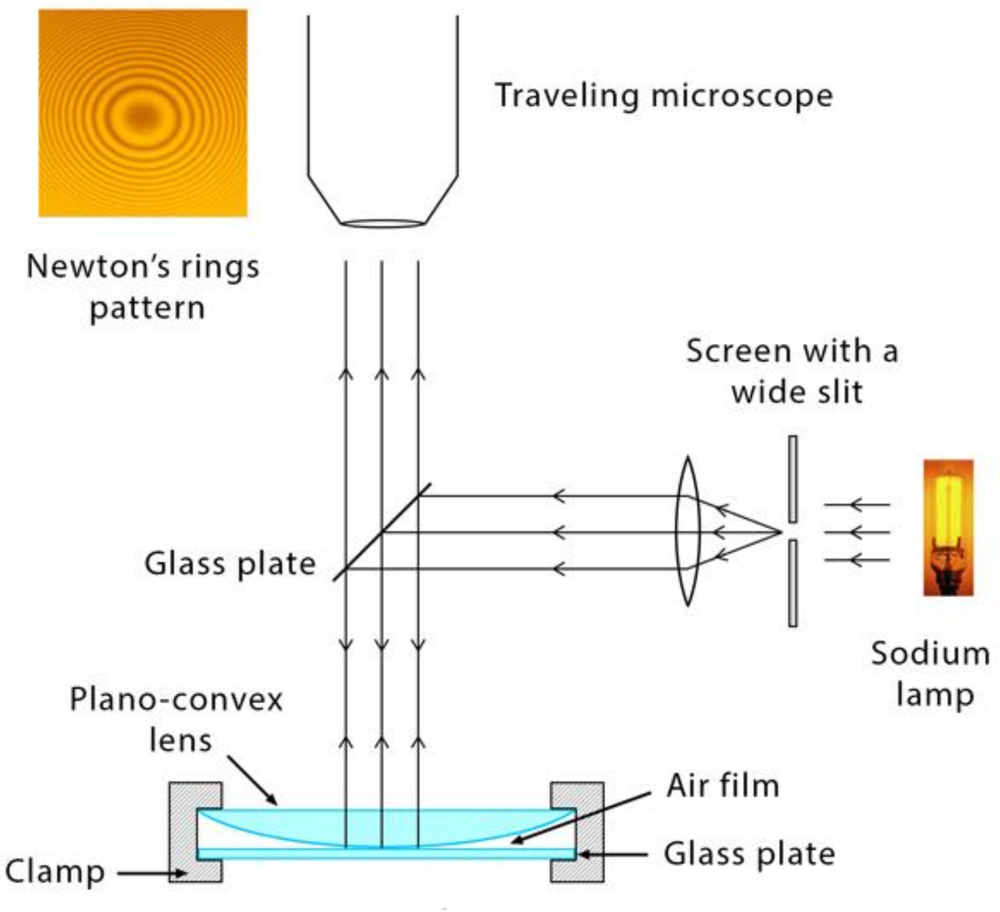


Fig : Newton's ring experimental setup

Observation Table: **Determination of [$D_{n+p}^2 - D_n^2$]**

Least count of the travelling microscope = 0.001cm

Ring Number	Microscope reading from Left-hand side of the center (cm) **(a)**			Microscope reading from Right-hand side of the center (cm) **(b)**			Diameter D_n $(a \sim b)$ (cm)	D_n^2 (cm^2)	$D_{n+p}^2 - D_n^2$ (cm^2)
	Main Scale	Vernier Scale	Total (cm)	Main Scale	Vernier Scale	Total (cm)			
20									
18									
16									
14									
12									
10									
8									
6									
4									

Calculation:

Result:

The radius of curvature (R) of a lens is ………………………..cm

Exp No : ……………. **Date : …………….**

EXPERIMENT: MELDE'S EXPERIMENT

Aim: To determine the frequency of electrically maintained tuning fork

Apparatus Required: Electrically Maintained Tuning Fork, Battery Eliminator, Meter Scale, Pulley, Weight Box, Thread.

Formula:

1) The frequency in transverse arrangement

$$f = \frac{1}{2\,l}\sqrt{\frac{T}{m}} \text{ (in Hz)}$$

Here f= Frequency of tuning fork
l=Distance between two nodes
T=Tension Applied
m= Mass per unit length of thread

2) The frequency in longitudinal arrangement

$$f = \frac{1}{l}\sqrt{\frac{T}{m}} \text{ (in Hz)}$$ With same meaning of symbols.

Diagram:

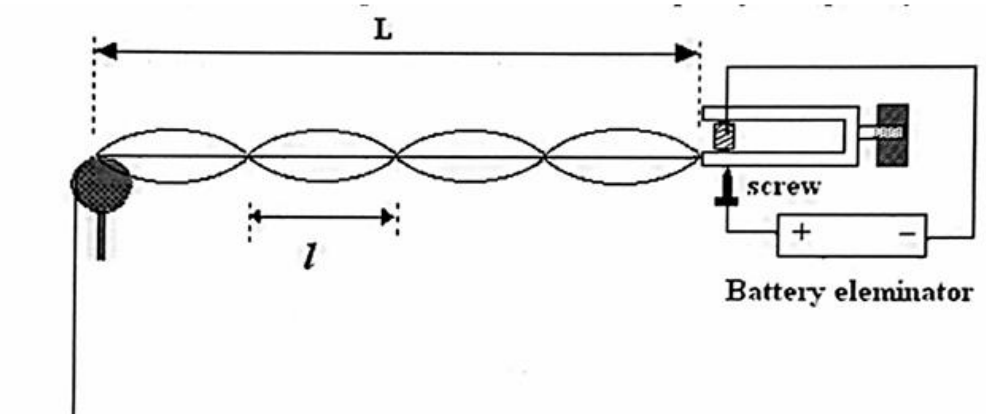


Fig 1. Transverse arrangement

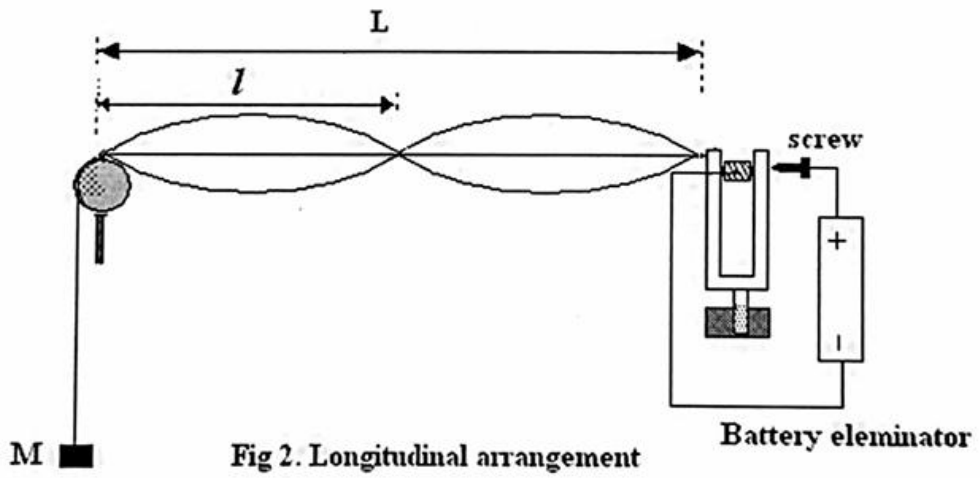


Fig 2. Longitudinal arrangement

Observation Table:

1) Mass of the pan= ………….. gm.
2) Mass of thread per unit length $m = 0.004215\ gm/cm$
3) Acceleration due to gravity $g = 980\ cm/sec^2$

Table 1 For Transverse arrangement

S.No	Mass of Pan + Weight suspended M(gm.)	Tension T=Mg (dynes)	No. of Loops n	Length of Vibrating Thread L (cm)	Length of one Loop $l = L/n$ (cm)	$f = \frac{1}{2l}\sqrt{\frac{T}{m}}$ (Hz)
1						
2						
3						
4						
5						

Mean $f_{Transverse} =$ Hz

Table 2 For Longitudinal arrangement

S.No	Mass of Pan + Weight suspended M(gm.)	Tension T = Mg (dynes)	No. of Loops n	Length of Vibrating Thread L (cm)	Length of one Loop $l = L/n$ (cm)	$f = \frac{1}{l}\sqrt{\frac{T}{m}}$ (Hz)
1						
2						
3						
4						
5						

Mean $f_{Longitudinal} =$ Hz

Calculations:

Frequency of tuning fork $f = \frac{f_{Transverse} + f_{Longitudinal}}{2}$

Result:

The frequency of fork is found to be f = ……………………Hz.

Exp No : ……………. **Date : …………….**

EXPERIMENT: FREQUENCY OF A.C MAINS

Aim: To determine the frequency of A.C mains using electrical vibrator.

Apparatus Required: Electrical vibrator, Lamp, Meter Scale, Pulley, Weight Box, Thread.

Formula:

The frequency of A.C mains

$$f = \frac{1}{2\,l}\sqrt{\frac{T}{m}} \quad \text{(in Hz)}$$

Here f= Frequency of rod (ac mains)
l=Distance between two nodes
T=Tension Applied
m= Mass per unit length of thread

Diagram:

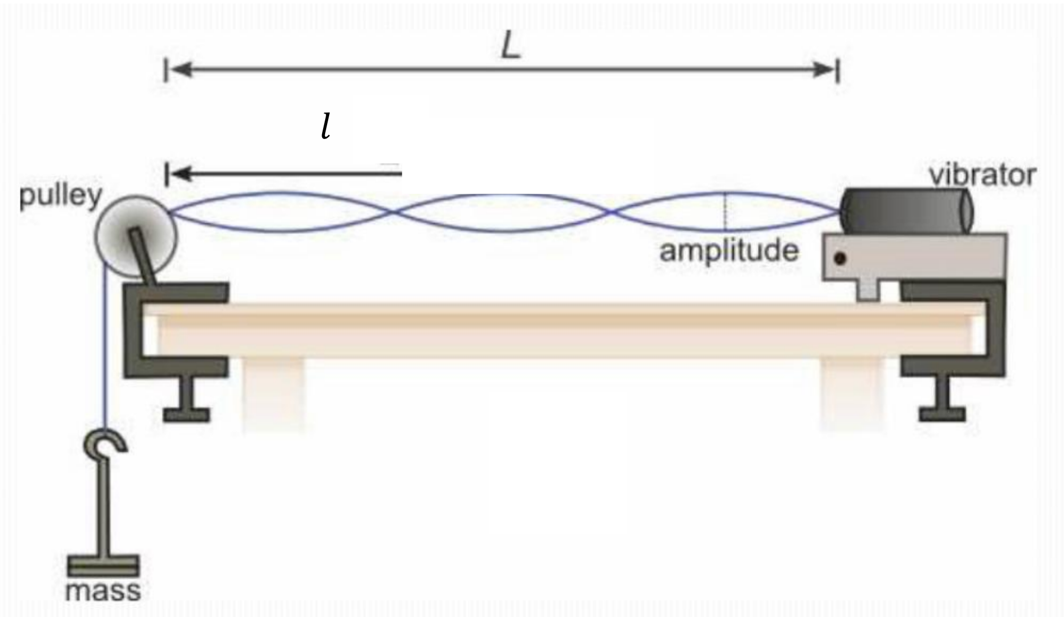


Fig: A.C Mains Transverse arrangement

Observation Table:

1) Mass of the pan = ………….. gm.
2) Mass of thread per unit length $m = 0.004215\ gm/cm$
3) Acceleration due to gravity $g = 980\ cm/sec^2$

Transverse arrangement:

S.No	Mass of Pan + Weight suspended M(gm.)	Tension T=Mg (dynes)	No. of Loops n	Length of Vibrating Thread L (cm)	Length of one Loop $l = L/n$ (cm)	$f = \frac{1}{2\,l}\sqrt{\frac{T}{m}}$ (Hz)
1						
2						
3						
4						
5						

Mean $f_{Transverse} =$ Hz

Calculations:

Result:

The frequency A.C main is found to be f = ……………………Hz.

Exp No : ……………. **Date : …………….**

EXPERIMENT: NODAL SLIDE ASSEMBLY

Aim: To verify the formula for the combination of lenses and to determine the cardinal points of the combination using Nodal Slide assembly.

Apparatus Required: Nodal slide assembly, Light source and convex lenses.

Formula:

The focal length of the combination of lenses

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{x}{f_1\, f_2}$$

Here

F is the focal length of the combination of lenses (in cm)

f_1 is the focal length of the lens 1

f_2 is the focal length of the lens 2

x is the distance between two lenses in combination.

Diagram

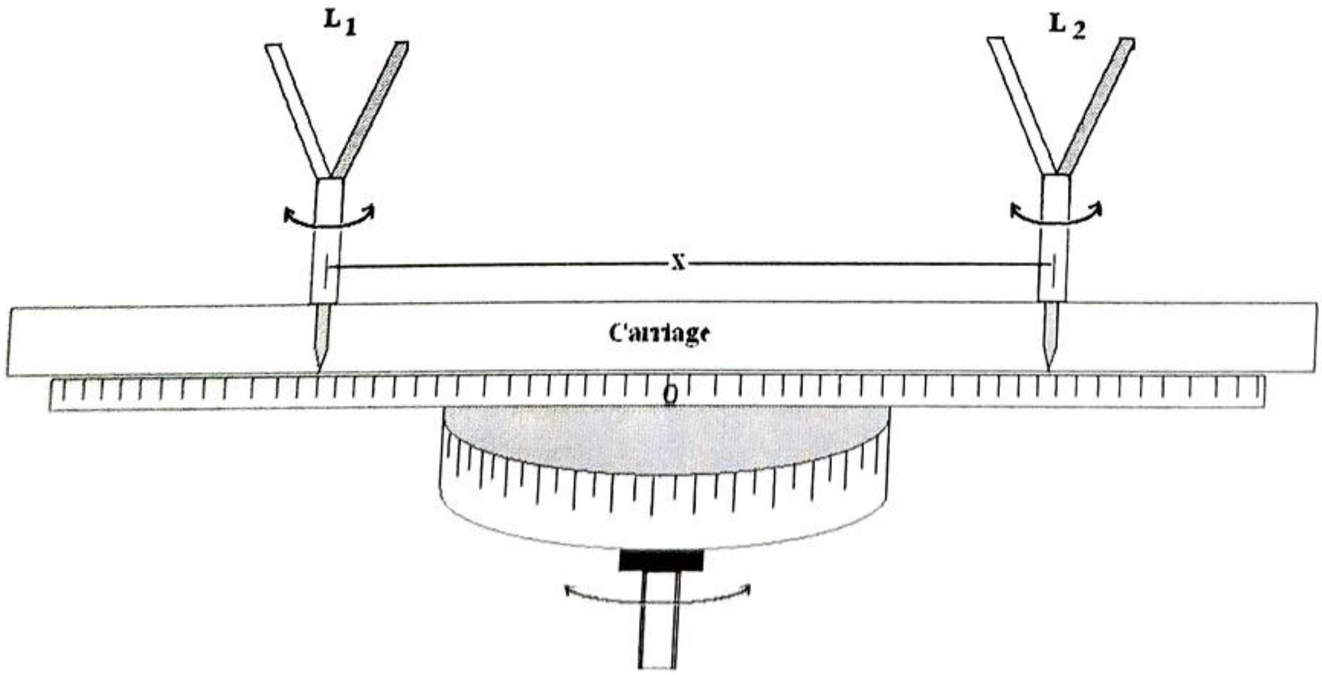


Fig: Nodal slide assembly

Observation Table:

Least count of the scale = …………..cm

Table 1 Finding focal length of the individual lens

Set	Light falls on	Position of cross slit R_1 (cm)	Position of lens on the Nodal slide assembly R_2 (cm)	Focal length of the lens $f = R_2 - R_1$ (cm)	Mean focal length (cm)
Lens-1	One Face				$f_1 =$
	Other Face				
Lens-2	One Face				$f_2 =$
	Other Face				

Table 2 Finding focal length of the combination of lens

Set	Light falls on	Position of cross slit A (cm)	Position of axis of Nodal slide assembly B (cm)	Focal length of the combination of lenses $F = B - A$ (cm)	Experimental Mean focal length F (cm)
Combination of lenses	One Face				$F =$
	Other Face				

Calculations:

Results:

1) Focal length of lens 1 f_1 =………… cm
2) Focal length of lens 2 f_2 =………… cm
3) Experimental value of focal length of combination F =…………… cm
4) Calculated value of focal length of combination F =…………… cm
5) Percentage error between calculated and experimental value of combination of lenses = …………..

Exp No : ……………. **Date : …………….**

EXPERIMENT: TWO SLIT DIFFRACTION

Aim: To determine the grating element of the two slit using He-Ne laser.

Apparatus Required: He-Ne Laser, Optical bench with suitable accessories, two slit unit.

Formula:

The grating element of slit

$$d = \frac{n\,\lambda\,L}{x} \text{ (in mm)}$$

Here

n is the order of diffraction ($n = 1$)
L distance between slit and screen
x distance between two consecutive lines (Fringe width)
λ is the wavelength of the He-Ne Laser ($6328\ A^o$)

Diagram:

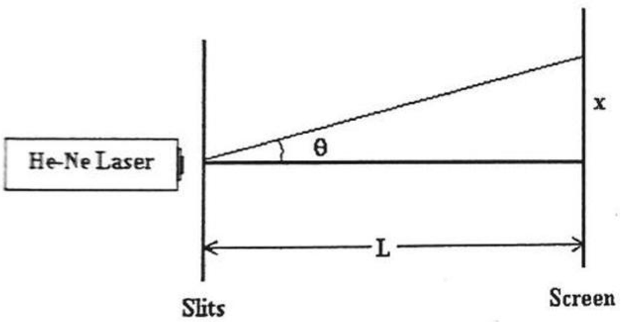


Fig 1. Laser Diffraction Experiment

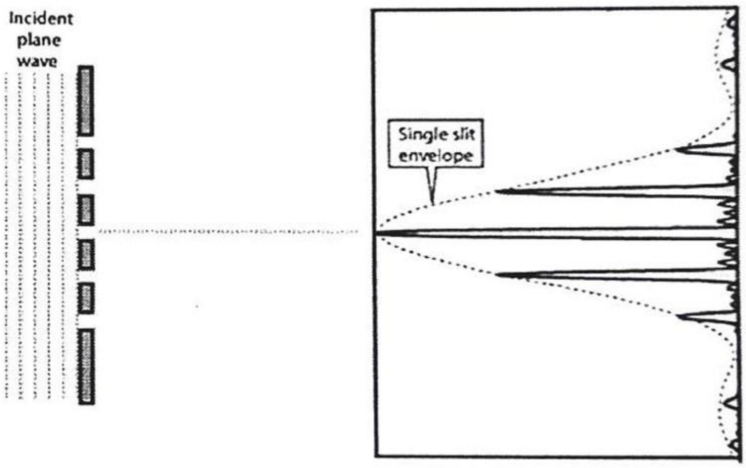


Fig: 2 Diffraction patterns from slits

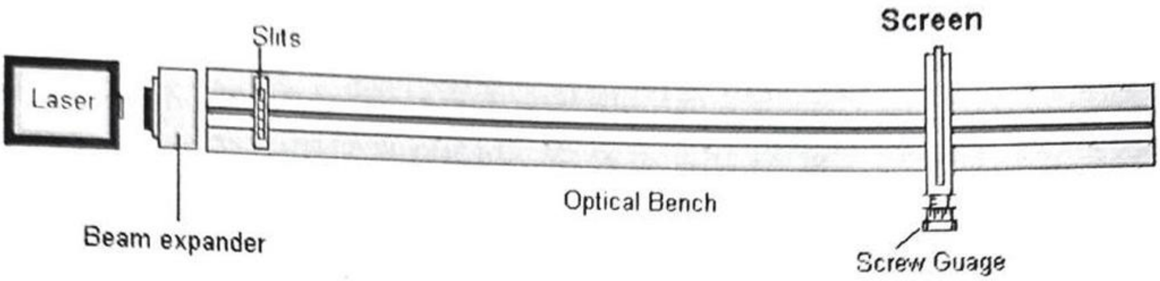


Fig. 3 Experimental setup for grating element

Observation Table:

Least count of the screw gauge main scale = 0.5 mm
Least count of the screw gauge circular scale = 0.01mm
Wavelength of the He-Ne laser $\lambda = 6328\ A^o$

Table for measuring the fringe width $\boldsymbol{x}$

Distance between slit and screen L (mm)	Fringes	Position of Fringes on screen			Fringe width x (mm)
		Main scale (mm)	Circular Scale (mm)	Total (mm)	
300 mm	1			A=	$A \sim B =$
	2			B=	
350 mm	1			A=	$A \sim B =$
	2			B=	
400 mm	1			A=	$A \sim B =$
	2			B=	

Calculations:

Result:

The grating element of given slit is ………………. mm.

Exp No : ……………. **Date : …………….**

EXPERIMENT: HALL EFFECT

Aim: To determine the Hall voltage and Hall Coefficient of Germanium crystal.

Apparatus Required: Hall Probe (Ge Crystal); Hall Effect Set-up , Electromagnet, Constant Current Power Supply, Digital Gaussmeter.

Formula:

Hall Coefficient of Germanium crystal (R)

$$R = \frac{V_h}{I_x}\frac{z}{H} \text{ (in V cm A}^{-1}\text{ G}^{-1}\text{)}$$

Here,

V_h is the measured Hall voltage
I_x is the applied Hall current
z Thickness of the Germanium crystal
H is the applied magnetic field
R is the Hall Coefficient of Germanium crystal

For calculation we need to find the slope from graph. Slope = $\frac{\Delta V_h}{\Delta I_x}$

Diagram:

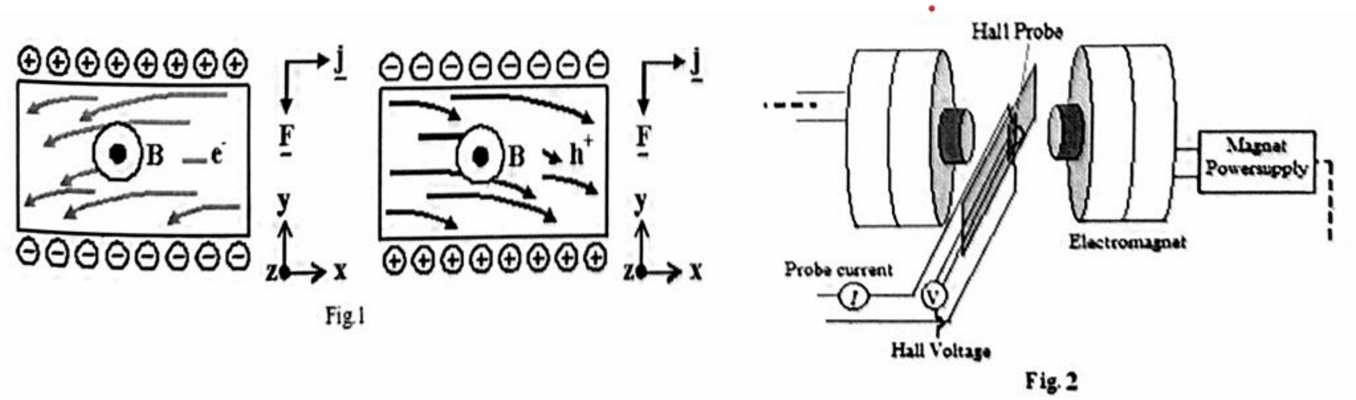


Fig.1

Fig. 2

Model Graph:

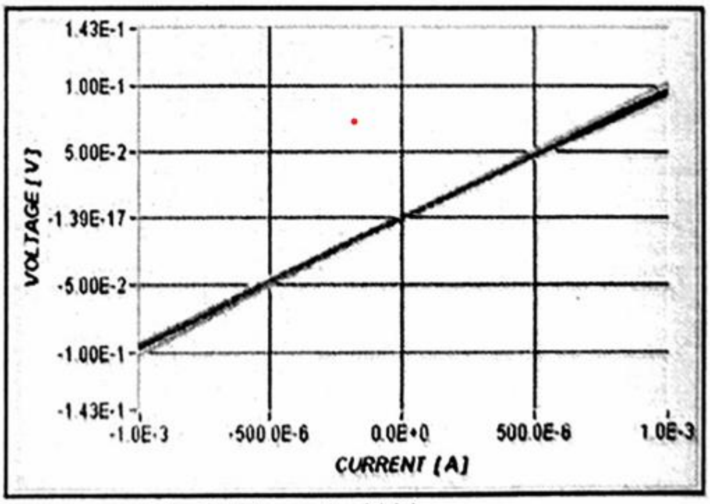


Fig 3: Expected I-V curve

Observation Table:

Thickness of the Germanium Crystal $z = 5 \times 10^{-2}$ cm

Table for measuring Hall voltage V_h

SET-1 Electromagnet power supply $H_1 = 1000$ Gauss (I_{EM} =……… A)			SET-2 Electromagnet power supply $H_2 = 1300$ Gauss (I_{EM} =……… A)			SET-3 Electromagnet power supply $H_3 = 1600$ Gauss (I_{EM} =……… A)		
S.No	I_x (mA)	V_h (mV)	S.No	I_x (mA)	V_h (mV)	S.No	I_x (mA)	V_h (mV)
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		

Calculations:

Plot V_h vs I_x graph and compute slope $(\frac{\Delta V_h}{\Delta I_x})$ for all the three sets. Calculate R for each set.

Here $R = slope \times \frac{z}{\mathrm{H}}$

Result:

The Hall Coefficient of Germanium crystal (R) =………………….. V cm A^{-1} G^{-1}

Exp No : ……………. **Date : …………….**

EXPERIMENT: MICHELSON INTERFEROMETER

Aim: To determine the wavelength of He-Ne laser with the help of Michelson interferometer

Apparatus Required: Michelson interferometer, laser source, screen etc

Formula:

The wavelength of the given source

$$\lambda = \frac{2\,d}{N} \text{ (in } A^o\text{)}$$

Here

d is the distance measured with a micrometre screw

N is the number of fringes collapsing

λ wavelength of the source

Diagram:

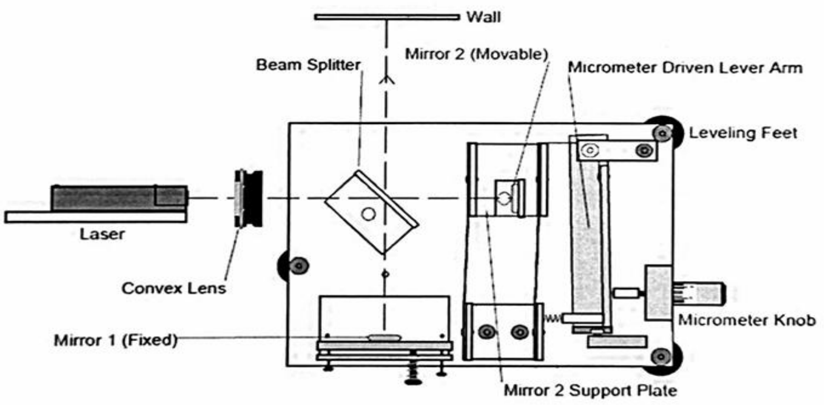


Fig.1 A typical Michelson interferometer

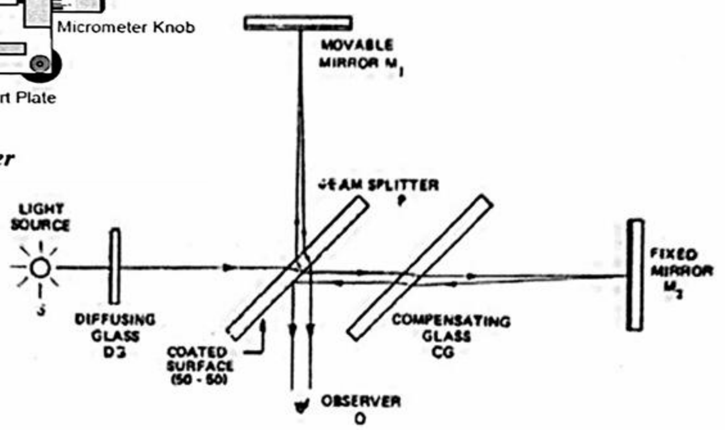


Fig.2 Optical arrangement and light path in Michelson interferometer

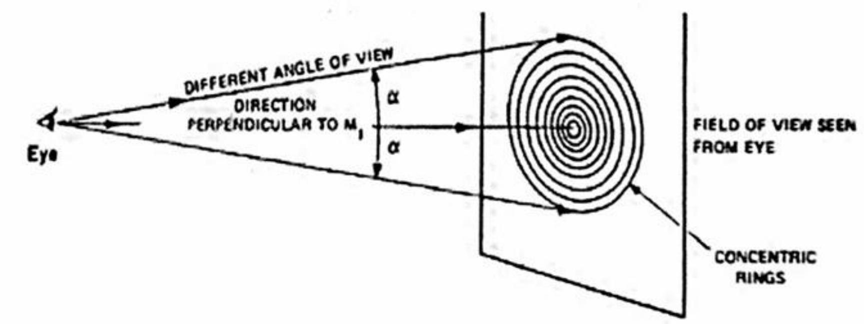


Fig. 3 Circular fringes (equal inclination) seen in Michelson interferometer

Observation Table:

Least count of interferometer Main scale = 1 mm

Least count of the circular scale $V_1 = 0.01$mm

Least count of vernier scale $V_2 = 0.0001$mm

Table for measuring separation d for N fringes

No of the fringes collapsed	Main scale (mm)	Circular scale V_1 (mm)	Vernier scale V_2 (mm)	Total (mm)	Separation **d** for N = 25 (mm)
0					
25					
50					
75					
100					
125					
150					

The mean value of **d** = mm

Calculations:

Result:

The wavelength of the given He-Ne laser is ……………….A^o

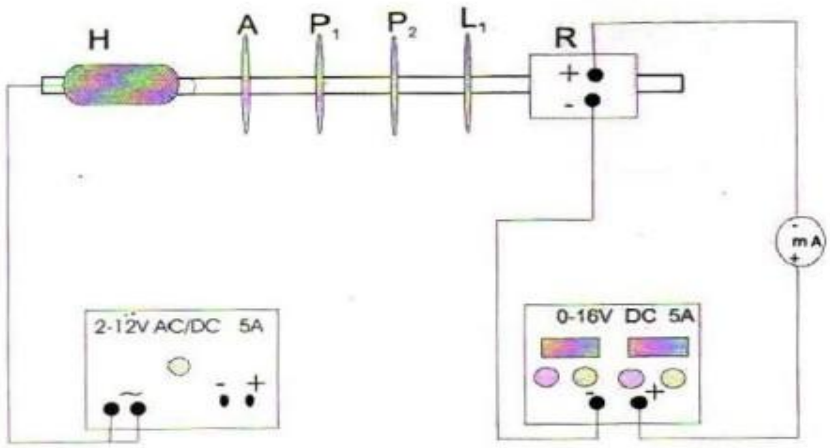
Exp No : ……………. **Date : …………….**

EXPERIMENT: PHOTOCONDUCTIVITY

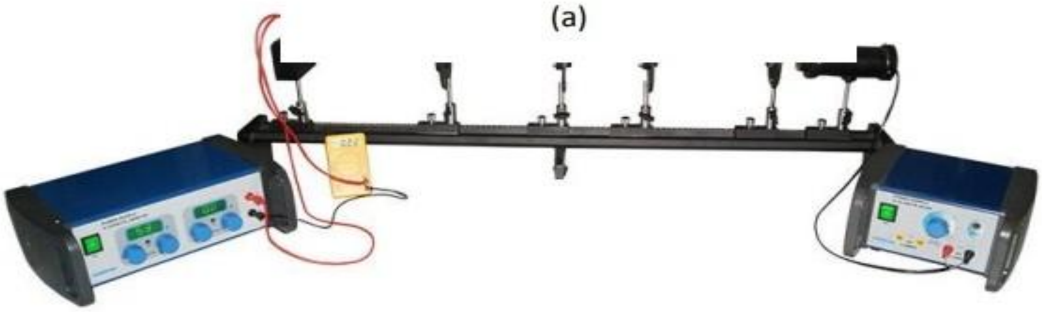
Aim: To measure the I-V characteristic of CdS as a function of irradiance and applied voltage, respectively

Apparatus Required: light source (yellow light bulb), lamp housing, adjustable slit, polarizer, analyser, voltage source 1) 2-12V 2) 0-16 V, focusing lens, optical bench.

Diagram:



(a)



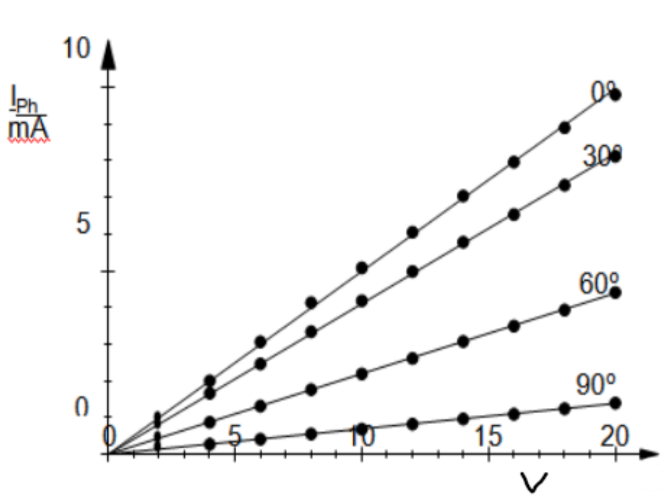
(b)

Fig. Experimental setup for recording the current-voltage characteristics of a CdS photoresistor.

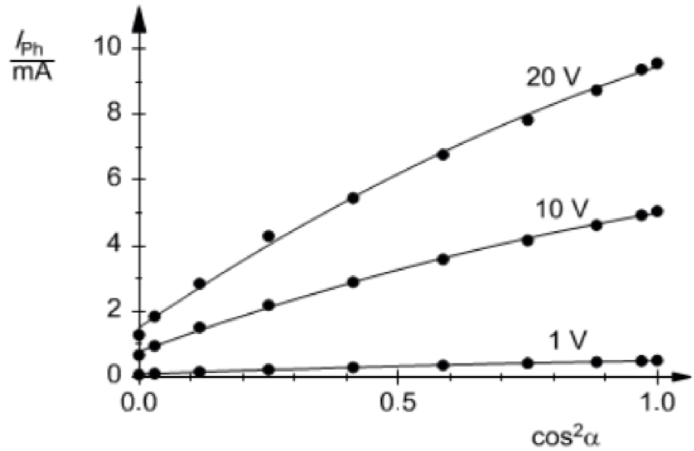
Here

Mount the lamp housing (H), adjustable slit self-centering (A), polarizer (P1), analyzer (P2), lens (L1), and photo-resistor (R) on the optical bench as shown in Fig.

Model Graph:



Current–Voltage characteristics of the CdS photoresistor



Current-irradiance characteristics of the CdS photoresistor

Observation Table1

S.No	Irradiance (α)	$Cos^2\alpha$	Photocurrent for varying voltage I_{ph} (mA)		
			2 V	6 V	12 V
1	90°				
2	60°				
3	45°				
4	30°				
5	15°				
6	0°				

Table 2

S.No	DC Voltage applied to the CdS Crystal (V)	Photocurrent for varying irradiance I_{ph} (mA)			
		90°	60°	30°	0°
1	2 V				
2	4 V				
3	6 V				
4	8 V				
5	10 V				
6	12 V				

Result:

The photoconductive CdS Photoresistor behaves like an ohmic resistance that depends on the irradiance.

Exp No : ……………. **Date : …………….**

EXPERIMENT: LUMMER-BRODHUN PHOTOMETER

Aim: To determine the percentage of light transmission for a semi-transparent film using a Lummer-Brodhun photometer.

Apparatus Required: Two given light sources, Lummer-Brodhum Photometer, Semi-transparent film, and optical bench.

Formula:

The percentage of light transmission for a semi-transparent film

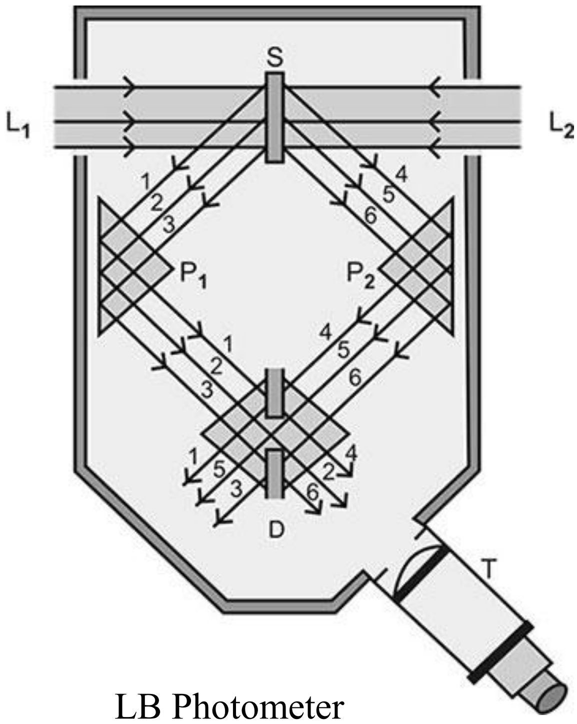
$$t = \frac{r_1^2}{r_2^2} \times 100 \ \ (\%)$$

Here,

r_1 is the distance between source 2 to the LB Photometer without transparent film

r_2 is the distance between source 2 and the LB Photometer with transparent film

Diagram:



LB Photometer

LB Photometer experiment setup

Observation Table

S.No	Position of Fixed Source P_1 (cm)	Position of LB Photometer a (cm)	Position of Second Source P_2 (cm)		$r_1 = b_1 \sim a$ (cm)	$r_2 = b_2 \sim a$ (cm)	Transmittance percentage $t = \frac{r_1^2}{r_2^2} \times 100$
			Without Plate b_1 (cm)	With Plate b_2 (cm)			
1							
2							
3							
4							
5							

Calculations:

Result:

The percentage of transmittance of a given semi-transparent film is ……………%

Exp No : ……………. **Date : …………….**

EXPERIMENT: CHARACTERISTICS CURVE OF A TRANSISTOR

Aim: To study and plot the transistor input and output characteristics for common emitter configuration.

Apparatus Required: A prepared kit of transistor with connecting wires.

Formula:

The current gain in the common-emitter circuit

$$\beta = \frac{\Delta I_C}{\Delta I_B}$$

The resistance gain of the common emitter

$$R = \frac{R_{out}}{R_{in}}$$

Here,

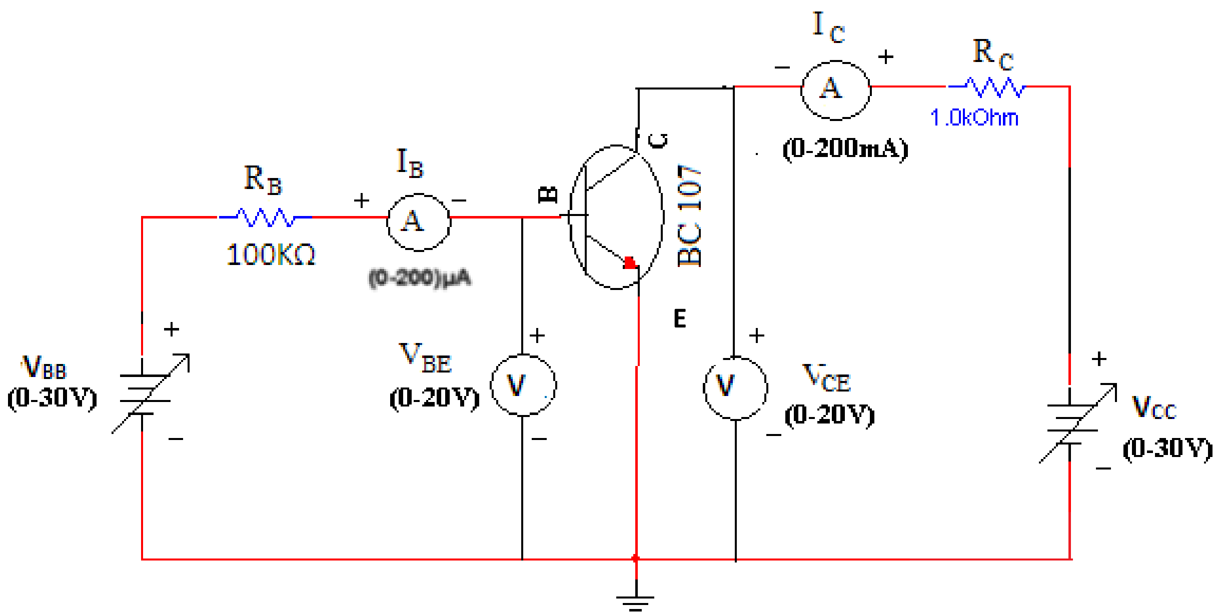
I_C collector current (output current)

I_B base current (input current).

$R_{in} = \frac{V_{BE}}{I_B}$ Resistance(input)

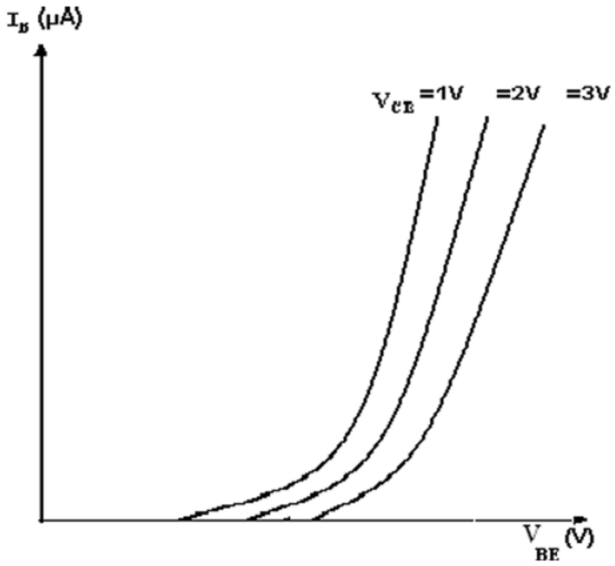
$R_{out} = \frac{V_{CE}}{I_C}$ Resistance(output)

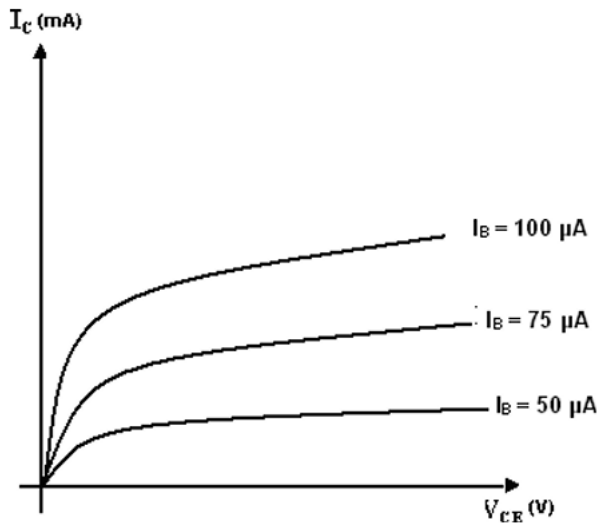
Circuit Diagram:



Model Graph:

Input Characteristics **Output Characteristics**





Observation Table:

Least Count of Ammeters =……………mA & …………….μA.

Least Count of Voltmeters =……………V

Table for Input Characteristics:

V_{CE} =………V			V_{CE} =………V		
V_{BE} (V)	I_B (μA)	$R_{in} = \frac{V_{BE}}{I_B}$ Ω	V_{BE} (V)	I_B (μA)	$R_{in} = \frac{V_{BE}}{I_B}$ Ω

Table for Output Characteristics:

V_{BE} =………...V			V_{BE} =………...V		
V_{CE} (V)	I_C (mA)	$R_{out} = \frac{V_{CE}}{I_C}$ Ω	V_{CE} (V)	I_C (m A)	$R_{out} = \frac{V_{CE}}{I_C}$ Ω

V_{BE} =………...V		
V_{CE} (V)	I_C (m A)	$R_{out} = \frac{V_{CE}}{I_C}$ Ω

Result:

The characteristics curves for the common emitter mode of given PNP/NPN transistor, are shown in the graphs.

Exp No : ……………. **Date : …………….**

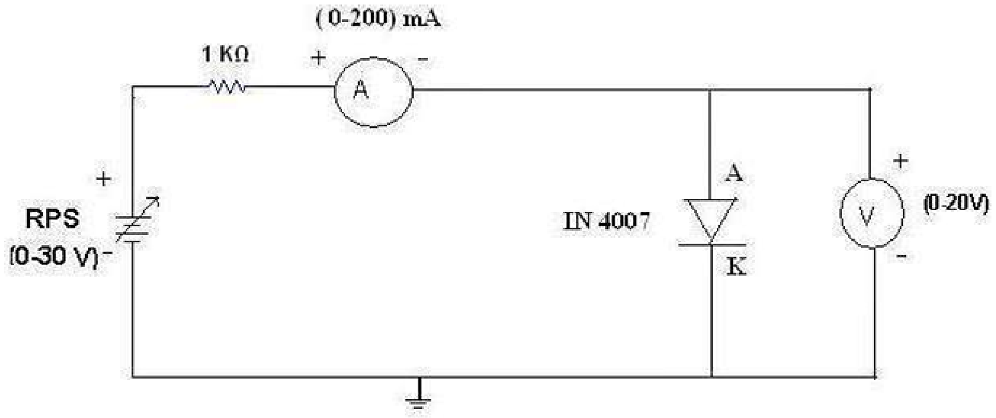
EXPERIMENT: STUDY OF DIODE

Aim: To study forward and reverse characteristics of Si and Ge junction diode.

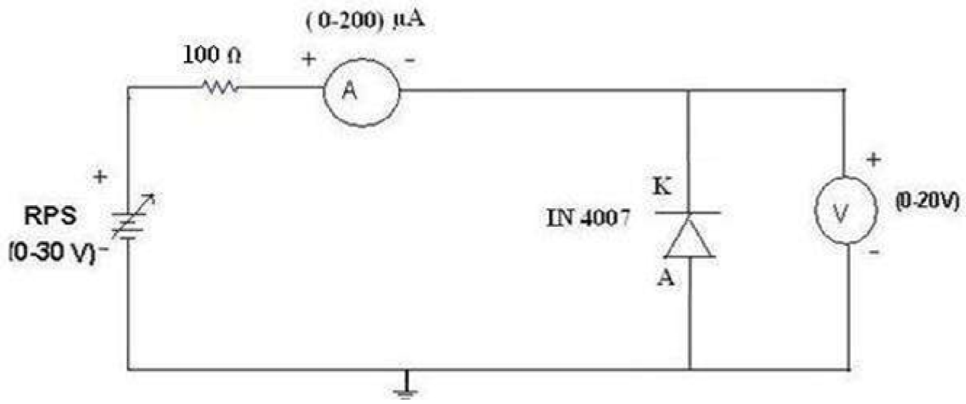
Apparatus Required: A prepared kit of PN junction diode with connecting wires.

Circuit Diagram:

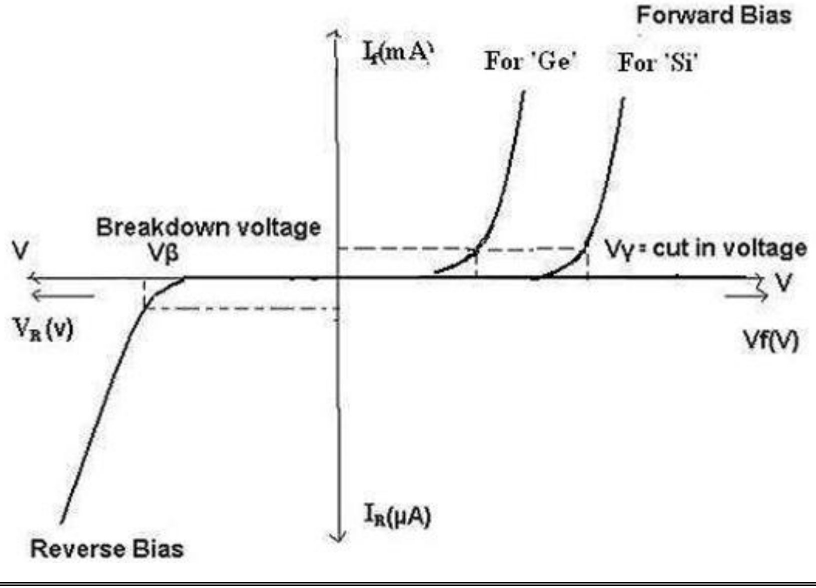
(i) FORWARD BIAS:



(ii) REVERSE BIAS:



Model Graph:



Observation Table:

Least Count of Ammeters =……………mA & …………….μA.

Least Count of Voltmeters =……………V

Table for Forward & Reverse Bias Characteristics:

Forward Bias			Reverse Bias		
S.No	V_F (V)	I_F (mA)	S.No	V_R (V)	I_R (μA)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Result:

The I-V characteristics curves for the Forward and Reverse bias of the PN junction Diode are studied.

i) The measured breakdown Voltage (Reverse Bias) is …………V

ii) The measured Cut-in Voltage (Forward Bias) is …………V

Exp No : ……………. **Date : …………….**

EXPERIMENT: REFRACTIVE INDEX

Aim: To determine the refractive index of the material of prism using a spectrometer.

Apparatus Required: Prism, Source of mercury light, Spirit level, and Spectrometer.

Formula:

The Refractive index of the material of the prism is

$$\mu = \frac{Sin\left(\frac{A+\delta_m}{2}\right)}{Sin\left(\frac{A}{2}\right)}$$

Here,

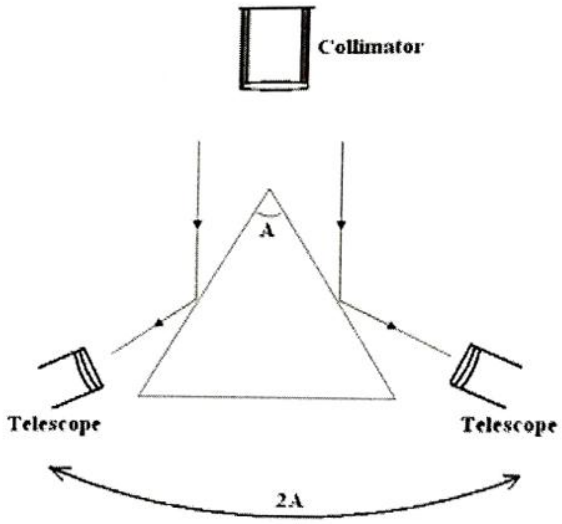
A is the angle of a prism

μ is the refractive index of the material of the prism

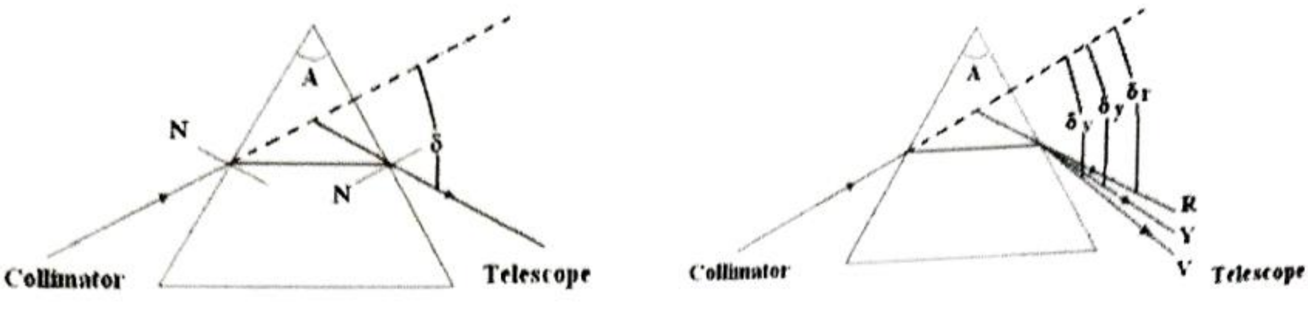
δ_m is the minimum angle of deviation.

Diagram:

Angle of Prism



The angle of minimum deviation



Observation Table:

Least Count of the main scale = 0.5° (degree)

Least Count of vernier scale = 1' (minute)

Table for Angle of Prism:

Window Vernier	Reflection on Left face (L)			Reflection on Right face (R)			Difference 2A $(V_{1L} \sim V_{1R})$ $(V_{2L} \sim V_{2R})$	Mean 2A	Angle of Prism A
	MSR	VSR	Total	MSR	VSR	Total			
V_1			V_{1L}			V_{1R}			
V_2			V_{2L}			V_{2R}			

Table for Minimum deviation of angle:

Colors	Window Vernier	Dispersed angle			Direct Angle			Difference 2A $(V_1 \sim V_{1D})$ $(V_2 \sim V_{2D})$	The angle of minimum deviation δ_m
		MSR	VSR	Total	MSR	VSR	Total		
Red	V_1			V_1				δ_r	
	V_2			V_2				δ_r	
Yellow	V_1			V_1	V_{1D}			δ_y	
	V_2			V_2				δ_y	
Violet	V_1			V_1	V_{2D}			δ_v	
	V_2			V_2				δ_v	

Calculation:

For Red

$$\mu_r = \frac{Sin\left(\frac{A+\delta_r}{2}\right)}{Sin\left(\frac{A}{2}\right)}$$

For Yellow

$$\mu_y = \frac{Sin\left(\frac{A+\delta_y}{2}\right)}{Sin\left(\frac{A}{2}\right)}$$

For Violet

$$\mu_v = \frac{Sin\left(\frac{A+\delta_v}{2}\right)}{Sin\left(\frac{A}{2}\right)}$$

Result:

i) Angle of Prism …………

ii) Refractive index of different colors

1) Red $\mu_r =$……………

2) Yellow $\mu_y =$……………

3) Violet $\mu_v =$……………

Exp No : ……………. **Date : …………….**

EXPERIMENT: DISPERSIVE POWER OF MATERIAL OF PRISM

Aim: To determine the dispersive power of the material of the prism using a spectrometer.

Apparatus Required: Prism, Source of mercury light, Spirit level, and Spectrometer.

Formula:

The Refractive index of the material of the prism is

$$\mu = \frac{Sin\left(\frac{A+\delta_m}{2}\right)}{Sin\left(\frac{A}{2}\right)}$$

The dispersive power of the prism is

$$\omega = \frac{\delta_v - \delta_r}{\delta_y} = \frac{\mu_v - \mu_r}{\mu_y - 1}$$

Here,

A is the angle of a prism

μ is the refractive index of the material of the prism

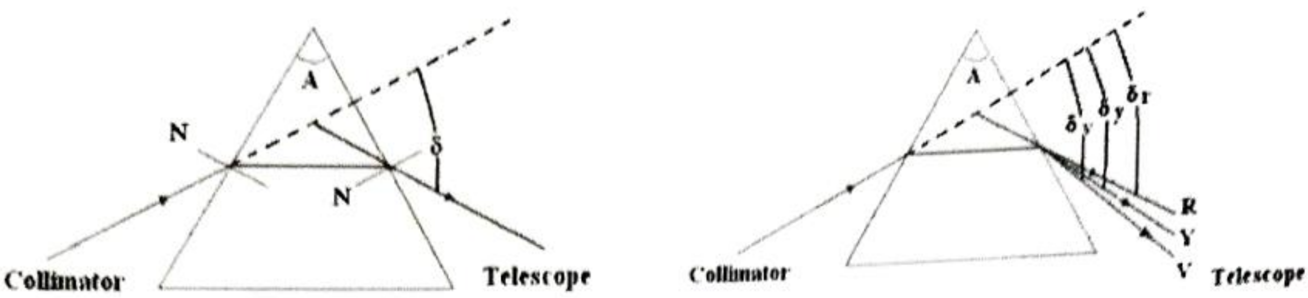
δ_m is the minimum angle of deviation.

$\delta_r, \delta_y, \delta_v$ is the minimum angle of deviation of red, yellow, and violet.

ω is the dispersive power of the prism.

Diagram:

The angle of minimum deviation



Observation Table:

Angle of prism = 60^{o}

Least Count of the main scale = 0.5^{o} (degree)

Least Count of vernier scale = 1’ (minute)

Table for Minimum deviation of angle:

Colors	Window Vernier	Dispersed angle			Direct Angle			Difference 2A $(V_1 \sim V_{1D})$ $(V_2 \sim V_{2D})$	The angle of minimum deviation δ_m
		MSR	VSR	Total	MSR	VSR	Total		
Red	V_1			V_1				δ_r	
	V_2			V_2				δ_r	
Yellow	V_1			V_1	V_{1D}			δ_y	
	V_2			V_2				δ_y	
Violet	V_1			V_1	V_{2D}			δ_v	
	V_2			V_2				δ_v	

Calculation:

For Red

$$\mu_r = \left. Sin\left(\frac{A+\delta_r}{2}\right) \middle/ Sin\left(\frac{A}{2}\right) \right.$$

For Yellow

$$\mu_y = \left. Sin\left(\frac{A+\delta_y}{2}\right) \middle/ Sin\left(\frac{A}{2}\right) \right.$$

For Violet

$$\mu_v = \left. Sin\left(\frac{A+\delta_v}{2}\right) \middle/ Sin\left(\frac{A}{2}\right) \right.$$

Result:

i) Refractive index of different colors

1) Red $\mu_r =$……………

2) Yellow $\mu_y =$……………

3) Violet $\mu_v =$……………

ii) Dispersive power of material $\omega =$ ………………

Exp No : ……………. **Date : …………….**

EXPERIMENT: PLANE TRANSMISSION GRATING

Aim: To determine wavelength of different colors of mercury light using a plane transmission grating.

Apparatus Required: Plane transmission grating, Source of mercury light, Spirit level, and Spectrometer.

Formula:

The wavelength of given colour by grating diffraction is

$$\lambda = \frac{(e+d)}{n} \, Sin\,\theta \quad (in\ A^o)$$

Here,

$(e+d)$ is the grating element

λ is the wavelength of colour of mercury spectral lines

θ is the angle of the given colour of light.

n is the order of diffraction.

Diagram:

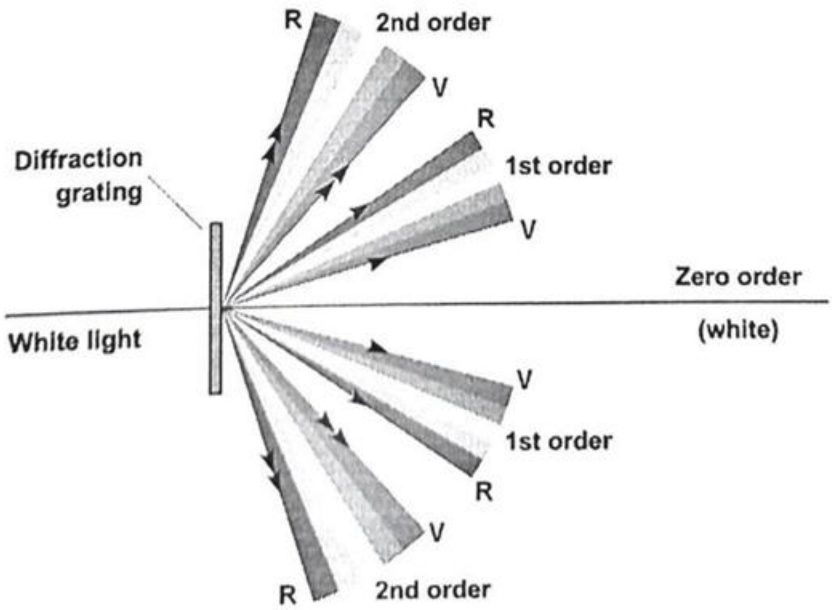


Fig 1: Diffraction pattern from grating

Observation Table:

Lines per inch on grating = 15000

Grating element $(e + d) = \frac{2.54}{15000}$ cm/lines

Least Count of the main scale = 0.5° (degree)

Least Count of vernier scale = 0.5' (minute)

Table for diffraction angle:

Colour	Window Vernier	Spectrum left of direct image (L)			Spectrum right of direct image (R)			Difference $2\,\theta$ $(V_{1L} \sim V_{1R})$ $(V_{2L} \sim V_{2R})$	Mean $2\,\theta$	Diffraction Angle θ
		MSR	VSR	Total	MSR	VSR	Total			
Violet	V_1									
	V_2									
Green	V_1									
	V_2									
Yellow	V_1									
	V_2									

Calculation:

For Violet

$$\lambda_v = \frac{(e+d)}{n} \, Sin\, \theta_v$$

For Green

$$\lambda_g = \frac{(e+d)}{n} \, Sin\, \theta_g$$

For Yellow

$$\lambda_y = \frac{(e+d)}{n} \, Sin\, \theta_y$$

Result:

The wavelength of different colours of the mercury spectrum

1) Violet $\lambda_v =$…………… A^o

2) Green $\lambda_g =$…………… A^o

3) Yellow $\lambda_y =$…………… A^o

Instructions

i) All group members must verify their calculations and results by faculties on the same day of the experiment in this observation book.

ii) After verifying your results in the Observation book, enter these readings in your Record notebook.

iii) The Record notebook must contain all these observations with the Theory of the experiment, Procedure, and Source of Errors & Precautions.

iv) The Blanck page of the Record notebook must contain a Diagram/Circuit diagram, Model graph diagram, Observation tables, and Calculations.

v) The Ruled page may contain all other writings including the Theory of experiment, Procedure, and Source of Errors & Precautions.

vi) Record Notebook must be submitted to get a signature every week before starting the next allotted experiment.