

School Code: 10908



CBSE Affiliation No. : 1730578

BHAGAT PUBLIC SR. SEC. SCHOOL

ALANIYA, KOTA



PHYSICS

ACTIVITY

2020-21

CLASS - XII



Affiliated to CBSE

Bhagat

PUBLIC SR. SEC. SCHOOL

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ACTIVITY 1

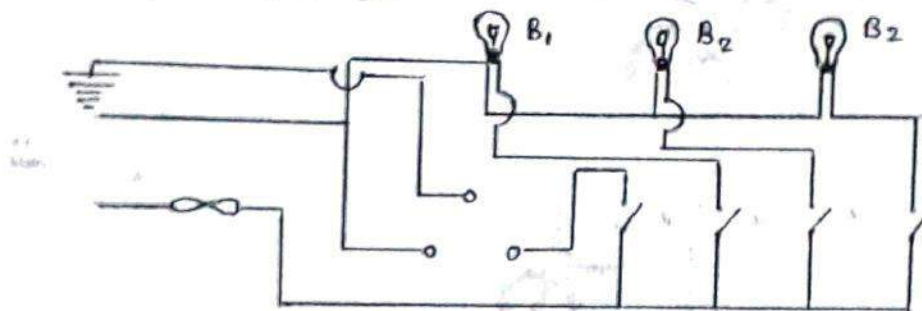
Aim :

To assemble a household circuit, comprising three bulbs, three (on/off) switches, a fuse and power source.

APPARATUS

Three bulbs, three (on/off) switches, flexible connecting wire (red and black), fuse and fuse wire, two pin plug, electric board.

Circuit Diagram



Observation : Make the switching on one by one then put them off one by one. Three for the circuit diagram is ok.

$$\text{list count of ammeter} = \frac{\text{Range}}{\text{No. of Div.}} = \frac{3}{60} = 0.05 \text{ amp}$$

$$\text{Total power consumption } P \text{ at any time. } P = VI$$

$$\text{Bulb } B_1 \quad P_1 = VI_1 = 220 \times 4 \times .05 = 220 \times 0.20 = 44 \text{ w}$$

$$\text{Bulb } B_2 \quad P_2 = VI_2 = 220 \times 5 \times .05 = 220 \times 0.25 = 55 \text{ w}$$

$$\text{Bulb } B_3 \quad P_3 = VI_3 = 220 \times 9 \times .05 = 220 \times 0.45 = 99 \text{ w}$$

$$P = P_1 + P_2 + P_3 = 44 + 55 + 99 = 198 \text{ w}$$

Result :

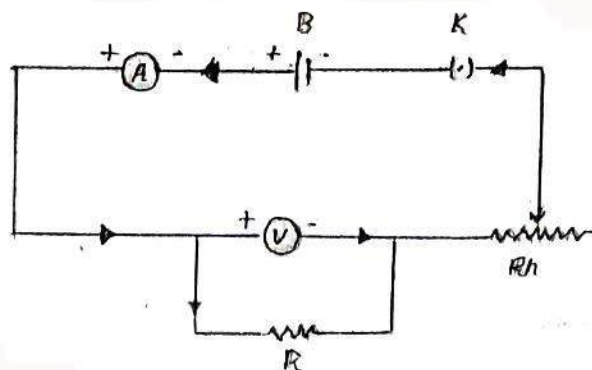
The bulbs glow when the switches is made on. Its stops glowing when the switch is put off.

ACTIVITY 2**Aim :**

To assemble the components of a given electrical circuit. (Ohm's law)

APPARATUS

Voltmeter, Ammeter, Battery Rheostate, Key Unknown resistance, Connecting wire.

Circuit Diagram

B = Battery
A = Ammeter
V = Voltmeter
R = Resistance Wire
K = Key
Rh = Rheostate

Procedure :

- (i) Connect the items as shown in Fig.
- (ii) For measuring current, ammeter should be connected in series with components.
- (iii) For measuring potential drop, voltmeter should be connected in parallel with the resistance coil or wire.

Assembly of all the components in electric circuit is complete.

ACTIVITY 3

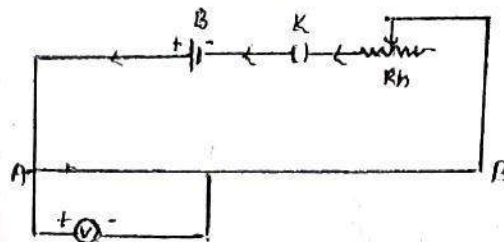
Aim :

To study the variation in potential drop with length of a wire for a steady current.

Apparatus

Meter Bridge or Potentiometer, Battery, Rhostat, Key, Voltmeter, Ammeter, Jokey and connecting wire.

Circuit Diagram



Observation :

Least count of voltmeter $V = \frac{\text{Total Range}}{\text{Total No. of Division}} = \frac{1.5}{60} = 0.025 \text{ volt}$

Observation Table:

S.N.	Length of resistance wire (cm)	Voltmeter reading $V = n \times \text{L.C.}$	$X =$ V/Cm
1	100 cm	$4 \times 0.025 = 0.1$	0.001
2	200 cm	$8 \times 0.025 = 0.2$	0.001
3	400 cm	$16 \times 0.025 = 0.4$	0.001

Calculation : Potential drop $x = \frac{v}{\ell}$ (w/cm)

1. $x_1 = \frac{v}{\ell} = \frac{0.1}{100} = 0.001 \text{ v/cm}$

2. $x = \frac{v}{\ell} = \frac{0.2}{200} = 0.001 \text{ v/cm}$

3. $x = \frac{v}{\ell} = \frac{0.4}{400} = 0.001 \text{ v/cm}$

Result : The potential difference is directly proportional to length a wire when steady current passing though it.

$V \propto \ell$

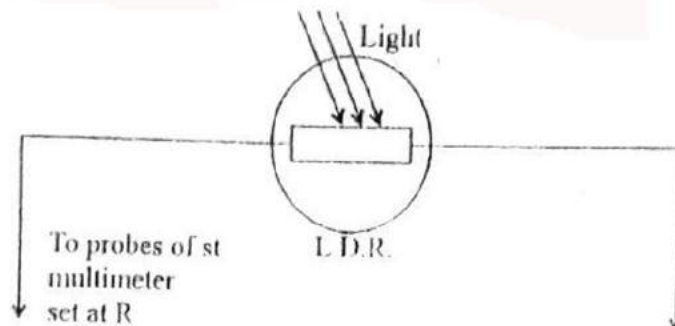
And $\frac{V}{\ell} = \text{constant}$

ACTIVITY 4**Aim :**

To study the effect of intensity of light (by varying distance) on L.D.R. (light dependent resistor)

Apparatus

An L.D.R., a multimeter, a source of intense light and a convex lens.

Diagram**Symbol of LDR****Theory :**

A light dependent resistor is made up of cadmium sulphide whose resistance depends on the intensity of light incident on it. A good quality LDR shown a variation of resistance from 10M in complete darkness to about 0.1 k in the day light. The symbol of an LDR is shown in Figure.

Procedure

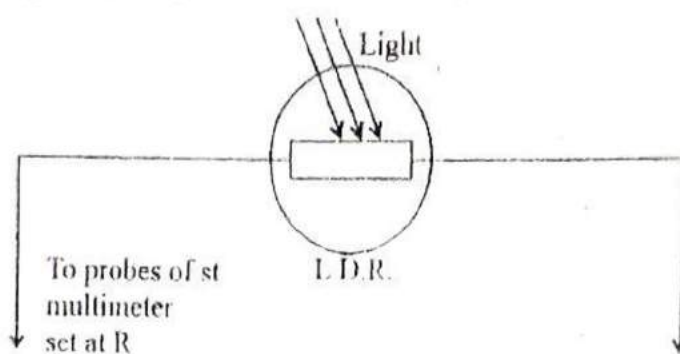
- (i) Turn the select switch and set it on R for the measurement of resistance.
- (ii) Plug the metallic ends of black probe in terminal marked common in multimeter and that of red in terminal marked as P (or +). Short the other metallic ends and adjust the 'R adjust' to get full scale deflection reading at zero ohm in the meter.
- (iii) Now touch the metallic probes to the two metal ends of the LDR Figure and read the value of resistance when -
 - (a) The source is kept at a distance of 2cm, fixing the source of light in a stand and keeping the L.D.R. vertically below it.

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- (iii) Now touch the metallic probes to the two metal ends of the LDR Figure and read the value of resistance when -
 - (a) The source is kept at a distance of 2cm, fixing the source of light in a stand and keeping the L.D.R. vertically below it.

- (b) Moving the source to 4 cm distance from the L.I.R. and
- (c) Moving the source to 6; 8 and 10 cm distances from L.D.R. and repeating observations three more times.
- (d) Record your observations in the table given below:

Observations Table : Effect. of distance of source on Resistance of L.D.R

No. of Obs.	Distance of Source from L.D.R. (cm)	Resistance of L.D.R. (Ohm)
1	150 cm	410 Ω
2	30 cm	750 Ω
3	45 cm	110 Ω

Conclusion :

As the distance of the source increases, the resistance of L.D.R. also increases, showing that intensity decreases with increase of distance.

ACTIVITY 5

Aim :

To identify a diode, An LED, transistor, IC, Resistor and Capacitor from mixed collection of such items.

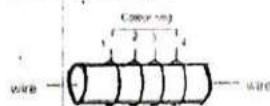
Apparatus

Multimeter, Battery, Above mixed collection of items.

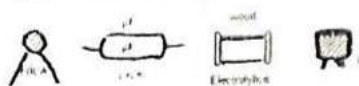
Circuit Diagram :

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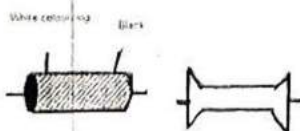
(i) Carbon resistor



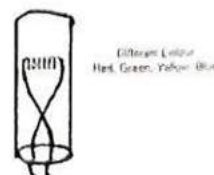
(ii) Capacitors



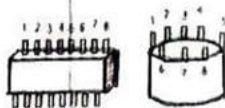
(iii) Diode



(iv) LED



(v) Integrated Circuit



(vi) Transistor



Observation :

Least count of Voltmeter $V = \frac{\text{Total Range}}{\text{Total No. of Division}}$

Observation Table :

S.No.	Observation	Legs	
1	Both direction current flow (same resistance)	Two	Resistor
2	Initially high but decays to zero	Two	Capacitor
3	Unidirectional current flow, emit no light	Two	Diode
4	Unidirectional current flow, emit light	Two	LED
5	More than 3 terminals	More 3	I.C.
6	Three Terminals	Three	Transistor (PNP, NPN)

No. of Obs.	Number of Legs	Device
1	More than 3	IC
2	Three	Transistor
3	Two	Capacitor, Diode or Resistor
No. of Obs.	Number of Legs	Device
1	Unidirectional emits no light	Diode
2	Unidirectional emits light	LED
3	Both directions (sleady)	Resistor
4	Initialy high but decays to zero	Capacitor

Result :

Identify the given component of mixture.

ACTIVITY 6

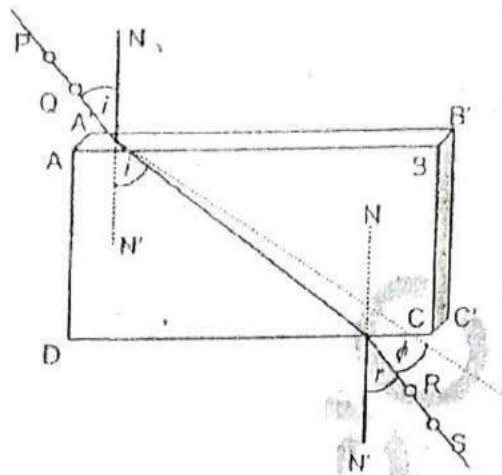
Aim :

To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.

Apparatus

Glas slab, Drawing board, white paper steet, drawing pin, office and protractor.

Ray Diagram :



Theory :

When a ray of light becomes incident on a parallel faced glass slab, it emerges from it in same direction as the incident ray. It only suffers a lateral displacement proportional to the slab thickness (+).

The lateral displacement it given by

$d = \dots\dots\dots$

Observation Table :

S.N.	Angle of incidence (i)	Angle of emergent (e)	Lateral displacement (d) = cm
1	40 degree	40 degree	1.8 cm

Result :

The ray of light emerging from a glass slab is parallel to the incident light and its laterally displaced.

$d = 1.8 \text{ cm}$