ELECTRICITY

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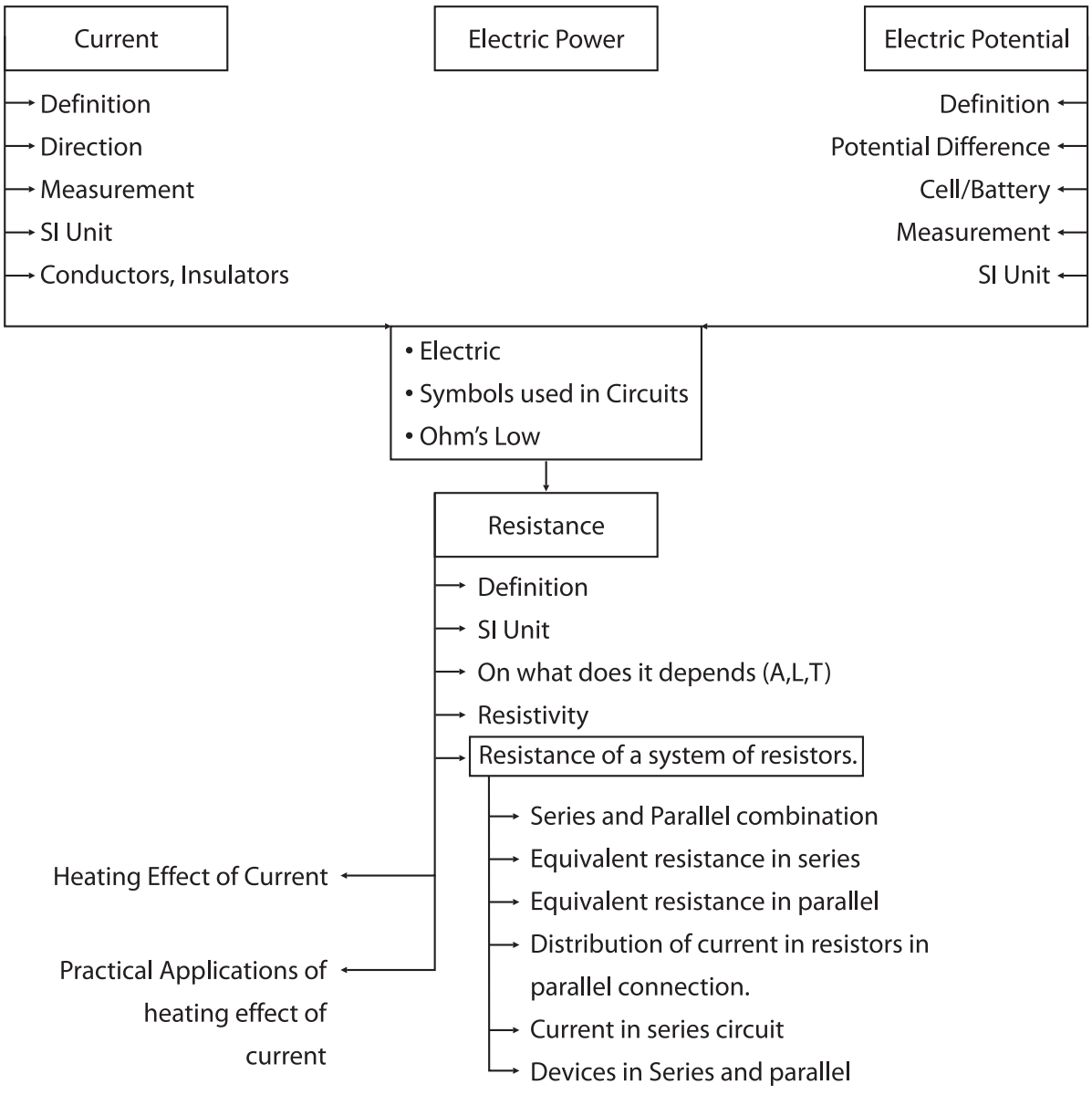
Introduction- Electricity is indispensible to us. It helps us in light, heat, water, comfort, information, communication, transport, medical treatment and entertainment. You must have seen the electric poles around your house. From these poles, electricity reaches our hoses through electrical wires. The source of all electricity is charge. Charged objects can exert forces on each other, like charges repel each other, unlike charges attract. Another important thing about the charged particles is that they can flow, the flow of charged particles is called an electric current. But they do not flow on their own. For flow of charges there has to be a potential difference. In this chapter we are dealing with the fundamental ideas of electricity, the governing rules and its applications in various areas. We shall also understand the heating effect of current, the electric energy/power and their applications.

Concept Mapping



Learning Objectives (General)

1. To develop interest & the habit of inquisitiveness.
2. To develop observational, analytical and interpretational skill
3. To develop the logical and decision making approach.
4. To enable the students to organise their thoughts and application of knowledge in daily life experiences.
5. Learning by doing develops the experimental skill

Learning Objectives (Specific)

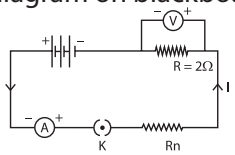
- The basics of electricity.
- Explain the working of domestic circuit, Iron, heater fuse, bulbs etc.
- Show practically how electricity moves, both in series and parallel circuits.
- To develop computing skill of consumption of electricity in their own houses and neighbourhood.
- Follow the basic safety measures while working with electrical appliances

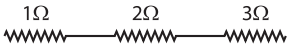
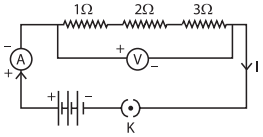
Teaching Learning Material

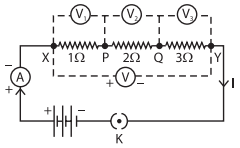
1. Dry cells - three of 1.5v each.
2. Ammeter
3. Voltmeter
4. Key
5. Resistance Coil of 1Ω, 2Ω & 3Ω
6. Variable resistance or rheostat
7. Insulated copper wire for connections.
8. Clips

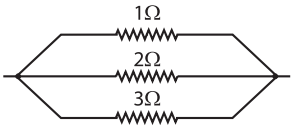
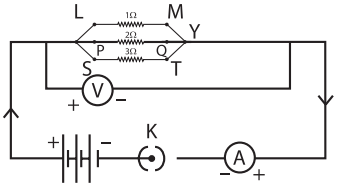
LESSON PLAN ELECTRICITY

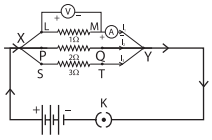
Topic - Resistance of a system of resistors (Proposed topic is based on assumption that students have already studied Ohm's law and have idea of resistance)

Teaching	Teaching learning Activities (Divide the class in groups of H/S Students		Assessment Techniques
	Teacher Activities	Student Activities	
1. Recalling of Ohm's Low	• Teacher will distribute the required material to each group. • Teacher draws the circuit diagram on blackboard.  • Teacher asks the students to set up the items provided in electric circuit as shown on blackboard. • Teacher given ten minutes, to set up the items properly for the electric circuit shown, and observe each group by moving in the class. • Teacher helps/ corrects the students and instructs-Switch off the circuit once they have checked it for- Ammeter shows deflection on right side to zero. Voltmeter shows deflection on right side to zero. • Teacher notes down the response of each group by interacting individually with each group. • Teacher evaluates the group using active-learning tool-Activity performance and by class response assessment worksheets	• Students Separate the items needed to set the electric circuit shown on blackboard from given sets of items i.e- 1. Voltmeter 2. Ammeter 3. Key 4. 6V battery 5. Resistance of 2Ω 6. Rheostat • Students setup a electric/ circuit shown by the teacher. • Student ensu11/10/10e about connectivity of components in Electric circuit with the help of teacher. • Students notes down the variation in reading of voltmeter and ammeter by changing resistance with the rheostat. • Students found $\frac{V}{I}$ approximately equal to 2Ω • After competition of the worksheets, the students could exchange their work with their pertains and correct it.	1. Hands-On Piratical Examination. Evaluation Criteria Collection of items - 1mark Setting of items - 1mark Checking of Circuit - 1 mark Observation of reading - 1 mark Observing of reading - 1 mark Total - 5 marks 2. Class Response Assessment Worksheets (Attached) Evaluation Criteria Ten Questions -½ marks each Total - 5 marks

	• Teacher could photocopy the class response assessment worksheets and distribute it to the class. • Teacher could call out the correct answers while the students correct them.		
2. Resistance in Series Combination	• Teacher writes on blackboard $= \frac{V}{I}$ constant =- R, called resistance. • Teacher asks the students to take 1Ω, 2Ω and 3Ω resistance from the set of items given to them. • Teacher asks the students to connect the resistances and the diagram on black board.  • Teacher asks the students to join the resistors end to end. • Teacher asks the students that when resistors are connected end to end then their combination is called series combination. • Teacher asks the studetns to connect the electric components as per circuit diagram shown on black board.  • Teacher asks the students to plug the key, not the ammeter reading. • Change the position of ammeter to anywhere in between the resistor, Note the ammeter reading each time.	• Students note down in class work copy the key points explained by the teacher • Students tries to connect the resistances • • • Some groups takes the help of teacher • Students setup the electric circuit.	3. Hands-On Practical Examination Evaluation Criteria COllection of items - 1 mark Setting of resistances - 1 mark Resistances in series - 1 mark Setting of Electric circuit - 1 mark Reading of voltmeter at different positions - 2 marks Reading of Ammeter at differnet - 2 marks Position

	• Do they find any change in the ammeter reading • Teacher concludes ammeter reading is same independent of its position is electric circuit. • Teacher confirms that in series combination of resistors, the current through each resistor is same. • Repeat all steps using voltmeterbyconnecting it as shown in electric circuit.  • Connect the voltmeter across XY, note the reading; • Now connect it across XP, note the reading • Now connect it across PQ, note the reading • Connect the voltameter again across QY, not the reading. • Teacher asks the students that they will observe that total potential difference across a combination of resistors in series is equal to the sum of potential difference across the individual resistors. • Means $V = V_1 + V_2 + V_3$ • Teacher concludes by writing on blackboard that - I is same for all resistors connected in series • V is different for all resistors connected in series. • By ohm's law we know that V = IR	• Students note down the reading of ammeter by changing its position, as directed by teacher. • Students note down the key points in class work copy. • Students notes down the reading of voltmeter by changing its position • Students notes down the key points about potential difference. • Students conclude the relation between equivalent resistance of individual resistors connected in series of and the current also with the potential difference.	Conclusion - 3 marks Total - 10 4. Oral test Q.1. Name the necessary condition of an electric circuit Q.2. Terminals of a resistance are interchangeable. Explain Q.3. What do you mean by series combination of resistances? Q.4. How can you arrange a given set of resistors so that the same current flows through all? Q.5. What is the effective resistance of three resistances of the same value connected in series? Total - 5 marks

	• Similarly $V_1 = IR_1$ • $V2 = IR_2$ • $V3 = IR_3$ • So $V = V_1 + V_2 + V_3$ means • $IR = IR_1 + IR_2 + IR_3$ $\boxed{R = R_1 + R_2 + R_3}$ • $Rs = R_1 + R_2 + R_3$ • If several resistors are formed in series, the resistance of combination equals the sum of individual resistance denoted by Rs. • Rs is more than any value of individual resistance		Q.5. What is the effective resistance of three resistance of the same value connected in series? Total 5 marks
Resistance in parallel combination	• Teacher asks the students to take again 1Ω, 2Ω and 3Ω resistance from the set of items given to them. • Teacher asks the students to connect the resistances as shown on blackboard.  • Teacher asks that this type of combination of resistors is called parallel combination • Teacher gives the following instructions while moving in class, observing the students • Teacher asks the students to connect the electric components as per circuit diagram shown on blackboard.  	• Students connect the resistances 1Ω, 2Ω and 3Ω as directed by teacher. • Students sets the items in electric circuit as drawn by the teacher on blackboard. • Students notes down the readings of voltmeter and ammeter by changing their positions in electric circuit.	5. Hands on practical examination Evaluation criteria Same as given in assessment technique no. 3 6. Oral test i) What do you understand by parallel combination of resistances? ii) How can you arrange a gives set of resistors so that the same voltage drop accurs across all? iii) What is the effective resistance of three resistances of the same value connected in parallel? iv) Why is the resultant resistant of parallel combination of resistances always less than the minimum resistance present in the combination?

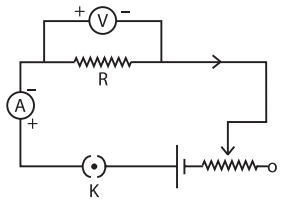
	• Plug the key, note the reading of ammeter and voltmeter. Note the reading of voltmeter and ammetee by connecting shown on blackboard.  • Connect the voltmeter in parallel with resistor 1Ω and ammeter in series with 1Ω, note the readings • Now do the same procedure with resistors 2Ω and 3Ω. • Teacher should help the students to reaching the conclusion. • Teacher concludes the observation and writes the key points on black board. • Ammeter reading is different for its connection with 1Ω, 2Ω and 3Ω • Total current I equals the sum of separate current through each branch $I = I1 + I2 + I3$ • Voltmeter reading remains same • By Ohm's law V = IR or I = • $I = I_1 + I_2 + I_3$ means $\frac{V}{R} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$ • Teacher will asks some questions orally to recaptulate the content. • Teacher will help the students to apply the understanding of the concept in applicances used at home like elect. bulb, elect. heater	• Students takes the help of teacher. • Students notes down the key points for parallel combination of resistors.	v) Is it possible to have both serves and parallel combinations of resistances in the same circuit? Total - 5 marks

	• Teacher can plan more activities to revise the content.	• Students apply their knowledgeandunderstand that electric bulb and electric heater cannot be connected in series.	7. Home work Assessment worksheet (attached) Evaluation criteria Ten questions - 1 mark each Total - 10 marks

Class Response Assessment Worksheet

1. Which two circuit components are connected in parallel in the circuit diagram ?

   a. Rheostat and voltmeter
   b. Voltmeter and resistor
   c. Voltmeter and ammeter
   d. Ammeter and resistor



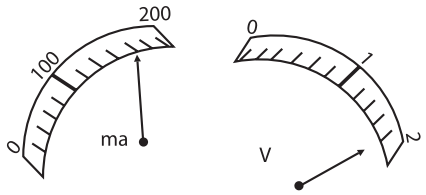
Ans (b) ½ marks

2. In a voltmeter there are 20 divisions between the 0 mark and 0.5 v mark. The least count of voltmeter is-

   a. 0.20v b. 0.025v c. 0.050 v d. 0.250 v

Ans (b) ½ mark

3. The current flowing through a resistor connected in a electrical circuit and potential difference developed across its ends are shown

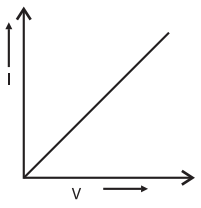


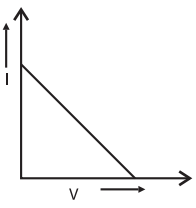
The value of resistance of the resistor in ohms is

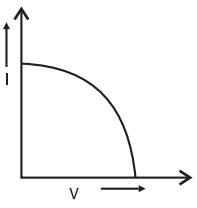
   a. 25 b. 20 c. 15 d. 10

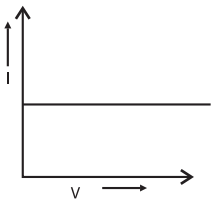
Ans (d) ½mark

4. Which of the following graphs a relationship between current and voltage?

   a. 

   b. 

   c. 

   d. 

Ans (a)

5. Which of the following is the correct relation between V, I & R.

   a. $V = \frac{I}{R}$ b. $R = \frac{V}{I}$ c. $V = \frac{R}{I}$ d. R = VI

Ans (b)

6. The unit of resistance is–

   a. Ohm b. Volt c. coulomb d. Ampere

Ans (a)

7. The instrument used for current measurement is-

   a. Galvanometer b. Voltmeter c. frequency meter d. Ammeter

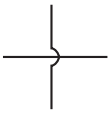
Ans (d)

8. The symbol  indicates

a. Key b. Resistor c. Bulb d. Rheostat

Ans (d)

9. Symbol commonly used in circuit diagrams for wires crossing without joining is-

a.  b.  c.  d. 

Ans (c)

10. Which of the following material can not be used in connecting wires for connecting the components of electric circuit.

a. Aluminium b. Bakelite c. Copper d. Iron

Ans (b)

Home work Assessment worksheet

1. How should the two resistances of 2Ω each be connected so as to produce an equivalent resistance of 1Ω?

A. Parallel combination

2. You are given three resistance of 1, 2 and 3Ω. How with the help of these resistances you can get 6Ω?

A. Series Combination

3. In a resistive electric circuit, two resistances are connected in series across a battery of 220 V and the voltage drop across one resistance is 150 V, calculate the voltage drop across the other resistance.

A. 70 V

4. Judge the equivalent resistance when the following are connected in parallel (i) 1Ω and 106Ω (ii) 1Ω, 103Ω and 106Ω

A. Slightly less than 1Ω

5. Give one advantage of connecting electrical devices in parallel with the battery, instead of connecting them in series.

A. Components Keep working if one device fails

6. What is disadvantage of a series circuit?

A. Circuit breaks, if one device fails.

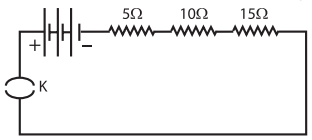
7. When two resistors of 10Ω are placed in parallel. Find the current flowing in them with a potential source of 5 Volt.

A. 0.5A in each resistor

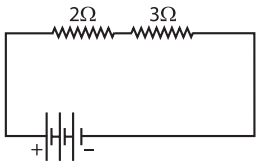
8. When two resistors of 10 Ω are placed in series. Find the current flowing in them with a potential source of 5 Volt.

A. 0.25 A

9. Draw a schematic diagram of an electric circuit consisting of a battery of two cells each of 1.5V, 5Ω, 10Ω and 15Ω resistor and a plug key, all connected in series.

A. 

10. What is the effective resistance in the given circuit?

A. 5Ω 

Total - 10 marks 1 mark each question

SCIENCE QUIZ

Topic – Electricity

Objectives – To enable the students to

Revise the concepts given in the chapter

Recall the mathematical formula involved

Observe and interpret the graph

Answer the questions based on the content of the chapter

Situation – The activity is conduced in the class to cover a chapter /revision of the chapter class is divided into teams, a team may contain 10 to 12 students

Time required – 15 minutes for a team.

Skill developed – Thinking, Problem solving, Alertness Scientific Attitude, Creative

Material Required – Blackboard, Chalk, Question bank prepared by teacher, stop watch

Procedure (a) Teacher makes clear the rules for quiz to all the teams, as follows.

1. There will be three rounds for each team. (detail is given at the end of activity)
2. It a team gives wrong answer or no answer then 1 marks will be deducted and bonus marks will be awarded to answering team.
3. Teacher draws a score board on the black board as shown, Tally method can be used for awarding marks.

Round	Team A	Team B	Team C	Team D
Ist	𝍸	II		
2nd	III	II	𝍸 I	
3rd	II			
Total				

4. Teacher should make effort in a sense so that each student should get minimum one chance to answer.
5. While getting the answer from the students teacher can make out the weak puts of the chapter of the students and may plan for his remedial there will be three rounds, in quiz.

Ist round, One words answer, five questions will be asked from each team, 1/2 minutes for each question, Total time needed - 2 1/2 minutes.

Exacmple for Questions

Total marks-05

Q.1. Name the charge responsible for the conduction in a conductor?

Ans. Electron

Q.2. What type of connection we use at home?

Ans. Parallel Connection

Q.3. Name the device used to safeguard electrical devices at home?

Ans. Fuse wire

Q.4. Who is responsible for driving current in a conductor?

Ans. Cell or Battery

Q.5. What is SI unit of electric potential

Ans. Volt

Q.6. Name the instrument used to measure electric current?

Ans. Ammeter.

2nd round, numerical based questions, five questions will be asked from each team, 1 minutes for each question will be given student can use pen and paper for computation work. Total time needed-5 minutes, Total marks – 05

Examples for Questions

Q.1. A conductor of resistance 10Ω is connected to a cell of emf 2 V. What will be current following through the conductor?

Ans. 0.2 A

Q.2. Calculate the amount of heat energy produced in 5 minutes by an electric heater rated at 1000w.

Ans. 3×105J

Q.3. If the length of conductor having resistivity 1.5 × 10-8 Ohm-m is doubled, calculate its new resistivity.

Ans. No Change in resistivity.

Q.4. An electric bulb is rated 220 v and 100w. When it is operated on 110v, what will be the power consumed?

Ans. 50 w

3rd round, Rapid fire round, True/False type five question will be asked from each team. 30 sec will be provided for each question Total time needed – 21/2 minutes, Total marks – 05

Examples for True/False

State True/False

1. When bulb are connected in series, the lower power bulb glows brighter

   True

2. Nichrome is used for making standard resistances as it readily varies its resistance with temperature.

   False

3. A body can have a charge less than an electron

   False

4. All Conductors conduct equally.

   False

5. 1kwh is used as unit to compute electricity bill.

   True

SYMPOSIUM

Topic – Electicity

Objective – To enable the students to

Learn some topics by self study

Make use of learning resource centre like library, internet etc.

Develop confidence to present a topic before an audience.

Situation – The activity is conducted in the class.

Time required – 5 minutes for a student.

Skill developed – public speaking, verbal expression knowledge of content.

Procedure – Teacher selects some good speakers of the class may be size or seven.

Teacher may distribute the topics among the students related with the knowledge of chapter electricity.

Students are given four to five for their preparation.

On the day fixed by teacher for symposium students can be asked to present papers. On their topics

Areas of assessment

Depth of content - 3

Presentation of content - 3

Use of audio visual aids – 2

Comprehension of the topic – 2

Total – 10

Examples for topic of Symposium –

- Electricity is an unavoidable source of energy
- Practical application of Heating effect of current.
- Calculation of Electrical energy consumed and saving tips.
- Study of factors on which the resistance of a conductor depends
- Importance of parallel circuits

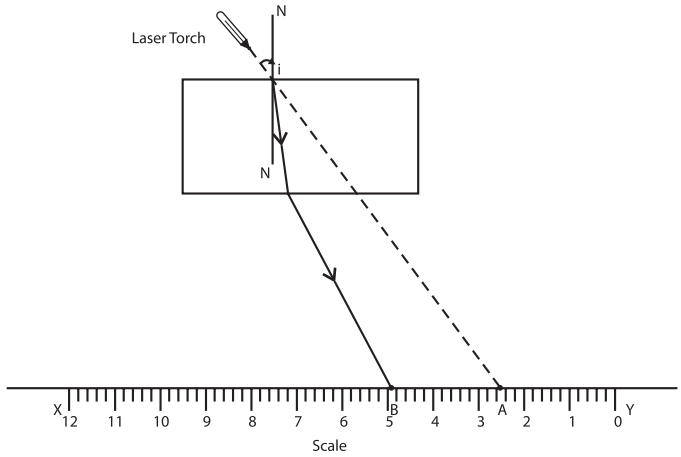
SOME SUGGESTED PROJECTS FOR FORMATIVE ASSESSMENT

Science Class X

Project No. 1

Topic – Refraction and lateral displacement in the glass slab. (Chapter – Light – reflection & refraction)
Objective – Understanding the concept of lateral displacement.
Skills development – Demonstrative, Observational & interpreting.
Situation – Class room, in groups under observation of teacher.
Material Required – Glan Slab, Drawing board, Laser light, drawing pins. Scale, Paper, Protractor, Pencil
Method –

1. A plane sheet is fixed on drawing board.
2. Glan slab is placed at the middle and its boundary is marked with pencil
3. draw normal at pint A, and incident ray from point A making an angle 30°.
4. Positioned the laser light along the incident ray and slab on its boundary.
5. Place the scale along the line XY as shown in fig of arrangement
6. Switch on the laser and see the light on the scale kept on the other side.
7. Note its reading on the scale.
8. Change the angle of incidence at least five times and again note the position of light on the scale



9. Now take the slab away, and find the position of light on the scale for each of the angles already taken with slab and record the same.
10. In each case of observation find the displacement of light.

Assessment Criterial

- Experimental Skill – Setting of items as per direction of teacher and taking observations. 3 marks
- Computing Skill, drawing skill, recording of observations in observation table 3 marks
- Drawing Conclusions 2 marks
- Application of knowledge 2 marks

Total – 10 marks

To test the application of knowledge the following oral questions can be asked-

1. Will a block of any transparent medium displace the light laterally?
2. If the opposite sides of the slab are not parallel, what will be your observation?
3. Will the experiment be possible with white light?

Note – Laser light is strong coherent light It should not be pointed to eye, the light should be observed only with spot formed by it either on the wall or on scale.

Project No. 2

Topic – Dispersion of white light by a prism.

Objective – Understanding the concept of dispersion of light.

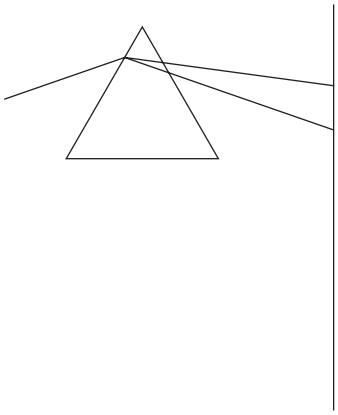
Skills developed – Experimental skill, creative and observational skill.

Situation – class room, in groups under observation of teacher.

Material required – Small box of cardboard e.g., shoebox. Filled with small tube light in it, prism.

Method –

1. With the help of teacher a small tube light is filled in shoe box.
2. Cut out a very small hole on its one side as shown.



3. Keep the shoebox on a table, when the tube light will be switched, on, a ray of white light will emerge from the hole.
4. Keep the prism on the table such that the prism roots on its triangular base and white light emerging from the slit through the shoebox falls on its refracting surface as shown in the arrangement.
5. Look at te emergent ray from the other refracting side of the prism. If the emergent ray is not visible, rotate the prism slightly If will change the angle of incidence of the ray of white light and the emergent light will become visible.
6. Instead of one emergent ray of white light, emergent rays of various colours forming the band of spectrum will be seen.
7. In spectrum, all colour bands may not appear separate, but there will be gradual change in the colours at the boundaries of two bands.
8. White light is made up of lights of seven different colours and each suffers a separate refraction on the refracting surface of the prism, as different colours travel through glass with different speeds. So undergo different angles of deviation.
9. Violet light is bent the most and red light the least.

Project No. 3

Topic – Force on a current carrying conductor in magnetic field.

Objective – Understanding of factors on which force on a current carrying conductor depends.

Skill development – Organising, Creative, experimental, Observational and interpreting skill.

Situation – Class room, in groups under observation of teacher.

Materials required – Copper wire, wooden stands rubber bands, marked paper, battery, Key, horseshoe magnet

Method –

1. Hang a copper wire between two wooden stands by using rubber bands. Fix a market paper behind the copper wire to note any change in its position.
2. Make connections to provide current in the copper wire from a battery. Use plug key in the circuit
3. Keep a strong horseshoe magnet in such a way that the copper wire lies in between the poles & note the position of the copper wire on the marked paper when the plug key is open.
4. Observe the changes in the position of the copper wire when the plug Key is inserted.
5. Observe the changes in the position of the copper wire, by reversing the poles of magnet, by changing the direction of current.

MAGNETIC EFFECTS OF ELECTRIC CURRENT

Introduction

Imagine a world where there is no electricity no electric light, no trains, no telephones, no electric motor, no electrical appliances no generators and no personal computers. In previous chapter students learned about the basic laws concerning steady electric current In this chapter students will study about relation between electricity and magnetism.

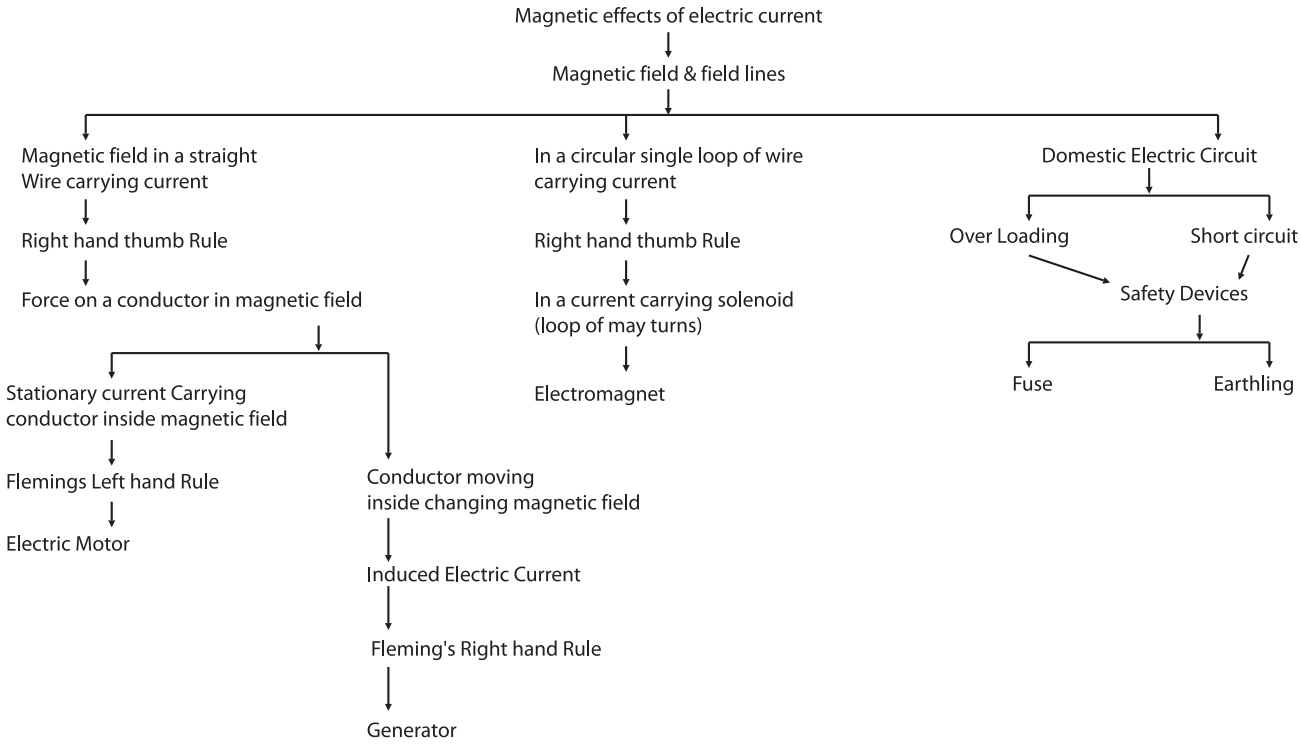
Electricity & magnetism were considered separate and unrelated phenomena for a long time. In 1820 experiments on electric current by oevested, Ampere and a few other scientists established the fact that electricity and magnetism are inter-related they found that electric current deflects and magnetic compass needle placed in its surrounding. This naturally raises the question like:

Is the converse effect possible?

Can moving magnets produce electric current?

After doing the suggested activities in the class safe studying this chapter students will find the answers to above questions themselves. An electromagnet and an electric motor.

Concept Mapping



Learning Objectives

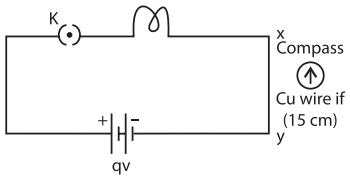
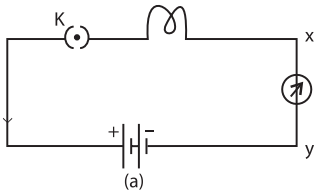
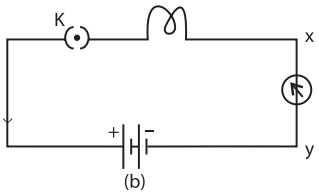
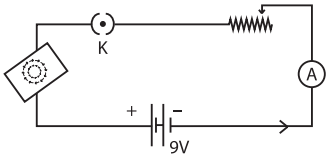
After learning this chapter with the suggested methods student's will

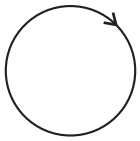
1. Understand and hove the knowledge of the relationship between electricity and magnetism.
2. Develop observational & decision making skill by doing the activity themselves.
3. Try to correlate the daily life experience while using electrical appliances with the concept taught in the class.
4. Learn appropriate technique to perform the activity/Expt. Himself/herself
5. Develop interest in knowing the construction and working of various appliances
6. Appreciate the contribution of various scientists towards the improvement of quality of life by formulating concepts of practicl utility
7. Be able to apply theoretical knowledge in practical situation e.g. checking of fuse
8. Analyse the difference between electric motor and generator
9. Be able to make working model of electromagnet and electric motor
10. Be able to handle appliances at home more efficiently

Material Required

1. Bar magnet
2. Magnetic compass (Twelve in number)
3. Copper connecting wire
4. Enamelled copper wire
5. Sand paper
6. Torch bulb or led
7. Cell of 9v
8. Card Boand
9. Pencil and eraser
10. Key
11. Rheostat
12. Ammeter

Teaching point	Teaching learning Activites		Evaluation Questions
	Teacher Activity	Students Activity	
1. Magnetic field around a conductor on passing electriccurrent through it.	Class is divided into groups of 4 students each rach group has following material i. Copper wire of gauze 20 and of length 15 cm ii. magnetic compass iii. Cell iv. Key v. Sand paper vi. copper connecting wire vii. Torch bulb or LED		Oral Assessment to check the previous knowledge of students Q.1. All the components of this circuit area joined in series or are in parallel? Q.2. Where is the magnet in magnetic compase? Q.3. Why does a compass needle gets deflected near a bar magnet?

	To draw the following circuit diagram on the Black Board  Place the compass needle near the Cu wire XY and observe the deflection in the magnetic compass. What this deflection in magnetic compass shows?	Each group wil complete the circuit diagram and to follow teacher's instructions.	Q.4. What is the pattern of magnetic field lines of a bar magnet. Q.5. What is the direction of these field lines
Direction of magnetic field produced when current is passed through a straight conductor	Half of the groups in the class will make circuit diagram (a) Rest of the groups will make circuit diagram (b) On completing the circuit diagram, Switch on the Key and note down the direction of deflection of magnetic compass needle teacher activity Direction of Current XY in / Deflection in needle	 (a) To Keep Magnetic compass below the copper wire xy  (b) Observations Groups (a) X to Y — N to E Groups (b) Y to X — N to W	Q.6. If direction of magnetic field produced depends on the direction of electric current passed through the conductor?
Tracing of magnetic field due to current passing through a straight conductor	  Orientation of needles when current moves into the plain of the paper. (i) Insert the thick copper wire through the centre, normal to the plane of the rectangular cardboard (ii) Use cellotape to fix the cardboard so that it does not slide up or down. (iii) Make the circuit as shown in circuit diagram		

	(iv) Place a compass needle near the wire on the card board (v) Now switch on the key. (vi) Take another compass needle & keep its spole touching the N-pole of previous needle and also goon marking the poles with pencil dots. Repeat this with number of needles. (vii) Now remore al the needles and noin the dots. (viii) Now again place the needle slightly away as compared to previous position and repeat the steps (v), (vi) & (vii). (ix) Again a bigger circle with bigger radus is formed. (x) Again place a magnetic needle on the card board and switch on the current and mark with the pencil dot, the deflection of the needle. (xi)Now increase the current. Using rheostat and again mark with the pencil dot, the deflection of the needle, which will also increase. (xii) Now for the same current mark the deflection of the needle when needle is near the wire and when the needle is moved away from the wire and observe that deflection has decrased. (xiii) Make a dark circle on the copy with a sketch pen and put an arrow on it in clockwise direction.  (xiv) Now reverse Opposite side the same page & see the direction of the arrow.		Questions for involvement of students in class-activity Q.1. What is the shape of magnetic field produced from a straight wire carrying current Q.2. How we concluded that magnetic field increases with the increase in current? Q.3. How we concluded that magnetic field produced depends on the distance? Q.4. What is the direction of concentric circles clock wise or a ni clockwise when current moves into the plane of the paper? Q.5. If the direction of the current passed through the conductor is changed than what will be the dirction of magnetic field produced? Q.6. If the direction of the arrow on the page is same or in different direction from the opposite side of the page?
Right hand thumb rule	Imagine the straight conductor in your right hand such that thumb points in the direction of curling of fingers of right hand gives the direction of magnetic field liens. On chart paper-Right hand tumb rule		Oral Evaluation Repeat Right hand thumb rule by holding the wire in your right hand when (a) Current is moving in upward direction (b) When current is moving in the down ward direction.

QUESTION FOR CCE

1. What important observation did oerested make in his experiment with current carrying conductor?
2. What is the form of magnetic field lines due to a straight current carrying conductor?
3. Name & state the rule to find the direction of magnetic field due to a straight current carrying conductor.
4. On what factors deflection of magnetic needle depends when it is placed near the conductor carrying current.
5. Draw the magnetic field lines around a straight current carrying conductor
6. 5 marks for activity performace in the class

   Assessment criteria

S.No.	Marks
(i) material	1
(ii) correct joining	2
(iii) observation	1
(iv) conclusion	1

	Gasps	Measures
1.	Ass CCE requires learning progress of students at regular time intervals sometimes it is not possible due to shortage of teachers.	Zero vacancy can be done by employing unemployed youth as guest teachers
2.	Under CCE-teaching should be based on learning needs and potential of different students which is not possible due to high student, teacher ratio.	Teacher can divide the class into homogeneous groups and teacher should be flexible in selecting the technique according to the learning needs.
3.	Evaluation can be based and controversial	(a) For this teacher can notify assessment criteria ahead of evaluation. (b) Peer assessment will also help in non-controversial evaluation.
4.	Sometime teachers can be non-judgemental about certain personality traits	All subject teachers consist together once a month & can discuss the specific personality traits of an individual child before grading him/her.
5.	Due to grading system-there is no difference between student scoring 91 or 100	It is better to explain students about the acquiring of various skills & then to complete
6.	Students may begin to lose the urge to study as less portion to study & no Boards.	It is better that students should learn to gain knowledge not that learning should be examination oriented.
7.	For students CCE-means more projects and more of assignments	For this school principal should chalk out a systematic plan before the starting of the session with consultation of teachers week wise schedule of formative assessment for every subject listing various techniques according to the content & concept of the chapter.
8.	Grading system will not help students to decide their stream efficiently & effectively for higher class.	For this aptitude tests can be given by the students
9.	No mompetition may lead to less seriousness.	There can be competition in various groups in a class then different schools at zonal level, district level do.
10.	Students to lose interest for back of individual attention by teacher	Activity Technique used by teacher should be such that it is related learner's daily life experience
11.	Socio-Economic problem students is unable to buy material suggested by teacher.	(a) Teacher should give information about the source of material to be used. (b) himself/her self from TLM money
12.	Excursion tours are waste of time	Proper guidance can be given by the teacher before taking the students for a tour.