

Pre-Content/content Post-Content	Learning outcomes/Objectives	
	General	Specific
Pre-Content Magnets, properties of a magnet, types of magnet. Content Magnetic field, magnetic field lines, magnetic effects of current, field lines due to a straight as well as circular current carrying wire, solenoid, right hand thumb rule, force on a current carrying conductor, Fleming's left hand rule, electric motor, electromagnetic induction, Fleming's right hand rule and electric generator. Post-Content Conceptual problems of based on application of: right hand thumb rule, Fleming's left hand rule and Fleming's right hand rule.	Students will be able to: • demonstrate and analyse magnetic field lines and their properties. • state and apply Right hand thumb rule. • state and apply Fleming's left hand rule. • state and apply Fleming's Right hand rule.	Students will be able to: • observe magnetic field lines due to a bar magnet. • enumerate properties of magnetic field lines. • demonstrate the presence of magnetism due to a current carrying conductor. • draw field lines due to straight, circular current carrying conductor and solenoid with the help of right hand thumb rule. • find the direction of force on a conductor kept in magnetic field with the help of Fleming's left hand rule. • comprehend working principle of electric motor. • comprehend electromagnetic induction. find direction of induced current with the help of Fleming's right hand rule. • comprehend working principle of electric generator.

Home Work /Assignments

NCERT exercise discussed in the class is given as the home task

Worksheets can be prepared and discussed with the students.

AND PROGRESS

Month- July

Class X

Teacher's Activity	Student's Activity	Teacher's observation and Remedial
Teacher will: demonstrate and explain the magnetic field lines due to a bar magnet. explain the properties of the magnetic field lines. Annexure 13 (A) demonstrate that the current carrying conductor behaves as a magnet. explain the properties of the magnetic field lines due to:- straight conductor, circular conductor and solenoid. state the right thumb rule and discuss its utility in finding direction of magnetic field. introduce Fleming's left hand rule to find out direction of motion of a current carrying wire in a magnetic field. pose a question "if a current carrying wire can behave like magnet then is it possible to induce current from a magnet"? explain Fleming's right hand rule to find out direction of induced current in a conductor. illustrate the working principle of electric motor and generator. provide situation based questions from NCERT textbook and worksheet in the class.	Students will: perform the activity and observe the field lines and draw the same in the notebook. perform the experiment to illustrate the properties of the field lines. Annexure 13 (a) perform the activity and conclude that "a current carrying wire behaves as a magnet". analyse the differences in the properties of magnetic field lines due to straight conductor, circular conductor and solenoid and also draw the same in their notebooks. comprehend the statement and apply the rule in the given problems. comprehend the statement and apply the rule on various questions. do brainstorming on the question posed by the teacher to understand electromagnetic induction. comprehend the statement and apply the rule on various questions. actively take part in the discussion to comprehend working of both electric motor and generator. solve the problems given in the exercise and worksheet.	

Teaching Aids: NCERT, Internet access, bar magnet, iron fillings, battery, and wire.

Methodology/Innovative: Lecture, Enquiry, Discussion, Experimentation, and Demonstration

Interdisciplinary Links: electromagnets, electricity and magnetism.

HOD

Coordinator

Vice-Principal

Principal

ANNEXURE 13 A, (a)- MAGNETISM RULES!!

Subject	Science
Class	X
Chapter/Unit	Chapter 13-Magnetic effects of electric current
Topic	Current carrying conductor behaves as a magnet
Time	20 Minutes
Nature of Activity	Pair work

What will I learn (Learning Outcome)?

To demonstrate that a current carrying conductor behaves as a magnet

Skills: Analyzing and Creating

What I have to do?

To demonstrate the magnetic effects of electric current.

What do I require?

Battery, connecting wires, magnetic compass, a straight thick copper wire.

What do I need to know?

We know that every magnet has a magnetic field around it which is represented by imaginary lines called as magnetic lines of forces. A magnet can apply the force of attraction/repulsion on another magnet or magnetic material.

➤ **Teacher's Activity**

Teacher will

1. make pairs of the students and will explain the steps of the activity.
2. instruct the students on how to make the circuit for the activity with necessary precautions - only when the circuit is complete, then it must be switched 'ON' and the current should not be flowing in the circuit for a long time.
3. ensure that each participant of the pair performs the activity on his/her own.

How will I proceed?

➤ **Students activity**

1. Take a straight thick copper wire and place it between the points X and Y in an electric circuit in which connecting wires are connected to battery and key.
2. Place a small compass near to this copper wire.
3. Observe the position of its needle.
4. Pass the current through the circuit by inserting the key into the plug.
5. Observe the change in the position of the compass needle.

What have I observed?

S. No.	Status of the circuit (ON/OFF)	Status of Magnetic Compass (Deflects/ does not Deflect)

What have I learnt?

From the activity we can conclude that as current passes through a conductor it can _____ the compass needle kept in the vicinity and hence we can say that, it behaves as a _____.

What am I curious to learn?

1. If I repeat the above experiment by reversing the direction of current then what change(s) , what will happen?
2. If some other magnetic material is used to find the pattern of magnetic field lines due to the current carrying conductor, what can be the observations?.

Let me evaluate myself

1. What is a magnet? Categorize it on the basis of shape.

2. How many poles does a magnet have? Name them.

3. A magnetic compass is also a magnet. What type of magnet is it?

4. Explain why a compass needle deflects when brought closer to a current carrying conductor?

5. Can a freely suspended bar magnet be used to find the magnetic poles of the earth? Explain.

