

Pre-Content/content Post-Content	Learning outcomes/Objectives	
	General	Specific
<u>Pre Content</u> Charge and its types, property of charge <u>Content</u> Electric current, electric potential, potential difference, ohm's law, resistance, factors affecting resistance, unit of resistance, combination of resistance, resistivity, heating effects of current, power consumed. <u>Post Content</u> Numerical calculation of: Current, potential difference, resistance using Ohm's law.	Students will be able to: relate charges with the electric current. establish an analogy between gravitational potential and electric potential to understand the concept of potential difference. illustrate ohm's law experimentally. develop an understanding on heating effects of current.	Students will be able to: - list the types of charges and their properties. - conclude that charges produced on the insulators are static. - comprehend that moving charges constitute current. - identify electric current as the flow of charges in a unit time. - develop the definition of potential difference. - analyse that the current flows due to potential difference. - state and verify Ohm's law. - define the resistance of a conductor. - list factors affecting resistance. - verify ohm's law of combination of resistance experimentally - distinguish between resistance and resistivity. - solve numerical problems on resistivity. - state and explain Joule's heating effect. - define electric power. - solve numerical problems related to electric power. - apply heating effects of current in understanding the working and need of an electric fuse. - differentiate between Overloading and short circuit.

Home Work /Assignments.

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

Worksheets can be prepared and given to the students.

AND PROGRESS

Month- April/May

Class X

Teacher's Activity	Student's Activity	Teacher's observation and Remedial
Teacher will help students recall the charges and their properties explain the terms electric current and potential difference by setting the analogy of potential difference. demonstrate experiment to verify Ohm's Law in the laboratory explain the factors affecting resistance of a wire. Annexure 12 (A) demonstrate the experiment to show that the current flowing through a series circuit is lesser as compared to that in a parallel circuit .(having same resistors). differentiate between resistivity and resistance. ask students if they have observed that the electrical devices heat up after sometime and then relate the existing knowledge of students to state Joule's Law of Heating explain the meaning of the current and power ratings of various electrical appliances and ask students how the electricity bill is affected by more use of high power appliances. provide various situation based questions from worksheet booklet and guide students to answer them.	Students will recall the definition of charge and list the properties of charges. relate the analogy of potential difference with potential difference leading to flow of charges. perform an experiment to verify Ohm's law and record the observations. list the factors affecting resistance of a wire. Annexure 12 (a) perform the experiment to verify that the current flowing through a series circuit is lesser as compared to that in a parallel circuit discuss and try to identify resistivity as specific resistance. relate their observation in daily life to derive the fact that heating of an electrical device depends on the amount of current as well as time. appreciate the fact that one must use high power appliances wisely to conserve the energy to ensure the continuous supply for the future generation. apply their knowledge and understanding to solve the given problems.	

Teaching Aids: NCERT, Internet access, activity kit including ammeter, voltmeter, resistor, rheostat, key and copper wires

Methodology/Innovative: Experimentation, Enquiry, Discussion, Hands on activity

Interdisciplinary Links: Mathematics, Domestic Circuits.

HOD

Coordinator

Vice-Principal

Principal

Annexure 12 A , (a) – Series vs Parallel !!

Subject	Science
Class	X
Chapter/Unit	Chapter 12-Electricity
Topic	Series and parallel circuit
Time	20 Minutes
Nature of Activity	Pair work

What will I learn (Learning Outcome)?

To verify that current flowing through a series circuit is lesser as compared to a parallel circuit (having same resistors).

Skills: Analyzing and Creating

What I have to do?

To demonstrate an activity to show the output produced in a circuit having two bulbs connected in series is less as compared to the circuit having the same bulbs connected in parallel.

What do I require?

Two bulbs(2.5 V each), connecting wires, bulb holders, switch and one 9 V battery.

What do I need to know?

In a series circuit, all components are connected end-to-end, forming a single path for current flow. In a parallel circuit, all components are connected across each other. In a series circuit, adding more components to the circuit increases resistance, meaning the electric current decreases. Resistance can be reduced even further by having more pathways in a parallel circuit.

➤ **Teacher's Activity**

Teacher will :

1. discuss the concept of series and parallel connections and how to do the connections in both the circuits.
2. will explain the steps of the activity.
3. ensure that each participant in pair performs the activity .

How will I proceed?

➤ **Students activity**

1. For series connection, all components – bulbs, switch and battery are connected end-to-end, forming a single path for current flow.
2. Switch on the circuit and observe the intensity of the bulbs
3. For parallel connection, the bulb 1 is connected to battery and switch using connecting wires . Then the second bulb is connected to the first bulb from both sides of the bulb holder.
4. Switch on the switch and observe the intensity bulbs.

What have I observed?

S. No	Type of circuit	The intensity of the two glowing bulbs - Less or More
1	Series circuit	
2	Parallel circuit	

What have I learnt?

- When the bulbs are a series connection , the bulbs will glow.....
- When the bulbs are connected parallel in the circuit, the bulbs will glow

What am I curious to learn?

- In place of copper wires, use Dough (Atta with bit of salt added to it) wires and two LEDs in place of bulbs to verify the same concept.
- Why the salt was added while preparing the dough?

Let me evaluate myself

Q.1.What causes an electric current to flow in a circuit?

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Q.2. If in Christmas lights/ Fairy lights , one bulb gets fused, the entire row of bulbs will not glow. Why?

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Q.3 Why resistance of a series circuit is more than the parallel circuit (having same resistors)?

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Q.4.How can we dispose used bulbs and batteries which are potential hazards?

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Q.5.What is the nature of gas inside an electric bulb? What is it's purpose?

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