Srini Science Mind

Abdul Kalam Physical Science Group

10th class

PHYSICAL SCIENCE
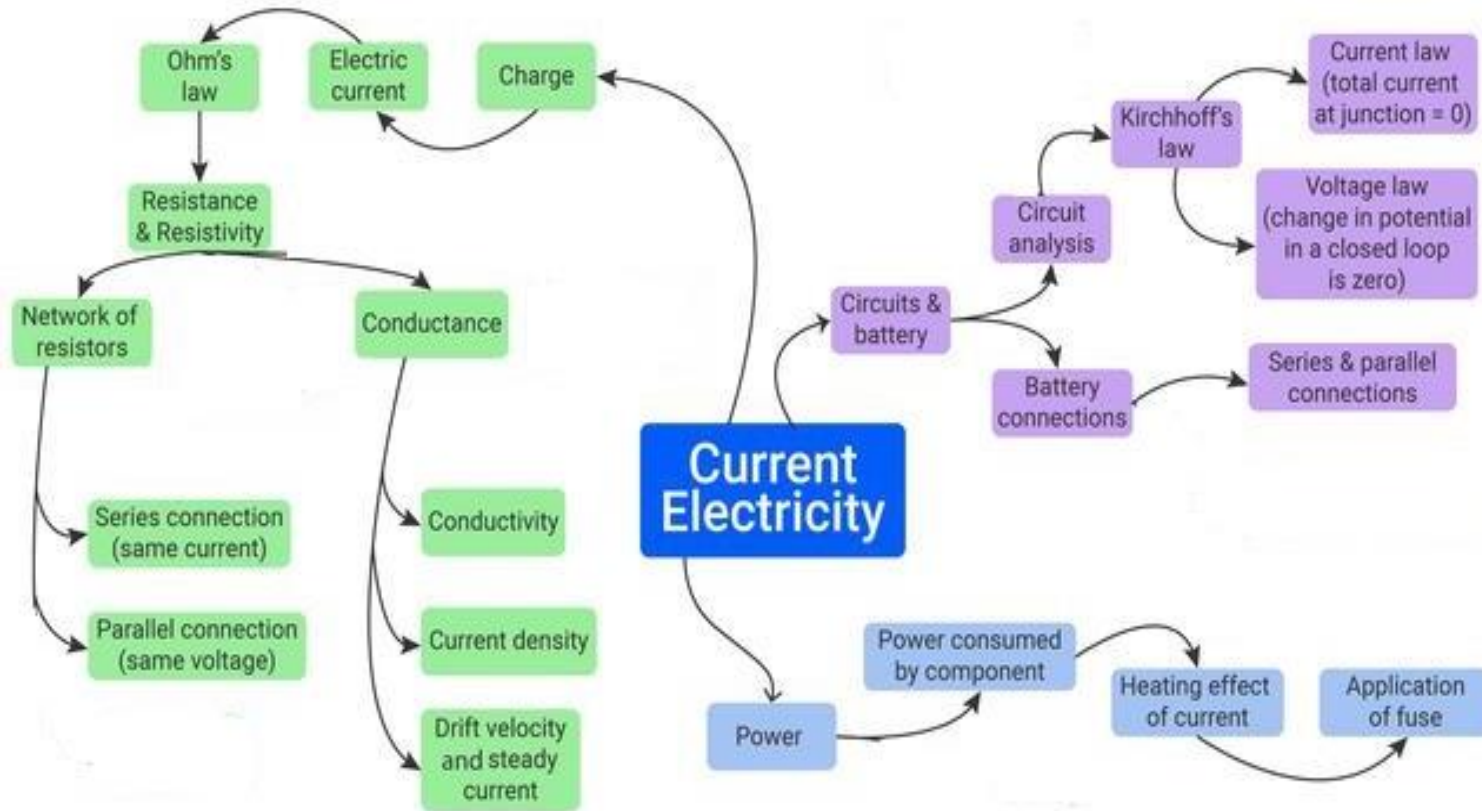
MODEL LESSON PLAN

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MODEL LESSON PLAN

CLASS: 10   **SUBJECT: PS**   **Name of the Teacher: M.SRINIVASA RAO**   **Name of the School: A.G.K.M.H.School,Gudivada**

Name of the Lesson/Unit	Topic	No.of Periods Required	Timeline for teaching		Any specific information
			From	To	
Electric Current (Chapter – 9)	Introduction and Electric current	2	xx/xx/xxxx	xx/xx/xxxx	
	Potential Difference – Electromotive force(EMF)	1	xx/xx/xxxx	xx/xx/xxxx	
	Ohm's law	2	xx/xx/xxxx	xx/xx/xxxx	
	Electric shock	1	xx/xx/xxxx	xx/xx/xxxx	
	Factors affecting the resistance of a material	2	xx/xx/xxxx	xx/xx/xxxx	
	Electric Circuits	2	xx/xx/xxxx	xx/xx/xxxx	
	Kirchhoff's law	2	xx/xx/xxxx	xx/xx/xxxx	
	Electric power – Overload	1	xx/xx/xxxx	xx/xx/xxxx	

Prior Concept/Skills:
1. What flows in an electric wire?
2. What is the charge of electron?
3. What is the SI unit of current?

Learning Outcomes:	No. of Periods
1. Draws conclusion of potential difference across a metal conductor is proportional to the electric current flowing through it.	1
2. Handles tools and laboratory apparatus properly, measures physical quantities using appropriate apparatus, instruments and devices of electric current and potential difference using ammeter and voltmeter	1
3. Plans and Conducts investigations and experiments to arrive at and verify the facts of verifies Ohm's law	1
4. Classifies materials as Ohmic and Non-Ohmic conductors based on Ohm's law.	1
5. Exhibits creativity in designing models using eco-friendly resources of Ohm's law verification.	1
6. Analyses and interprets data, graphs and figures of V-I graphs.	1
7. Relates processes and phenomena with causes and effects of electric shock.	1
8. Applies learning to hypothetical situations "What causes electric shock in the human body-current or voltage?	1
9. Communicates the findings and conclusions effectively of resistivity of various materials.	1
10. Derives formulae, equations and law of equivalent resistance of resistors in series and parallel	2
11. Calculates using the data of electric power.	1
12. Relates processes and phenomena with causes and effects of overload.	1

TEACHING LEARNING PROCESS

Induction/Introduction:

Experience and Reflection:
1. Students will learn why Kirchhoff's laws apply to DC circuits.
2. Students will combine and use electrical devices in the best manner according to their needs in daily life.
3. Students will learn what precautions to take in case of electric shock when connecting electrical equipment.

Explicit Teaching/Teacher Modelling (I Do)	Group Work (We Do)	Independent Work (You Do)	Notes for:
1. Discussion and conduct activities on electric circuits and the functioning of various components.	1. Students observe the activities.	1. Students arrange the various electric components.	1. Which device can change chemical energy into electric energy?

2. Explain ordered motion of electrons in open and closed circuits and net charge.	2. Group discussion on Drude and Lorentz theory.	2. Students give reasons, Why net charge is zero when the conductor is in open circuit.	2. Why do all materials not act as conductors?
3. Explain the concepts of Electric current and Drift velocity.	3. Students derive drift speed of electron in a copper wire,	3. Students complete the homework.	3. Define Electric current ?
4. Discussion and explain the potential difference.	4. Students explain the direction of electric current in terms of potential difference.	4. Students write the definition of Potential difference.	4. What is the S.I unit of potential difference?
5. Explain EMf and difference between Potential difference and EMF.	5. Group discussion on differences between Potential difference and EMF.	5. Students give reasons, Why emf is called force?	5. Define Electro motive force.
6. Conduct experiments on V/I is a constant for a conductor and V/I is not constant in LED conductor.	6. Students conduct experiments and describe the procedure.	6. Students read the biography of G.S.Ohm	6. Do all materials obey Ohm's law? Explain
7. Explain V-I graphs, Limitations of Ohm's law and Types of conductors.	7. Students draw the V-I graphs of Ohmic and Non-Ohmic conductors.	7. Students express the limitations of Ohm's law	7. What are Ohmic and Non-Ohmic materials?
8. Discussion and explain Electric shock.	8. Students collect information on Electric Shock.	8. Students complete the homework.	8. What causes electric shock in the human body?
9. Explain and conduct experiments on factors affecting the resistance of a materials.	9. Students verify the resistance of a conductor is proportional to the length of the conductor	9. Students derive $R = \rho \, l/A$	9. What are the factors on which the resistance of the conductor depends?
10. Explain resistivity and resistivity of various materials.	10. Students collect information on the resistivity of materials and their conductivity.	10. Students complete the homework.	10. What is specific resistance and write its units?
11. Discussion and explain series and parallel connection of resistors.	11. Students collect information on applications of series and parallel connections in daily life.	11. Students will solve problems on series and parallel connections.	11. Silver is a better conductor of electricity than copper. Why?
12. Explain Kirchhoff's laws and Problems.	12. Students will solve problems on Kirchhoff's laws.	12. Students write Kirchhoff's laws.	12. What quantity is conserved in Kirchhoff's first law?
13. Discussion and explain Electric power and overload.	13. What precautions should be taken to avoid the overloading of domestic electric circuits?- Discuss	13. Students will solve problems on electric power.	13. What do you mean by overload?

| **Check For Understanding Questions**	**TLM's (Digital+Print)**
1. Factual: 1. Why the potential difference is necessary to produce current in a circuit? 2. Are Kirchhoff's laws applicable to AC or DC circuits? 3. Why doesn't a bird get a shock when it stands on a high voltage wire? **2. Open Ended/Critical Thinking:** 1. What happens when one of the resistors in series breaks down? 2. Why is resistivity called a material property? 3. Why does overload cause damage to electric appliances? **3. Student Practice Questions & Activities:** 1. Deduce the expression for the equivalent resistance of three resistors connected in series. 2. State Ohm's law. Suggest an experiment to verify it and explain the procedure. 3. Write the differences between potential difference and emf 4. Two bulbs have ratings 100 W, 220V and 60 W, 220V. Which one has the greatest resistance? 5. Explain overloading of household circuits.	1. Used prepared Quiz paper. 2. Utilized digital classroom. 3. Provide video links QR codes, DIKSHA App 4. YouTube video links

Assessment:

1. Derive $R = \rho l/A$
2. How do you verify that resistance of a conductor is proportional to the length of the conductor for constant cross section area and temperature
3. Explain Kirchhoff's laws with examples
4. Observe the figure and answer the questions.
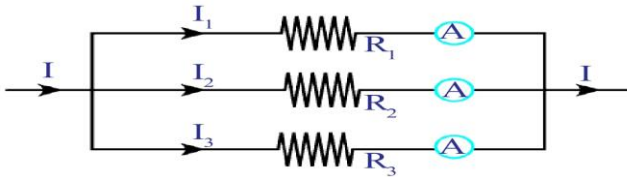
a) Are all the resistors connected in series or parallel?
b) What is the equivalent resistance of the combination of three resistors?
c) In this system, which physical quantity is constant?
d) If $R_1 = 2\ \Omega$, $R_2 = 3\ \Omega$ and $R_3 = 6\ \Omega$, then find equivalent resistance?

SIGNATURE OF THE TEACHER   SIGNATURE OF THE HEADMASTER

VISITING OFFICER WITH REMARKS