

LESSON PLAN 2. SUBJECT : PHYSICS CLASS: XII

CHAPTER 3:CURRENT ELECTRICITY

BRIEF DESCRIPTION- CONCEPT OF ELECTRIC CHARGE, OHMS LAW, KIRCHOFFS LAW, CELLS AND THEIR COMBINATION, INTERNAL RESISTANCE AND WHEATSTONE BRIDGE PRINCIPLE.

KPI DEFINITION :

KPI 01: Students face problems in solving the problems of Kirchoffs law

KPI 02 : Students face problems in solving numerical portion/ mathematical calculations.

KPI 03 : Students Face problem in solving problems based on internal resistance of cells

KPI 04: students face problem in framing a particular diagram/graph for any particular set of problems.

KPI 05: Students wont be able to understand the general application of resistance and temperature

OBJECTIVES:

SUBJECTIVE OBJECTIVE

Subjective:

1. "Explain Ohm's Law and its significance in understanding current electricity."
2. "Discuss the concept of electric potential difference and how it relates to the flow of current."
3. "Describe the factors affecting the resistance of a conductor and how to calculate it."
4. "Analyze the differences between series and parallel circuits, providing examples of each."
5. "Examine the role of Kirchhoff's laws in solving complex circuits."

Behavior Objective: "At the end of this lesson on current electricity, students should be able to construct and analyze complex electrical circuits using a

combination of series and parallel connections. They should demonstrate proficiency in calculating voltages, currents, and resistances within these circuits and apply Kirchhoff's laws to solve circuit problems accurately."

ASSESSMENT:

1. Written Examinations:

- Multiple-choice questions to test basic concepts.
- Short-answer questions to assess knowledge of formulas and principles.
- Long-answer or essay questions to evaluate understanding and application of concepts.

2. Practical Experiments:

- Conducting experiments to measure resistance, current, and voltage in various circuits.
- Analyzing experimental data and drawing conclusions.
- Writing lab reports that include observations, calculations, and explanations.

3. Problem Solving:

- Assigning complex circuit problems that require the application of Ohm's Law, Kirchhoff's laws, and circuit analysis techniques.
- Grading based on the correctness of solutions and the logical approach taken.

4. Project Work:

- Group or individual projects where students design and build circuits to solve specific problems.
- Assessment based on project presentations, reports, and the functionality of the constructed circuits.

5. Oral Assessments:

- Conducting oral quizzes or discussions to evaluate conceptual understanding and the ability to explain concepts verbally.

6. Homework and Assignments:

- Assigning regular homework and assignments to reinforce learning and practice problem-solving skills.
- Providing constructive feedback on assignments.

7. Peer Assessments and Peer Teaching:

- Encouraging students to assess and critique each other's work, fostering a deeper understanding of concepts.
- Allowing students to take turns teaching specific topics to their peers.

8. Class Participation and Engagement:

- Assessing participation in class discussions, asking questions, and engaging in group activities.

9. Formative and Summative Assessments:

- Using a combination of formative assessments (ongoing assessments during the learning process) and summative assessments (final evaluations) to gauge overall understanding.

10. Online Quizzes and Interactive Tools:

- Utilizing online platforms for quizzes, simulations, and interactive exercises to engage students and assess their comprehension.

LEARNING OUTCOME:

1. Conceptual Understanding:

- Explain the fundamental concepts of electric current, voltage, and resistance.
- Understand Ohm's Law and its significance in electrical circuits.
- Describe how electric charge flows in conductors and insulators.

2. Mathematical Skills:

- Apply mathematical formulas to calculate voltage, current, and resistance in simple and complex circuits.
- Solve problems related to series and parallel circuits.
- Utilize Kirchhoff's laws to analyze circuit behavior.

3. Circuit Analysis:

- Analyze and construct series and parallel circuits, including mixed configurations.
- Calculate total resistance, current, and voltage in various circuit arrangements.
- Determine power dissipation and energy consumption in circuits.

4. Practical Skills:

- Perform experiments to measure electrical quantities using instruments like ammeters, voltmeters, and multimeters.
- Build and troubleshoot basic electrical circuits.
- Safely handle electrical components and equipment.

5. Critical Thinking and Problem Solving:

- Apply critical thinking skills to diagnose and solve circuit problems.
- Identify and troubleshoot issues such as short circuits and open circuits.
- Formulate strategies to optimize circuit design for specific applications.

6. Safety Awareness:

- Demonstrate knowledge of electrical safety precautions when working with circuits and electrical devices.
- Recognize potential hazards and take appropriate safety measures.

7. Application in Real-world Scenarios:

- Relate the principles of current electricity to real-world applications, such as household wiring, electronics, and electrical appliances.
- Understand the impact of current electricity on daily life and technological advancements.

8. Communication Skills:

- Communicate findings and conclusions effectively through written lab reports and oral presentations.
- Express complex electrical concepts in a clear and understandable manner.

9. Interdisciplinary Understanding:

- Recognize the interdisciplinary nature of electrical engineering and its connections to physics and mathematics.
- Appreciate the role of current electricity in fields like electronics, telecommunications, and renewable energy.

10. Ethical and Environmental Awareness:

- Understand the ethical considerations related to electrical consumption and conservation.
- Discuss the environmental impact of electrical energy generation and explore sustainable energy solutions.