

PHYSICS · CHAPTER 3

Current Electricity

A 1-page guide for parents · 90-second read.

EXPECTED MARKS**10 marks****TIME TO MASTER****9-11 hrs****HELPLINE****70330 05444****WHAT THIS CHAPTER IS, IN PLAIN ENGLISH**

This chapter is about how electric current flows through wires and circuits. Your child learns Ohm's law ($V=IR$), how resistors combine in series and parallel, what 'EMF' and 'internal resistance' of a battery mean, and two very important tools for analysing circuits — Kirchhoff's laws and the Wheatstone bridge. It is the single most numerical-heavy chapter in Class 12 Physics and routinely yields 8-10 marks in the board paper.

5 QUESTIONS TO ASK YOUR CHILD

- Can you state Ohm's law and write the formula?
- What is drift velocity in one sentence — and why is it so small?
- If two resistors of 3 Ohm and 6 Ohm are in parallel, what is the equivalent? (Answer should be 2 Ohm, not 4.5.)
- Why does a potentiometer give a more accurate EMF reading than a voltmeter?
- Can you draw the Wheatstone bridge and state the balance condition?

WEAK-SPOT INDICATORS

- Adds parallel resistors instead of using the reciprocal formula
- Confuses EMF (epsilon) with terminal voltage (V)
- Cannot explain WHY drift velocity is small ($\sim 10^{-4}$ m/s) when current 'travels' fast
- Sign errors in KCL/KVL — gets a negative current and panics
- Treats Wheatstone bridge as a memorised formula without understanding $I_g = 0$ at balance

WHEN TO WORRY — AND WHAT TO DO

If your child cannot solve a basic Ohm's law numerical ($V=12V$, find I across 4 Ohm) in under 30 seconds, or if they keep getting drift-velocity and thermal-velocity mixed up, please book a free 15-min doubt-clearing call. This chapter compounds into Magnetic Effects (Ch 4) and AC (Ch 7), so gaps here cost marks downstream too.

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