Subject	Year	Term
Physics	13	1

Topic

Topic 7B Magnetic Fields

Content (Intent)

Prior Learning (Topic) Topic 2 (mechanics), Topic 3 (electricity)

Magnetic field line patterns, Right hand grip rule

Demonstrate motor effect, Fleming's left hand rule

Magnitude of B defined by *F = BIl* (for wire, *F = Bqv* for charged particles). Application to motors, moving coil meters and loudspeakers.

Magnetic flux density B, flux φ and flux linkage Nφ Origins of EM induction

Faraday's law, $\varepsilon = \frac{-\mathrm{d}(N\phi)}{\mathrm{d}t}$. Lenz's law and energy conservation.

Transformer effect Effect of turns-ratio on transformer output Explain $\frac{V_p}{V_s} = \frac{N_p}{N_s}$ using Faraday's law

Peak and root-mean-square values of current and voltage. $V_{rms} = \frac{V_0}{\sqrt{2}}$ and $I_{rms} = \frac{I_0}{\sqrt{2}}$.

- *CORE PRACTICAL 11:* Use an oscilloscope or data-logger to display and analyse the potential difference (p.d.) across a capacitor as it charges and discharges

The thermionic effect LINAC principles $W = QV$. Cyclotron principles $BQv = \frac{mv^2}{r}$

$r = \frac{p}{BQ}$ for a charged particle in a magnetic field

Mass increase as speed increases; particles can never reach the speed of light.

How will knowledge and skills be taught? (Implementation)	How will your understanding be assessed & recorded (Impact)
Demonstrations of EM induction, such as magnet falling through coil of wire, or magnet on a spring oscillating though a coil of wires. Simple transformer demonstration Demonstrate Eddy current braking.	Homework Booklet 7B marked and written feedback given Test 7 marked, graded and feedback given

How can parents help at home?

Check that the homework booklet 7B is completed

Helpful further reading/discussion

Reading	Vocabulary Lists	Careers Links
Advanced Physics for you chapters 19,20	*See front of homework booklet*	