Edexcel International GCSE Physics 4PH1 Learning Plan

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| **Unit: 6 Magnetism and Electromagnetism** | | **Chapter: 21. Electric motors and electromagnetic induction** | | **Hours: 4** |
| Content coverage | Learning outcomes | Resources | Assessment | |
| Section 6: Magnetism and Electromagnetism  c) Electromagnetism  d) Electromagnetic induction | **6.11P know that there is a force on a charged particle when it moves in a magnetic field as long as its motion is not parallel to the field**  **6.12** understand why a force is exerted on a current-carrying wire in a magnetic field, and how this effect is applied in simple d.c. electric motors and loudspeakers  **6.13** use the left-hand rule to predict the direction of the resulting force when a wire carries a current perpendicular to a magnetic field  **6.14** describe how the force on a current-carrying conductor in a magnetic field changes with the magnitude and direction of the field and current  **6.15** know that a voltage is induced in a conductor or a coil when it moves through a magnetic field or when a magnetic field changes through it and describe the factors that affect the size of the induced voltage  **6.16** describe the generation of electricity by the rotation of a magnet within a coil of wire and of a coil of wire within a magnetic field, and describe the factors that affect the size of the induced voltage  **6.17P describe the structure of a transformer, and understand that a transformer changes the size of an alternating voltage by having different numbers of turns on the input and output sides**  **6.18P explain the use of step-up and step-down transformers in the large-scale generation and transmission of electrical energy**  **6.19P know and use the relationship between input (primary) and output (secondary) voltages and the turns ratio for a transformer:**  **input (primary) voltage** = **primary turns output (secondary) voltage secondary turns**  **6.20P know and use the relationship: input power = output power**  ***Vp Ip*** =***Vs Is* for 100% efficiency** | Video and Powerpoint:  5.8 Electromagnetic effects (1)  5.9 Electromagnetic effects (2)  Textbook pages:  Page 207 – Movement from electricity  Page 210 – Electromagnetic induction  Page 210 – Demonstrating electromagnetic induction  Page 211 – Generators  Page 212 – The transformer  Page 213 – Using transformers to change voltages  Page 213 – Energy in transformers  Page 214 – Transformers and national grids | Pages 215 – 216  Questions (1) to (7)  Pages 217 – 219  End of Unit Questions (1) to (7)  Chapter 21 Textbook Answers (PDF)  Chapter 21 Answers to End of Unit Questions (PDF)  Chapter 21 - exam question - pdf  Chapter 21 - exam question mark scheme – pdf  Chapter 21 - Talking paper video | |

Videos – [www.igcsesciencecourses.com](http://www.igcsesciencecourses.com)

Textbook Ref: Edexcel International GCSE (9-1) Physics Student Book - Pearson (Arnold, Johnson, Woolley))