**Graphical user interface

Description automatically generated with medium confidenceMagnetism and Electromagnetism** (Phys)

RAG your understanding.

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|  | **Start of Topic** | **End of Topic** | **Revised** |
| **7.1 Magnetism and Electromagnetism** | | | |
| P.7.1.1.a - I can describe the attraction and repulsion between unlike and like poles of permanent magnets and explain the difference between permanent and induced magnets. |  |  |  |
| P.7.1.1.b - I know that magnetic attraction and repulsion are examples of non-contact forces and that magnetic forces are strongest at the poles of a magnet. |  |  |  |
| P.7.1.2.a - I can draw the magnetic field pattern of a bar magnet, showing how field strength and direction are indicated, and change from one point to another. |  |  |  |
| P.7.1.2.b - I can explain how the behaviour of a magnetic compass is related to evidence that the core of the Earth must be magnetic. |  |  |  |
| P.7.1.2.c - I can describe how to plot the magnetic field pattern of a magnet using a compass. |  |  |  |
| P.7.1.2.d - I know that Iron, Nickel and cobalt are magnetic metals. |  |  |  |
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| **7.2 The Motor Effect** | | | |
| P.7.2.1.a - I can state examples of how the magnetic effect of a current can be demonstrated, and explain how a solenoid arrangement can increase the magnetic effect of the current. |  |  |  |
| P.7.2.1.b - I can draw the magnetic field pattern for a straight wire carrying a current and for a solenoid (showing the direction of the field). |  |  |  |
| P.7.2.1.c - (Physics only) I can interpret diagrams of electromagnetic devices in order to explain how they work. |  |  |  |
| ***P.7.2.2.a (HT) - I can state and use Fleming's left-hand rule and explain that the size of the induced force depends on the magnetic flux density, current in, and length of, the conductor in the magnetic field.*** |  |  |  |
| ***P.7.2.2.b (HT) - I can calculate the force on a conductor carrying a current at right angles to a magnetic field by applying, but not recalling, the equation:***  ***F = B I L*** |  |  |  |
| ***P.7.2.3.a (HT) - I can explain how rotation is caused in an electric moto.*** |  |  |  |
| ***P.7.2.4.a (HT*** Physics ***only) - I can explain how a moving-coil loudspeaker and headphones work.*** |  |  |  |
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| **7.3 Induced potential, transformers and the National Grid (HT Physics only)** | | | |
| ***P.7.3.1.a - I can describe the principles of the generator effect, including the direction of induced current, effects of Lenz’ Law, and factors that increase induced p.d., and apply them in a given context.*** |  |  |  |
| ***P.7.3.2.a - I can explain how the generator effect is used in an alternator to generate a.c. and in a dynamo to generate d.c.*** |  |  |  |
| ***P.7.3.2.b - I can draw/interpret graphs of potential difference generated in the coil against time.*** |  |  |  |
| ***P.7.3.3.a - I can explain how a moving-coil microphone works.*** |  |  |  |
| ***P.7.3.4.a - I can explain how the effect of an alternating current in one coil inducing a current in another is used in transformers.*** |  |  |  |
| ***P.7.3.4.b - I can explain how the ratio of the potential differences across the two coils depends on the ratio of the number of turns on each, and so distinguish a step-up from a step-down transformer.*** |  |  |  |
| ***P.7.3.4.c - I can apply the equation linking the p.d.s and number of turns in the two coils of a transformer to the currents and the power transfer involved, and relate these to the advantages of power transmission at high voltages.*** |  |  |  |
| ***P.7.3.4.d - I can calculate the number of turns on each coil of transformers, and the voltage or current through them, by understanding that ideal transformers' input and output powers are the same, and by applying but not recalling the equations:***  ***Vs × Is = Vp x Ip*** |  |  |  |

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