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Physics Paper 2 Topic 7: Magnetism

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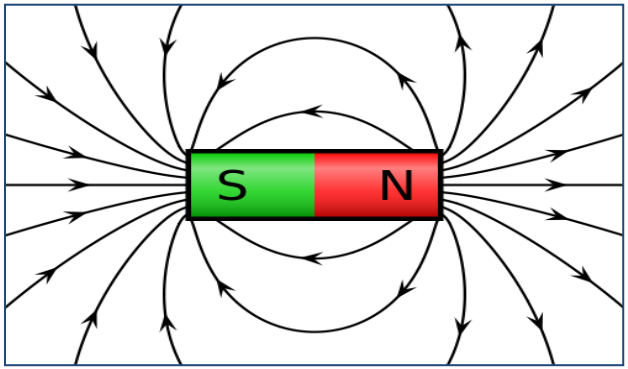
Section 1: Key Terms and Definitions

1.	Pole	The ends of the magnet where the magnetic forces are strongest. Where the field lines are most concentrated. The two poles are named north and south
2.	Magnetic Field	The area around a magnet where a force acts on another magnet or magnetic material
3.	Magnet	Produces a magnetic field and can attract or repel
4.	Repel	Occurs when two like poles are brought close together. The magnets push each other apart.
5.	Attract	Occurs when two opposite poles are brought close together. The magnets are pulled together.
6.	Permanent Magnet	A magnet that produces its own magnetic field.
7.	Induced Magnet	A magnetic material that becomes a magnet when it is placed in a magnetic field. When removed from the field it quickly loses its magnetism.
8.	Magnetic Material	Material in which magnetism can be induced. Iron, (Steel,) Nickel and Cobalt are magnetic materials.
9.	Compass	Compasses contain small bar magnets which points towards the poles of the Earth's magnetic field.
10.	Electromagnet	A solenoid containing an iron core which increases its strength.
11.	Electric Current	An electric current is a flow of electric charge. In electric circuits this charge is often carried by moving electrons in a wire.
12.	Solenoid	A coil of wire that will create a magnetic field when current is passed through it. The magnetic field inside the solenoid is strong and uniform. It acts in the same way as a bar magnet.

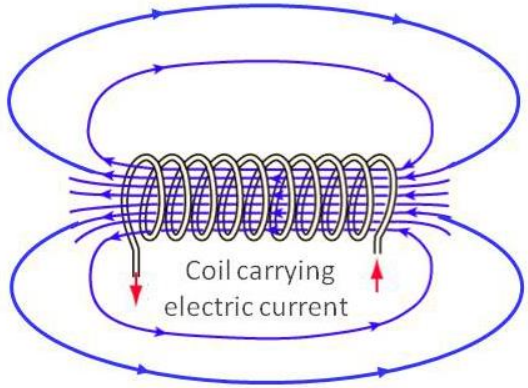
Section 2: Magnetic Field Around a Bar Magnet

The magnetic field around a bar magnet. The field lines always go from North to South.



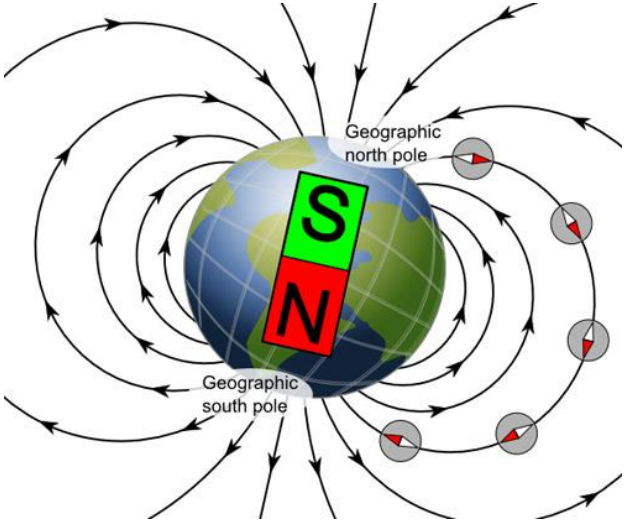
Section 3: Magnetic Field in a Solenoid

The magnetic field in a solenoid is concentrated inside the coil in a uniform direction, otherwise it acts in the same way as a bar magnet.



Section 4: The Earth's Magnetic Field

The Earth behaves as if there is a bar magnet inside it. The geographic north pole is a magnetic south pole. A compass will point towards geographical north and is the north-seeking pole.



Section 5: Increasing the magnetic force of….

A solenoid	A Motor
Add an iron core	Increase the number of coils of wire
Increase the number of coils of wire	Increase the strength of the magnetic field
Increase the current	Increase the current

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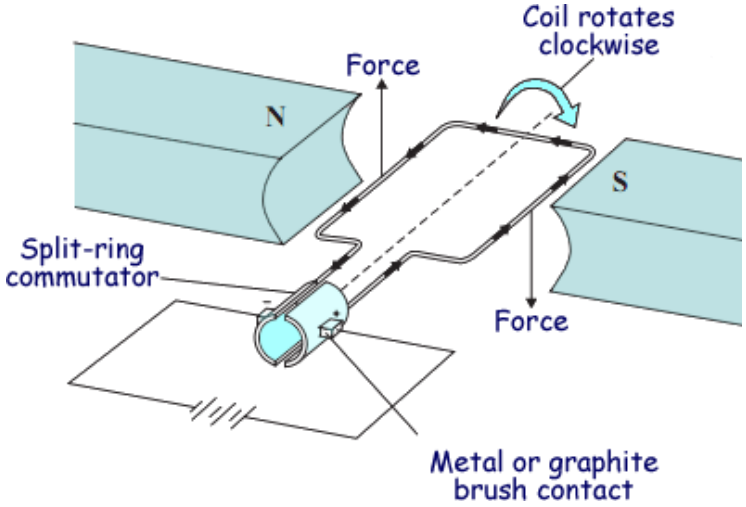
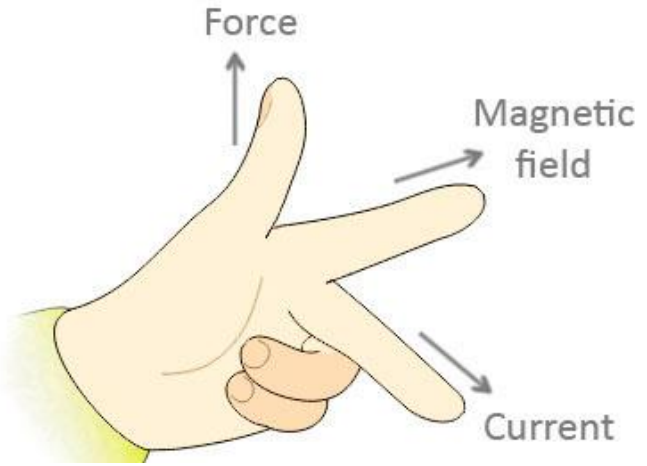
Section 6: Motor Effect

When a conductor carrying a current is placed in a magnetic field, the magnet producing the field and the conductor exert a force on each other. This can be used to create a motor.



Section 7: Fleming's Left-Hand Rule

A rule that shows the relative direction of the current, force and magnetic field in the motor effect.



Align fingers to the field and the direction of the current to work out the way the wire moves.

Section 8: Transformers

1.	Transformer	A transformer changes the size of an alternating potential difference.
2.	Step-up Transformer	Increases the potential difference – it has more coils on the secondary coil than the primary coil. Reduces the current.
3.	Step-down Transformer	Decreases the potential difference – it has more coils on the primary coil than the secondary coil. Increases the current.
4.	Efficiency	Correct use of transformers makes the national grid more efficient as less electrical current is lost due to a heating effect.