

OCR B Physics A Level

6.1.3 - Motor Effect

Flashcards

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What is the motor effect?



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The motor effect is when a current-carrying wire experiences a force when placed in a magnetic field.



What three factors determine the magnitude of magnetic force?



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1. Magnetic flux density of the field.
2. Current in the wire.
3. Length of the wire.



State the equation used to calculate the force when a current carrying wire is placed in a magnetic field.



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*Force = Magnetic Flux Density \times Current
 \times Length of Wire*

$$F = BIL$$



Describe the required orientation of the wire and field for the equation of force to hold true.



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The field and current flow must be perpendicular to each other.



Explain the basic operation of a motor.



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- A motor consists of a rectangular coil formed of a current-carrying wire on a pivot.
- The coil is placed in a uniform magnetic field and a force is experienced on the two sides perpendicular to the field.
- The current flow is in opposite directions on these sides causing the forces produced to be in opposite directions, causing rotation.



What is produced when a motor rotates?



What is produced when a motor rotates?

A back emf that provides resistance to the motor's rotation and limits its speed of rotation.

