Electromagnetic Induction

AP Physics C: Electricity and Magnetism · Vocabulary in context

Word	Example
Magnetic flux /mæg'netɪk flʌks/	**Magnetic flux** is the field times the area it passes through.
surface integral /'sɜːfɪs 'ɪntɪgrəl/	A **surface integral** adds up a quantity over every small part of a surface.
area vector /'eərɪə 'vektə/	The **area vector** points straight out of the surface.
emf /emf/	An **emf** is induced when the flux through a coil changes.
Faraday's law /'færədeɪz lɔː/	**Faraday's law** says faster change gives a bigger e.m.f.
Lenz's law /'lentsɪz lɔː/	**Lenz's law** says the current opposes the change.
induced current /ɪn'djuːst 'kʌrənt/	An **induced current** flows when the magnet moves.
right-hand rule /raɪt hænd ruːl/	Use the **right-hand rule** to find the force on a positive charge.
motional emf /'məʊʃənl emf/	A metal wing moving through Earth's field has a small **motional emf**.
Maxwell's equations /'mækswelz ɪ'kweɪʒnz/	**Maxwell's equations** describe all electric and magnetic fields.
electromagnetic waves /ɪˌlektrəʊməg'netɪk weɪvz/	Light and radio waves are **electromagnetic waves**.
eddy currents /'edi 'kʌrənts/	**Eddy currents** heat the pan on an induction cooker.

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generator /'dʒenəreɪtə/	A wind turbine turns a **generator** to make electricity.
inductance /ɪn'dʌktəns/	Greater **inductance** stores more energy.
inductor /ɪn'dʌktə/	An **inductor** resists changes in current.
solenoid /'səʊlənɔɪd/	A **solenoid** is a long coil of wire.
magnetic permeability /mæg'netɪk ˌpɜːmə'bɪlɪti/	Iron has a high **magnetic permeability**.
differential equation /ˌdɪfə'renʃl ɪ'kweɪʒn/	A **differential equation** links a quantity and its rate of change.
time constant /taɪm 'kɒnstənt/	The **time constant** is RC. RC
oscillates /'ɒsɪleɪts/	Near x = 0, sin(1/x) **oscillates** up and down forever. x = 0 sin(1/x)
simple harmonic motion /'sɪmpl hɑː'mɒnɪk 'məʊʃn/	A mass on a spring moves with **simple harmonic motion**.
conservation of energy /ˌkɒnsə'veɪʃn ɒv 'enədʒi/	**Conservation of energy** means energy is never made or destroyed.
RL circuit /ˌɑː 'el 'sɜːkɪt/	In an **RL circuit**, the current grows slowly through the inductor.
LC circuit /ˌel 'siː 'sɜːkɪt/	In an **LC circuit**, energy swings between the capacitor and the inductor.