FARADAY'S LAW

OCR A LEVEL PHYSICS H556
Module 6: Particles and medical physics
6.3 Electromagnetism
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a)-d)

Outline = moving a conductor in a magentic field forces and emf

Apparatus = backwards kicking wire

Text book reference = pages 193-199

Independent study = page 199 questions

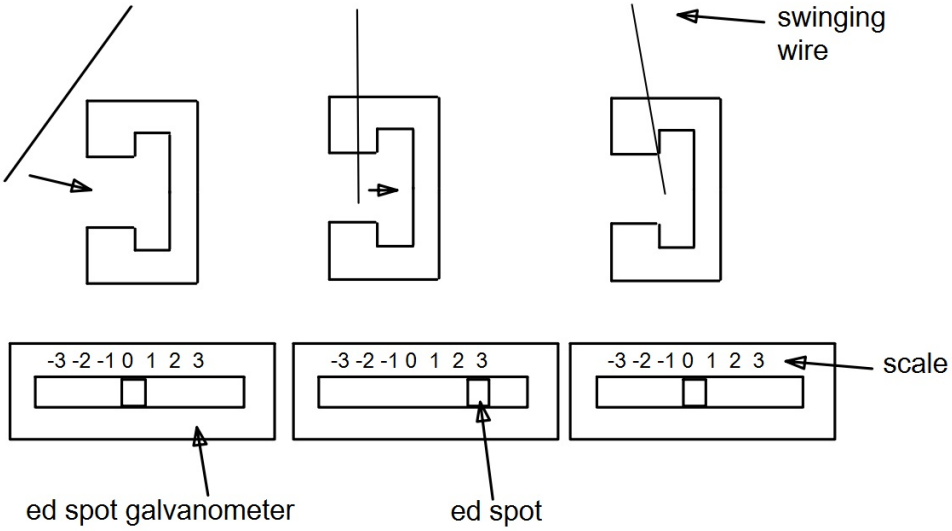
What is this lesson about?

- What is magnetic flux and magnetic flux linkage?
- What happens when a conductor moves through flux?
- How does flux density affect this?
- How does speed of movement affect this?
- What is Faraday's law?

FARADAY'S LAW

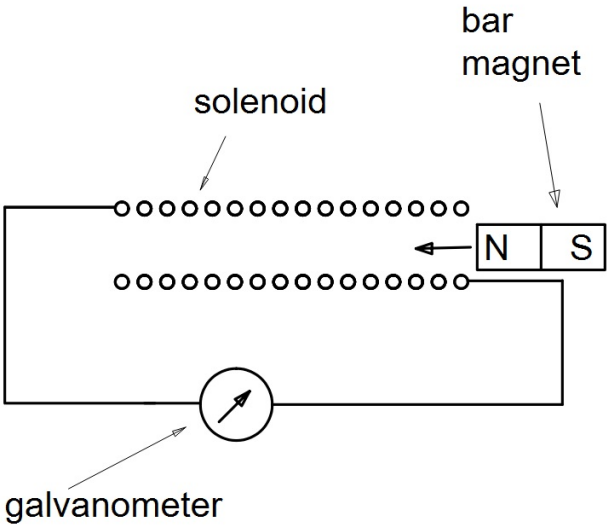
Generating current [version 1]

- Swing the wire through the magnet's field.
- What happens?



Generating current [version 2]

- Move the magnet on a stick into and through the coil.
- What happens?



FARADAY'S LAW

Faraday's law [concept]

- When a **conductor moves relative to** a **magnetic field**
- An **emf is induced**
- And a current can flow
- The flux density matters!
- The relative speed matters!
- At a maximum if conductor is perpendicular to field

Faraday's law [definition]

The **induced emf** is **equal to** the **rate of change in flux linkage**.

FARADAY'S LAW

Faraday's law [formula]

$$\varepsilon = \Delta\Phi/\Delta t$$

Where:

ε = induced emf / V
Φ = flux linkage / Wb
t = time for change to occur / s

Independent study

- Page 195 questions from your text book

Further thoughts?