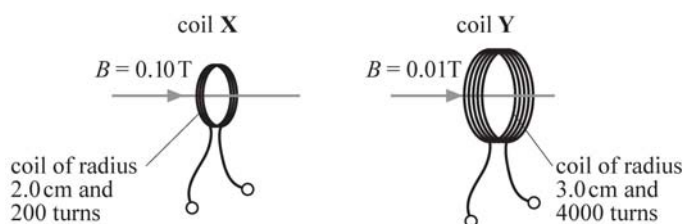


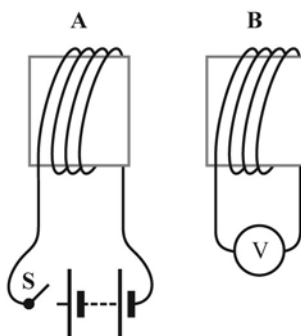
10 End-of-chapter test

Answer all questions.

- 1 a State Faraday's law of electromagnetic induction. [1]
 b Lenz's law expresses an important conservation law. Name this conservation law. [1]
 c i Define magnetic flux for a coil placed at right-angles to a magnetic field. [1]
 ii Determine for which of the two coils **X** and **Y**, each placed at right-angles to the magnetic field, is the magnetic flux linkage the greatest. [4]



- 2 The diagram below shows two coils **A** and **B** placed close to each other.
 a The switch **S** is closed. Explain why the voltmeter placed across coil **B** indicates an induced e.m.f. for a short period of time. [4]
 b The coil **A** has 200 turns and cross-sectional area $9.0 \times 10^{-4}\text{ m}^2$. With the switch **S** closed, the current through the coil **A** produces a uniform magnetic field within the coil of magnetic flux density $2.5 \times 10^{-3}\text{ T}$. Calculate the magnetic flux linkage for this coil. [3]



- 3 A rectangular coil of length 3.0 cm and width 2.0 cm has 100 turns. The coil is placed at right-angles to a uniform magnetic field of magnetic flux density $1.2 \times 10^{-2}\text{ T}$.
 a The coil is removed from the magnetic field in a time of 50 ms. Calculate the magnitude of the average induced e.m.f. across the ends of the coil. [5]
 b Explain how your answer to **a** would change if the magnetic field were parallel to the plane of the coil. [2]

Total: _____ Score: _____ %
 21