10 (a) A cross-section through a current-carrying solenoid is shown in Fig. 10.1.

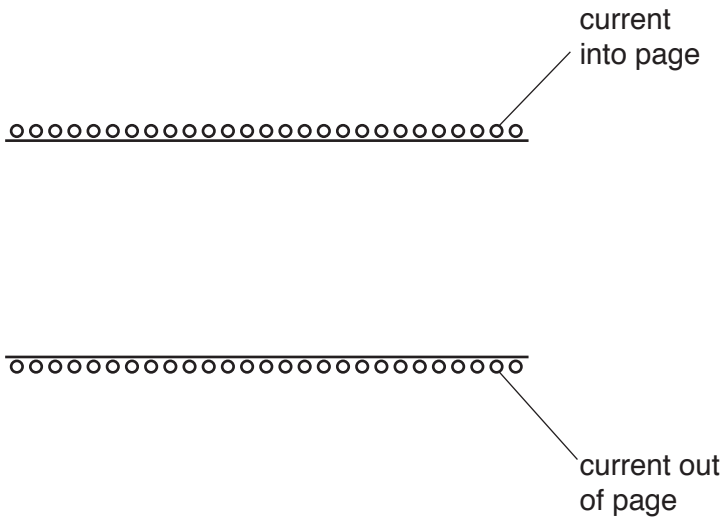

Fig. 10.1

On Fig. 10.1, draw field lines to represent the magnetic field inside the solenoid. [3]

(b) State Faraday's law of electromagnetic induction.

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..... [2]

(c) A coil of insulated wire is wound on to a soft-iron core.

The coil is connected in series with a battery, a switch and an ammeter, as shown in Fig. 10.2.

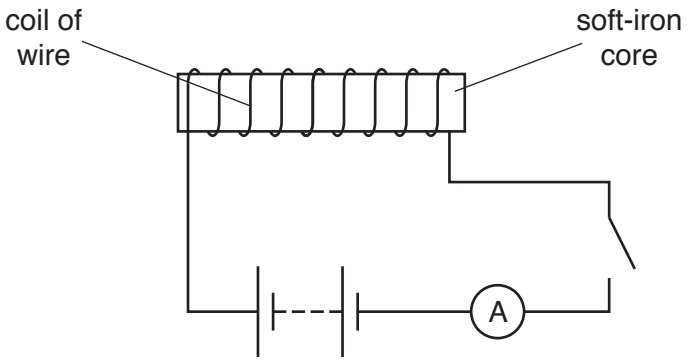

Fig. 10.2

Use laws of electromagnetic induction to explain why, when the switch is closed, the current increases **gradually** to its maximum value.

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..... [3]

[Total: 8]