

**GCSE Physics B (Twenty First Century Science)**  
**J259/03** Depth in physics (Higher Tier)

**Question Set 7**

1

Ali investigates electromagnetic induction.

He pushes a magnet quickly into a coil of wire. He uses an ammeter to record the biggest current produced in the coil.

He repeats the experiment for coils with different numbers of turns.

**Table 7.1** shows his results.

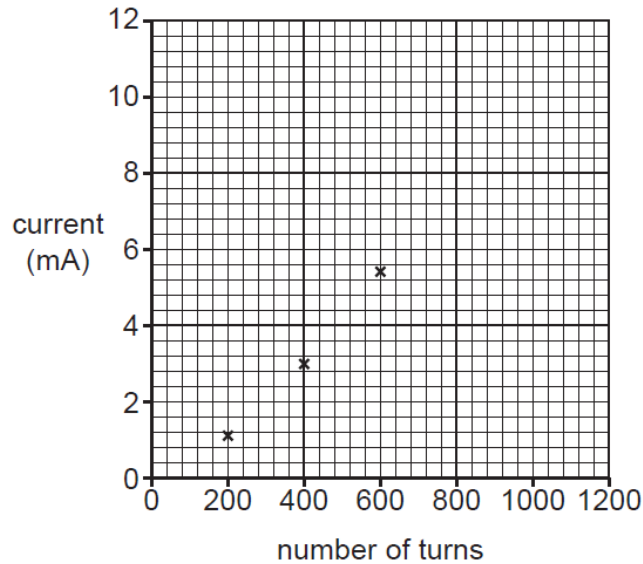
Number of turns	Current (mA)
200	1.1
400	3.0
600	5.4
800	6.7
1000	9.1
1200	11.0

**Table 7.1**

(a) Explain why a current is produced in the coil.

[2]

(b) (i) Complete the graph by plotting the missing results in **Table 7.1** and draw a line of best fit.



(ii) Use your line of best fit to determine the maximum current that Ali could produce if he used a coil with **700 turns**.

[2]

Maximum current = ..... mA

[1]

- (iii) Amaya says that this experiment is not valid because the speed of the magnet may be different each time.

Suggest how Ali could control the speed of the magnet.

[1]

- (c) As Ali pushes the magnet towards the coil, he feels a small repulsive force.

Explain why.

[2]

**Total Marks for Question Set 7: 8**

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