

MARK SCHEMES – Physics Unit 7 Homework

Q1 (a) the direction of the magnetic field 1

(b) decreases 1

(c) the distance between the field lines
allow the closer the lines the stronger the field for 2 marks 1

is smaller where the field is stronger
allow where the lines are close the field is strong for 1 mark 1

(d) straight line drawn within 1 mm of all points on the graph 1

(e) 1.3 – 0.9 1

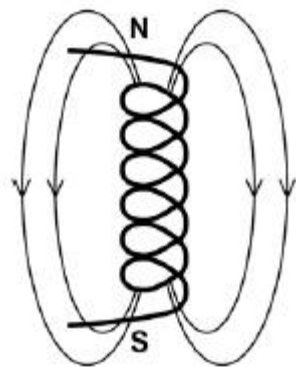
0.4 arbitrary units 1

(f) increase the current through the solenoid
if more than 2 boxes are ticked deduct 1 mark for each extra box ticked 1

increase the potential difference across the solenoid 1

(g) at least one field line on each side of the solenoid 1

an arrow to indicate the field going from North to South pole



(h) add an iron core
*allow a description of this, eg wrap the wire around an iron nail
adding a core is insufficient* 1

2) (a) The movement of liquid iron in the Earth's outer core

- 1
- (b) will attract 1
- will repel 1

(c) **Level 2 (3–4 marks):**
 A detailed explanation is provided that includes a coherent comparison of the properties of the types of magnet and presents a clear argument to support the use of electromagnets. Logical links are made between relevant points and use in a scrapyard

Level 1 (1–2 marks):
 Relevant points made about the properties of the magnets. An attempt at comparison may be made, but logic is unclear and unstructured and links to use in scrapyard may not be present

0 marks:
 No relevant content.

Allow steel or iron for car body throughout

Indicative content

- an electromagnet can be switched on and off
- so it can be used to lift a car body
- and release a car body
- so it can easily be used to move car bodies from one place to another in the scrapyard
- a permanent magnet cannot be switched off to release a car body
- so would not be as useful in the scrapyard
- the strength of the magnetic field of an electromagnet can be varied
- so an electromagnet can lift different masses
- so can deal with different vehicles
- but the strength of the magnetic field of a permanent magnet cannot be varied or is fixed
- so a permanent magnet can only lift up to a certain mass

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3) (a) Cobalt

1

Nickel

Iron ; Steel

1

(b) **Either**

- put iron filings 1
- on a piece of paper 1
- over the magnet 1

or

- use (plotting) compass(es) (1)
- around the magnet (1)
- with the needle showing the direction (1)