

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

(a) iron and steel will be attracted (to the magnet) 1

aluminium, copper and tin will not be attracted (to the magnet)

allow 1 mark if one metal is in the incorrect list, but all the other four are correct

if no other mark awarded allow iron and steel are magnetic for 1 mark

1

(b) the paperclip would still be attracted to the magnet 1

because of induced magnetism

allow the paper clip becomes an induced magnet

allow because the paper clip is a temporary magnet

allow there is a magnetic field at the south pole

1

(c) weight = mass $\times$ gravitational field strength

or

$$W = mg$$

do not accept gravity for gravitational field strength

1

(d) 1.0 g = 0.0010 kg 1
allow 0.001 (kg)

$$\text{weight of 1 paperclip} = 0.0010 \times 9.8$$

allow 0.0098 (N)

allow correct substitution using incorrectly/not converted value of mass of paperclip

1

$$\text{Force} = 0.0098 \times 20 = 0.196 \text{ (N)}$$

allow correct calculation using incorrectly/not converted value of mass of paperclip

1

[8]

Q2.

(a)	1st box ticked	1
(b)	(permanent magnet) has no effect on the aluminium	1
	iron is attracted (to the permanent magnet)	1
	(only) the (permanent) magnet can be repelled (by the permanent magnet)	1
(c)	Level 3: Relevant points (reasons / causes) are identified, given in detail and logically linked to give a clear account.	5–6
	Level 2: Relevant points (reasons / causes) are identified, and there are attempts at logically linking. The resulting account is not fully clear.	3–4
	Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.	1–2
	No relevant content	0

Indicative content

- completing the circuit
- turns the electromagnet on
- there is a current in the coil
- a magnetic field is produced around the coil
- the iron core becomes magnetised
- move electromagnet towards the blocks
- the block is attracted to the electromagnet
- moving the crane moves the block
- switching off the current switches off the electromagnet
- releasing the block

[10]