PEAK SUCCESS EDUCATION

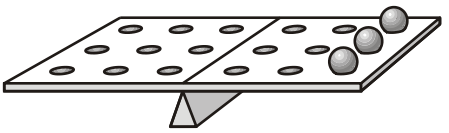
Kenya Certificate of Secondary Education

MARKING SCHEME

1. (a) • it will go down 1

accept 'it will tip anticlockwise'
accept 'it will tip towards A'
accept 'end B will go up'
'tip' is insufficient

(b) • 1



all three balls are required for the mark
ignore any shading and size

(c) • 100 1

(d) (i) • carbon ✓ 1 (L4)

if more than one box is ticked, award no mark

(ii) any **one** from 1

- steel contains iron
- brass does not contain iron
- iron is magnetic **or** sticks to a magnet
- cooper and zinc are not magnetic **or** will not stick to a magnet

accept 'steel contains iron and carbon'
the answer must relate to the elements
'steel is magnetic' is insufficient
'copper is not magnetic' is insufficient
'zinc is not magnetic' is insufficient

'brass is not magnetic' is insufficient

'copper and zinc are not magnets' is insufficient

[5]

2. (a) • both picked up the same number **or** four paper-clips 1

accept 'they both picked up the same number'

accept 'same amount of paper-clips'

accept 'there were 5 out of 9 paper-clips left for both'

accept 'the same mass of paper-clips'

'they hold the same clips' is insufficient

(b) any **one** from 1

- it does not stay magnetised
- it can be turned off

accept 'you cannot turn steel off'

- objects do not stay attached to it
- iron loses its magnetism
- steel stays magnetised

(c) (i) any **one** from 1 (L6)

- the greater the distance the lower the reading
- the further away the smaller the reading

accept the converse

accept 'at big distance the field is weaker' or the converse

accept 'at 50 mm the reading is lower'

accept the converse

*do **not** accept 'the bigger the distance the smaller the amps **or** current'*

(ii) • the greater the current the stronger the electromagnet 1

(iii) any **one** from 1

- change the number of turns
- change the thickness of the wire
- change the diameter of the core

accept 'use more coils'
accept 'use fewer or less coils'
accept 'put the coils closer together' ***or*** *the converse*
accept 'change the metal of the coils'
accept 'use a different sized core'
accept 'use nickel ***or*** *cobalt core'*
accept 'use a different core'
'use bigger coils' is insufficient
'use more wire' is insufficient
do ***not*** *accept 'add more batteries'*

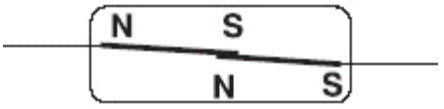
[5]

3. (a) (i) · add more coils **or** turns 1

accept 'put coils ***or*** *turns closer together'*
do ***not*** *accept 'move it closer'*

· increase the current 1

accept 'increase the number of cells ***or*** *batteries'*
accept 'increase the voltage ***or*** *power'*

(ii) 

1

all four *poles must be correct for the mark*

(b) (i) any **one** from 1 (L7)

· steel stays magnetised

· iron loses its magnetism

· the switch would stay closed

· the switch would not spring open

(ii) · copper is a better conductor than iron 1

accept the converse

accept 'copper has a lower resistance'

*accept 'iron **or** the reed switch has a greater resistance'*

[5]

4. (a) they will repel **or** it will push the magnet away **or** it will push the coil 1

accept 'it will change the direction of the force'

accept 'it will make the magnet twist around and attract'

*do **not** accept 'the magnet moves away'*

(b) (i) any **one** from 1

- because the magnet is heavier **or** the paper clip is lighter

accept 'because the magnet is heavy'

- so the moments are equal

(ii) current in the coil produces a magnetic field 1

*accept 'the coil becomes an electromagnet' **or** 'the coil is magnetised'*

- the magnet is attracted **or** repelled 1

*accept 'the field **or** coil exerts a force on the magnet'*

(iii) any **one** from 1

- the straw is deflected more **or** moves more
- the reading is higher **or** goes up

any **one** from 1

- it increases the magnetic field
- it makes the electromagnet stronger
- it attracts **or** repels the magnet more strongly

[6]

5. (a) any **two** from 2

- on each side of the pivot, the like poles repel

  *accept 'like poles repel' **or** 'N repels N and S repels S'*

  *do **not** accept 'the poles of the magnet repel' **or** 'opposites attract'*

- on each magnet the two poles are of equal strength
- if the N pole is tipped downwards, the N poles repel more strongly
- if the S pole is tipped down, the S poles repel more strongly
- the two poles which are closest together repel more strongly
- the moments are balanced **or** the forces are equal when the bar magnet is horizontal

  accept 'the forces balance when the bar is level'

(b) (i) any **one** from 1

- the right hand end will tip down

  ***only** accept 'it will tip' if the correct direction is indicated*

- the left hand end will tip up
- the S pole will move down
- the N pole will move up

any **two** from 2

- the coil weakens the S pole of the horseshoe magnet

  *accept 'the S pole of the horseshoe magnet becomes an N pole' **or** 'the S pole is cancelled out'*

- the repulsion between the S poles is weaker

  accept 'the S pole of the bar magnet is now attracted'

- the coil strengthens the N pole of the horseshoe magnet

  *accept 'the coil reinforces the N pole' **or** 'the N pole becomes stronger'*

- the repulsion between the N poles is stronger

(ii) it tips the other way **or** the N pole tilts down 1

*do **not** accept 'the opposite will happen'*

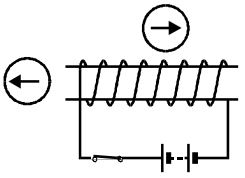
(iii) it rocks 1

*accept 'it would vibrate' **or** 'it would oscillate' **or** 'it would move back and forth'*

*accept 'the N **or** S pole goes up and down'*

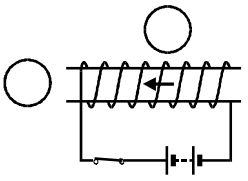
*do **not** accept 'it goes up and down'*

[7]

6. (a) (i)  2

award one mark for each correctly drawn arrow

the arrows must be drawn in the compasses

(ii)  1

the arrow must be drawn in the tube

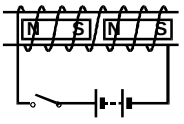
(iii) North *do **not** accept 'the same direction'* 1

(b) any **one** from 1

- reverse the battery
- wind the coil in the other direction

*accept 'connect the battery the other way round' **or** 'change the direction of the flow of electricity' accept 'reverse the coil'*

*do **not** accept 'turn the glass tube around'*

(c) (i) 

1

***all four** poles are required for the mark*

(ii) they attract each other 1

*accept 'they attract' **or** 'unlike poles attract'*
*do **not** accept 'they are magnetised'*

[7]