Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

(a) current

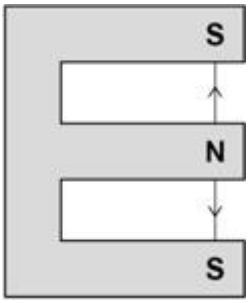
allow charge flow

or

potential difference

1

(b)



1

(c) an induced magnet is a material that becomes a magnet when it is placed in a magnetic field

allow 'when close to another magnet' for 'when it is placed in a magnetic field'

or

an induced magnet loses most / all of its magnetism (quickly) when removed from a magnetic field

allow 'no magnets are nearby' for 'removed from a magnetic field'

'temporary magnet' alone is insufficient

1

(d) motor effect

1

(e) 16 mA = 0.016 A

allow 1.6×10^{-2} *(A)*

1

$0.013 = B \times 0.016 \times 6.5$

allow correct substitution using incorrectly / not converted current

1

$$B = \frac{0.013}{0.016 \times 6.5}$$

allow correct re-arrangement using incorrectly / not converted current

1

B = 0.125 (T)

allow correct calculation using incorrectly / not converted current

allow 0.13 (T)

1

(f) **Level 2**: Scientifically relevant features are identified; the way(s) in which they are similar / different is made clear and (where appropriate) the magnitude of the similarity / difference is noted.

3-4

Level 1: Relevant features are identified and differences noted.

1-2

No relevant content

0

Indicative content:

- for all three people, the minimum sound level that can be heard increases as frequency increases

Age

- the minimum sound level that can be heard increases with age
- between 2000 and 3000 Hz the minimum sound level that can be heard increases more in **B** compared to **C**
- **C** has very little variation in the minimum sound level that can be heard at all frequencies

Working in a loud environment:

- increases the minimum sound level that can be heard at all frequencies above 2000 Hz compared to working in a quiet environment
- the minimum sound level that can be heard increases more as frequency increases from 2000 to 4000 Hz compared to working in a quiet environment
- doesn't affect the minimum sound level that can be heard at 2000 Hz

to access **level 2** the answer must include at least **one** comparison for age **and one** comparison for working in a loud environment, using supporting data/information from the graph

[12]

Q2.

(a) iron

allow nickel / cobalt

do not allow steel

1

it is easily magnetised (and demagnetised)

allow it is a magnetic material

1

MP 2 is dependent on MP 1

(b) $\frac{230}{\quad} = \frac{2000}{\quad}$

1

$V_s = \frac{40}{2000} \times 230$

subsequent marks can only be awarded if the first equation is correct and has been used

1

$V_s = 4.6$ (V)

1

$V_s = 4.6 \times I_s = 6.9$

this mark may be awarded if the pd is incorrectly calculated

1

$I_s = 1.5$ A

allow a correctly calculated I_s using an incorrectly calculated pd

1

OR

$6.9 = I_p \times 230$ (1)

$I_p = \frac{6.9}{230}$ (1)

subsequent marks can only be awarded if the first equation is correct and has been used

$I_p = 0.03$ (A) (1)

$I_s = 0.03 \times \frac{2000}{40}$ (1)

this mark may be awarded if I_p is incorrectly calculated

$I_s = 1.5$ (A) (1)

allow a correctly calculated I_s using an incorrectly calculated I_p

1

[7]