

Mark schemes

Q1.

- (a) (most reactive)
Mg Zn Ni Cu Ag
(least reactive)
allow name of metal for symbol
allow 1 mark for
(most reactive)
Mg Zn Ni
or
Ni Cu Ag
(least reactive)

2

(justification)
the higher the (positive) voltage the more reactive the metal
allow the most reactive (metal) has the highest (positive) voltage
allow the least reactive (metal) has the most negative voltage
allow the greater the difference in reactivity the greater the (magnitude of the) voltage

1

- (b) **Level 3:** The method would lead to the production of a valid outcome.
The key steps are identified and logically sequenced.

5–6

Level 2: The method would not necessarily lead to a valid outcome.
Most steps are identified, but the method is not fully logically sequenced.

3–4

Level 1: The method would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.

1–2

No relevant content

0

Indicative content

- **set up cell with sodium chloride solution as the electrolyte**
- **use two different metals as electrodes**
- **measure voltage**
- **repeat at different concentrations of electrolyte solution**
- **by diluting the sodium chloride solution with water**
- using measured volumes of sodium chloride solution and water
- measure volumes with a measuring cylinder (allow pipette / burette)
- use the same two metals each time

- use the same volume of electrolyte solution

(c) hydrogen is oxidised (electrochemically)
ignore references to electrodes
allow hydrogen loses electrons

1

to produce water

1

[11]