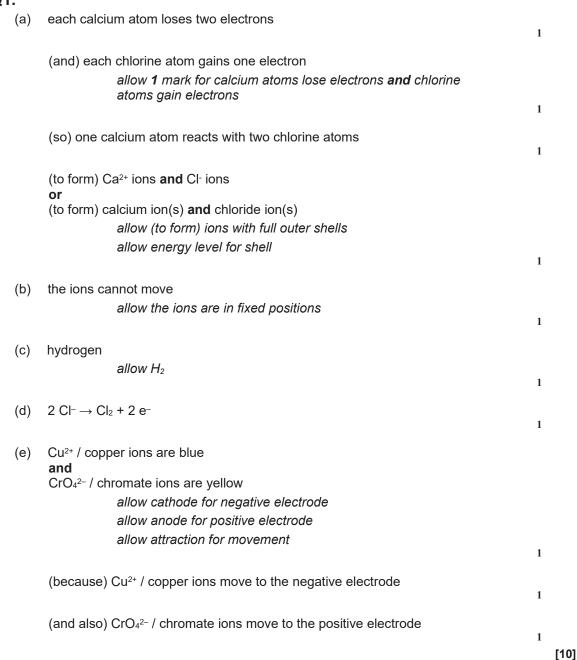
Mark schemes

Q1.



1

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Q2.

(a) $Al^{3+} + 3e^- \rightarrow Al$ allow multiples

(b) sodium is more reactive than aluminium

(c) water (molecules) break down

(to) produce (H⁺ and) OH⁻ (ions)

(so) OH- (ions) are attracted / move to the positive electrode

(where) OH- (ions) are discharged / oxidised to give oxygen (molecules) allow (where) OH- (ions) lose electrons to give oxygen (molecules)

allow hydroxide ions for OH- throughout

(d) (change)

use measuring cylinders (instead of test tubes)

allow (inverted) burettes for measuring cylinders allow gas syringes for measuring cylinders

(reason)

because there is a scale (on the measuring cylinders)

allow measuring cylinder(s) measure volume

(e) 10 cm³

[9]

1

Q3.

(a) Na⁺ + e⁻ \rightarrow Na

(b) so the products do not react (to reform sodium chloride)

(c) ion

(d) hydrogen / H⁺ (ions)

hydroxide / OH- (ions)

(e) sodium hydroxide

allow NaOH

(f) sodium ions and hydroxide ions are left (in solution)

(because) hydrogen ions are discharged / reduced (at the negative electrode to form hydrogen)

allow (because) hydrogen ions gain electrons (at the negative electrode to form hydrogen)

allow (because at the negative electrode) 2 H^+ + 2 $e^- \rightarrow H_2$

(and because) chloride ions are discharged / oxidised (at the positive electrode to form chlorine)

allow (and because) chloride ions lose electrons (at the positive electrode to form chlorine)

allow (and because at the positive electrode) 2 Cl $^- \rightarrow$ Cl $_2$ + 2 e $^-$

[9]

1