

Name of the Student: _____

Max. Marks : 16 Marks

Time : 16 Minutes

Mark Schemes

Q1.

(a) Covalent

Do not allow dative covalent or coordinate (covalent)

1

(b) Cl^- not donating lone pair (to Cu^{2+}) Cl^- does not form a coordinate/dative bond (to Cu^{2+})*Allow without charges but penalise incorrect charges* *Cl^- / it is bonded ionically (to Cu^{2+})*

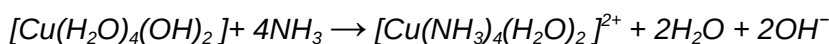
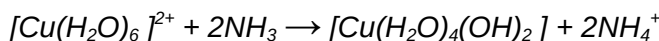
1

(c) $[\text{Cu}(\text{H}_2\text{O})_6]^{2+} + 4\text{NH}_3 \rightarrow [\text{Cu}(\text{NH}_3)_4(\text{H}_2\text{O})_2]^{2+} + 4\text{H}_2\text{O}$

1

Deep blue / Royal blue / Dark blue (solution)

1

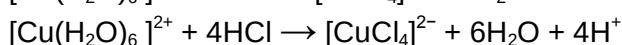
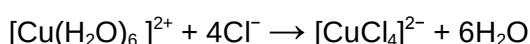
Allow combination of:*Do not penalise missing square brackets**Ignore initial colour of Cu^{2+} (aq)*(d) CuCO_3 or copper carbonate*Penalise incorrect oxidation state**Allow correct formula for basic copper carbonate*

1

(e) HCl/ hydrochloric acid

*Ignore concentration**Allow soluble chloride salt*
Also allow any reagent which leads to a change in colour of solution due to a change in ligands (e.g. $\text{NH}_2\text{CH}_2\text{CH}_2\text{NH}_2$) or change in oxidation state (e.g. SO_2) and associated correct equations.

1

*Mark independently*

1

(f) $(3d^{10})$ or has full (3)d (sub) shell/orbital

Penalise incorrect principal quantum number

1

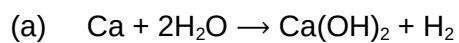
It is colourless/cannot absorb (frequencies of) visible light

Ignore clear

1

[9]

Q2.



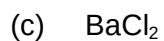
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8 – 12

1

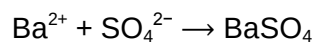
(b) Decrease

1



Allow $\text{Ba(NO}_3)_2$ or other soluble barium salt

1



Allow equation if state symbols missing but penalise if state symbols are incorrect

1

(d) Strong attraction

1

Between positive and negative ions

1

[7]