Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Inorganic 2

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) oxidation state of N in $Cu(NO_3)_2$: +5; **1**

oxidation state of N in NO_2: +4; **1**

oxidation product: oxygen; **1**

(b) copper-containing species: $[Cu(H_2O)_6]^{2+}$; **1**

shape: octahedral; **1**

(c) (i) precipitate B: $Cu(H_2O)_4(OH)_2$ or $Cu(OH)_2$ or name; **1**

equation: $[Cu(H_2O)_6]^{2+} + 2NH_3 \rightarrow Cu(H_2O)_4(OH)_2 + 2NH_4^+$

OR

$NH_3 + H_2O \rightarrow NH_4^+ + OH^-$

and

$[Cu(H_2O)_6]^{2+} + 2OH^- \rightarrow Cu(H_2O)_4(OH)_2 + 2H_2O$; **1**

(ii) NH_3 accepts a proton; **1**

(d) (i) identity: $[Cu(NH_3)_4(H_2O)_2]^{2+}$; **1**

colour: deep blue; **1**

equation:

$Cu(H_2O)_4(OH)_2 + 4NH_3 \rightarrow [Cu(NH_3)_4(H_2O)_2]^{2+} + 2H_2O + 2OH^-$; **1**

(ii) NH_3 is an electron pair donor; **1**

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(e) identity: $[CuCl_4]^{2-}$;

1

colour: yellow-green;

1

shape: tetrahedral;

1

(f) (i) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}$;

1

(ii) role of Cu: a reducing agent;

1

[17]

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