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

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Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

Mark Schemes

Q1.

(a) increases from fluorine to iodine **(1)**

sizes of molecules increase **(1)**
(or molecules have more electrons or mass of molecules increases)
QoL mark

Magnitude of intermolecular forces or vdW forces increase **(1)** (or more vdW forces)

More energy required to separate molecules (or particles) **(1)**
(or more energy to break intermolecular forces)
or intermolecular forces difficult to break

4

(b) with NaCl white ppt **(1)**
soluble in ammonia **(1)**
note, if ppt clearly refers to wrong substance
e.g. NaCl then C.E = 0

with NaBr cream (or off white or biege) ppt **(1)**
partially soluble (or insoluble) in ammonia **(1)**
ignore references to conc ammonia
if obviously added silver nitrate mixed with ammonia allow:
*NaCl: no change **(2)***
*NaBr: cream ppt **(2)***

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(c) oxidising ability decreases from chlorine to iodine (or down the Group) **(1)**

$Cl_2 + 2Br^- \rightarrow 2Cl^- + Br_2$ **(1)**
allow use of NaBr, HBr etc

Br_2 red brown (or yellow or orange) liquid (or solution but not solid) **(1)**

$Cl_2 + 2I^- \rightarrow 2Cl^- + I_2$ **(1)**
allow use of NaBr etc, penalise HI once only

I_2 brown solution / black solid **(1)**
do not allow any reference to purple

$Br_2 + 2I^- \rightarrow 2Br^- + I_2$ **(1)**

Yellow/orange/red-brown/brown solution goes brown/darker brown solution/black solid **(1)**

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Q2.

(a) *Trend*: decrease **(1) C.E if wrong**
Explanation: number of shells increases (or atomic radius increases) **(1)**
increased nuclear shielding **(1)**
or less attraction for bond (pair electrons)

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(b) (i) *Observation*: brown solution or black solid **(1)**
purple wrong

Equation: $Br_2 + 2I^- \rightarrow I_2 + 2Br^-$ **(1)**
Allow NaI, KI

(ii) Br_2 is a weaker oxidising agent than Cl_2 **(1) (or converse)**

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OR Br_2 is less reactive than Cl_2
penalise Cl, Br, Cl^-, Br^- etc

(c) *Observation with KF (aq)*: no change **(1) (or colourless)**
Observation with KBr(aq): cream/off white <u>ppt</u> **(or solid) (1)**

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(d) $KF + H_2SO_4 \rightarrow KHSO_4 + HF$ **(1)**
or $2\ KF + H_2SO_4 \rightarrow K_2HSO_4 + 2\ HF$
Allow ions

1

(e) $2\ H_2SO_4 + 2\ Br^- \rightarrow \underline{SO_2 + Br_2} + 2\ H_2O + SO_4^{2-}$ **(1)**
Balanced equation **(1)**
Allow $2\ H_2SO_4 + 2\ NaBr \rightarrow SO_2 + Br_2 + 2\ H_2O + Na_2SO_4$
$H_2SO_4 + 2\ HBr \rightarrow 2\ H_2O + Br_2 + SO_2$ etc

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