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

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Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

(a) (i) $Ba + \mathbf{2}H_2O \longrightarrow Ba(OH)_2 + H_2$

Ignore state symbols

Credit multiples and correct ionic equations

1

(ii) (Reactivity with water) increase(s) / increasing / increased (down the Group / from Mg to Ba)

Accept "greater" or "gets more" or similar words to that effect.

Ignore reference to "increase in solubility / gets more soluble"

1

(b) $Mg(OH)_2$

Accept $Mg^{2+}(OH^-)_2$ / $Mg(HO)_2$

Insist on brackets and correct case

1

(c) **M1** Barium meal / barium swallow / barium enema or (internal) X-ray or to block X-rays

M2 $\underline{BaSO_4}$ / barium sulfate is insoluble (and therefore not toxic)

*Accept a correct reference to **M1** written in the explanation in **M2**, unless contradictory*

*For **M2** NOT barium ions*

NOT barium

NOT barium meal and NOT "It"

Ignore radio-tracing

2

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Q2.

(a) (i) Increases

1

(ii) Decreases

1

(iii) Increases

1

(b) Calcium has a higher melting point than strontium, because

CE = 0 for reference to molecules or intermolecular forces or covalent bonds

Correct reference to size of cations/proximity of electrons

M1 (For Ca) delocalised <u>electron(s) closer to cations / positive ions / nucleus</u>

Ignore "Van der Waals forces (between atoms)" but penalise if between "molecules"

OR <u>cations / positive ions / atoms are smaller</u>

OR <u>cation / positive ion / atom or it has fewer (electron) shells / levels</u>

Ignore general Group 2 statements

Answers must be specific

Relative strength of metallic bonding

M2 (For Ca) has <u>stronger</u> attraction between the <u>cations / positive ions / nucleus</u> and the <u>delocalised electron(s)</u>

Penalise M1 if Ca or Sr is said to have <u>more or less</u> delocalised electrons

OR

<u>stronger metallic bonding</u>

(assume argument refers to Ca but accept converse argument for Sr)

Ignore reference to shielding

2

(c) (i) Sulfuric acid / it contains <u>sulfate ions / SO_4^{2-}</u>

OR

Do not penalise an <u>additional</u> but incorrect formula for sulfate ion.

<u>Sulfuric acid</u> would form a (white) <u>precipitate</u>

If only the formula of the sulfate ion is given, it must be correct

1

(ii) $Ba^{2+} + SO_4^{2-} \longrightarrow BaSO_4$ ONLY

Ignore state symbols

No multiples

1

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Q3.

(a) $Ca(OH)_2$ OR $Mg(OH)_2$

Ignore name

Could be ionic

1

(b) NaF or sodium fluoride

OR

NaCl or sodium chloride

Either formula or name can score

Do not penalise the spelling ''fluoride''

When both formula and name are written,

- *penalise contradictions*
- *if the attempt at the correct **formula** is incorrect, ignore it and credit **correct name** for the mark unless contradictory*
- *if the attempt at the correct name is incorrect, ignore it and credit **correct formula** for the mark unless contradictory*

1

(c) NaClO OR NaOCl

Ignore name (even when incorrect)

The correct formula must be clearly identified if an equation is written

1

(d) **Br_2** (ONLY)

Only the correct formula scores;

penalise lower case ''b'', penalise upper case ''R'', penalise superscript

Ignore name

The correct formula must be clearly identified if an equation is written

1

(e) **M1** S OR S_8 OR S_2

M2 I_2 (ONLY)

Ignore names

penalise lower case ''i'' for iodine,

penalise superscripted numbers

Mark independently

The correct formula must be clearly identified in each case if an equation is written

2

(f) (i) $CH_3CH_2CH=CH_2$

Structure of but-1-ene. Ignore name

Credit ''sticks'' for C-H bonds

1

(ii) $CH_3CH_2CH_2CH_2OH$

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Structure of butan-1-ol. Ignore name
Credit ''sticks'' for C-H bonds

1

(iii) $CH_3CH_2CH_3$

Structure of propane. Ignore name
Ignore calculations and molecular formula
Credit ''sticks'' for C-H bonds
Ignore the molecular ion

1

(iv) CH_3CH_2Br OR $C_2H_5B_r$

Structure of bromoethane.
Ignore name and structure of nitrile
Credit ''sticks'' for C-H bonds

1

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