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

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

(a) Row 1 = no (visible) change/reaction / stays orange/yellow

Row 1 - allow stays brown (ignore red)

Row 2 = name or formula of a (hydrogen)carbonate (e.g. Na_2CO_3, $NaHCO_3$, $CaCO_3$)
OR
name or formula of reactive metal (e.g. Mg, Na)

Row 2 - name or formula, but formula must be correct if given (even if correct name also given); allow bicarbonate for hydrogencarbonate; ignore reference to limewater for a (hydrogen)carbonate

Row 3 = no (visible) change/reaction/stays blue

Do not allow nothing/no observation for Row 1/3

3

(b) **M1** mass of H = 0.50 - 0.45 (= 0.05(0)) (g)

Correct answer scores 3 marks

M1 10% H, 90% C

M2 $C\ \frac{0.45}{12(.0)} = 0.0375,\ H = \frac{0.05}{1(.0)} = 0.05$

Allow ECF from M1 to M2

Allow ECF from M2 (if an attempt at moles) to M3

M3 C_3H_4

Alternative M1/2

M2 $C\ \frac{90}{12(.0)} = 7.5,\ H = \frac{10}{1(.0)} = 10$

3

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Q2.

(a) Trichlorofluoromethane

No other names

1

(b) $CHFCl_2 + \bullet Cl \rightarrow \bullet CFCl_2 + HCl$

Equations in either order

$\bullet CFCl_2 + Cl_2 \rightarrow CFCl_3 + \bullet Cl$

Allow dot anywhere on each radical species

Allow 1 mark for two equations with missing dots that are otherwise correct

Ignore any arrows for electron movement

2

(c) $CFCl_3 \rightarrow \bullet CFCl_2 + \bullet Cl$

Allow dot anywhere on each radical species

Ignore any arrows for electron movement

1

(d) $O_3 + \bullet Cl \rightarrow \bullet OCl + O_2$

$\bullet OCl + O_3 \rightarrow 2\ O_2 + \bullet Cl$

Equations in either order

Allow dot anywhere on each radical species

Allow 1 mark for two equations with missing dots that are otherwise correct

(Accept alternative pair of equations for M2 (both needed for M2)

$O_3 \rightarrow O + O_2$

$ClO\bullet + O \rightarrow Cl\bullet + O_2$)

2

(e) Absorbs/removes ultraviolet/UV radiation that is harmful/causes (skin) cancer/causes (cell) mutations

Answer must refer to removal of UV <u>and</u> idea of it being harmful/the harm it causes

Ignore stopping UV/blocking UV/preventing UV/protecting from UV

ignore reference to greenhouse effect/gases/absorption of IR/global warming

1

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Q3.

(a) **M1** Misty / white / steamy fumes

M1 (immediate) White precipitate forms

M2 No visible change

M2 White precipitate forms <u>slowly</u>

2

(b) **M1** Propanal AND (blue solution gives a brick) red precipitate

If **M1** incorrect, allow ECF for suitable tests on remaining liquids

M1	(Warm with) acidified potassium dichromate (VI)	add Na	warm with a named carboxylic acid with conc H_2SO_4	(Warm with) acidified potassium manganate (VII)
M2	Propan-1-ol/alcohol AND (orange solution) goes green	Propan-1-ol/alcohol AND effervescence	Propan-1-ol/alcohol AND fruity smell	Propan-1-ol/alcohol AND (purple solution) goes colourless

3

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