

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

Name of the Student: _____

Max. Marks : 25 Marks

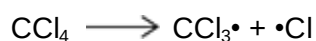
Time : 25 Minutes

Mark Schemes

Q1.

(a) UV light

1



1

(b) $\text{Cl}\cdot + \text{O}_3 \longrightarrow \text{ClO}\cdot + \text{O}_2$

1



1

(c) M_r of $\text{CF}_3\text{Cl} = 104.5$

$$\text{Moles freon} = 1.78 \times 10^{-4} \times 10^3 / 104.5 = 1.70 \times 10^{-3}$$

1

$$\text{Number of molecules} = 1.70 \times 10^{-3} \times 6.02 \times 10^{23} = 1.02 \times 10^{21}$$

1

$$\begin{aligned} \text{Molecules in } 500 \text{ cm}^3 &= (1.02 \times 10^{21} \times 500 \times 10^{-6}) / 100 \\ &= 5.10 \times 10^{15} \end{aligned}$$

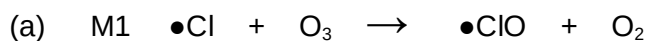
Allow answer in the range $5.10\text{--}5.13 \times 10^{15}$

Answer must be given to this precision

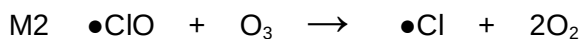
1

[7]

Q2.



1



1

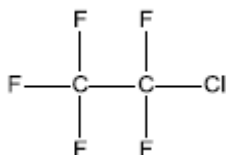
M1 and M2 could be in either order

Credit the dot anywhere on the radical

Penalise absence of dot once only

Individual multiples acceptable but both need to be doubled if two marks are to be awarded

Ignore state symbols



Must be displayed formula

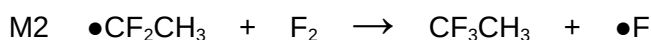
1

- (c) Does not contain Cl or does not release Cl (atoms/radicals)
or no C-Cl bonds
or C-F bond(s) strong / does not break / no F (atom/radicals) released

1



1

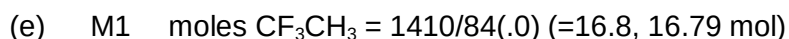


1

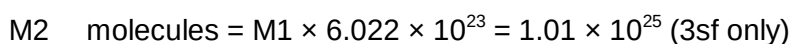
M1 and M2 could be in either order

Credit the dot anywhere on the radical

Penalise absence of dot once only



1



1

Correct answer scores both marks

Allow M2 for $M1 \times \text{Avogadro}$ with answer to 3 sf (but must have attempted to calculate moles for M1)

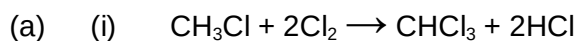
Ignore incorrect units

- (f) (bonds) vibrate/stretch/bend OR (as bonds) are polar
NOT polar molecules; 'they' = bonds

1

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Q3.



IGNORE state symbols

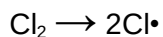
ALLOW multiples

1



This answer only

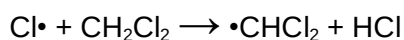
1



Penalise absence of dot once only

1

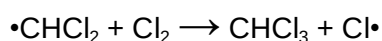
1st Propagation step



Penalise + and/or – charges every time

1

2nd Propagation step

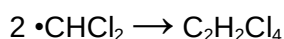


ALLOW $\cdot$ anywhere on $\cdot\text{CHCl}_2$ but, if drawn out as a structure, then

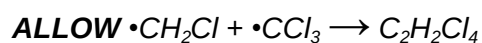
$\cdot$ must be on C

1

Termination



Mark independently



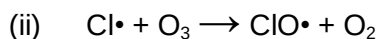
IGNORE state symbols throughout

1



ALLOW $\cdot$ anywhere on $\cdot\text{CF}_3$ unless displayed

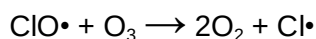
1



Equations can be in either order

Penalise absence of $\cdot$ once only

1



ALLOW $\cdot$ anywhere on $\cdot\text{ClO}$

NOT $\cdot\text{O}_3$

1

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