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

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

Mark Schemes

Q1.

(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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Q2.

(a) **M1** + 3 C_2H_6

M2 Zeolite/Aluminosilicate/Aluminium oxide

2

(b) Option B

1

(c) Alkenes

1

(d) **M1** Initial volume O_2 = 0.21 × 1350 = 283.5 (cm^3)

Alternative route:
M1 Vol Air decreases by 6.5 × 20 = 130 cm^3

M2 Volume of O_2 remaining = M1 - (6.5 × 20) = 153.5 cm^3

M2 = 1220 cm^3

M3 Volume of CO_2 formed = 20 × 4 = 80 cm^3

M3 Vol CO_2 produced = 4 × 20 = 80 cm^3

M4 Total volume of gas left = M2 + M3 + (0.79 × 1350) = 1300 cm^3

M4 Total Vol Air + CO_2 = 1220 + 80 = 1300 cm^3

4

(e) **M1** Acid rain

M1 Allow damages (limestone) buildings or statues/death of aquatic organisms/air pollution

M2 CaO or $CaCO_3$

2

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