

Chemistry

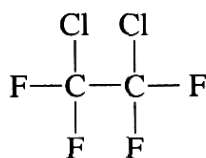
Section I – Part B (continued)

Marks

Question 25 (6 marks)

(a) What is the systematic name of the CFC in the diagram?

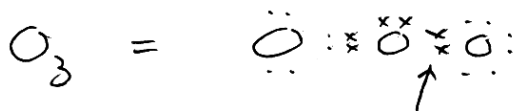
1



..... 1,2-dichloro-1,1,2,2-tetrafluoroethane

(b) Identify the bonding within ozone, using a Lewis electron-dot diagram.

2



↑
Coordinate covalent bond.

(c) Discuss how CFCs damage the ozone layer, using relevant equations.

3

..... CFC's when released into the troposphere, it is decomposed by U.V light
 ie. $\text{CCl}_3\text{F} \xrightarrow{\text{U.V. light}} \text{CCl}_2\text{F} + \text{Cl}$ to produce a chlorine radical. That
 when upon reaching the stratosphere will react with ozone. $\text{Cl} + \text{O}_3 \rightarrow \text{ClO} + \text{O}_2$
 and as a result destroying ozone rapidly as when it forms a 'ClO' and
 reacts again. $\text{ClO} + \text{O} \rightarrow \text{Cl} + \text{O}_2$ to form back into chlorine radical,
 hence like a chain reaction, destroying ozone repeatedly. Thus destruction
 of ozone allows more harmful U.V.B (short wavelength) light to
 reach earth's surface, which can cause fatigue and DNA mutations
 on a human's skin, But does would not occur if ozone is
 present as it absorbs these harmful radiations. Therefore the ozone
 layer needs to be protected by CFC's, that cause massive damage
 on the ozone layer.