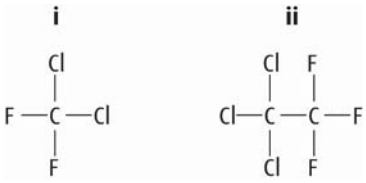
Core Worksheet – Option E

1 **a** Describe the greenhouse effect. [4]

b Discuss whether carbon dioxide or methane is a more effective greenhouse gas. [2]

2 **a** Write equations to show the formation of ozone in the atmosphere. [2]

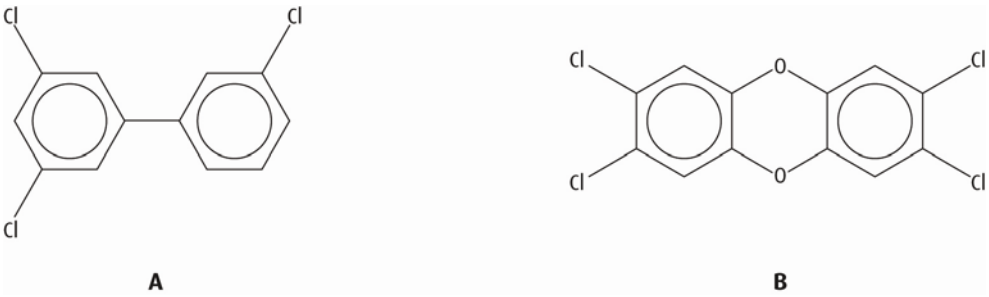
b The molecules shown below are classified as CFCs and contribute to the destruction of the ozone layer.



Give the IUPAC names for each of these CFCs. [2]

c Hydrocarbons have been suggested as alternatives to CFCs. Give one major disadvantage of using hydrocarbons instead of CFCs as propellants in aerosol cans. [1]

3 **a** The structures of two molecules that may be responsible for pollution of water are shown below. State the class of compounds to which each molecule belongs. [2]



b Most waste water treatment plants process water in three stages.

i Organic matter is removed in the secondary stage. Describe the activated sludge process for removal of organic matter. [3]

ii Phosphates are removed in the tertiary stage. Write an equation to show how phosphates are removed. [1]

iii Suspended solids, dissolved organic compounds and phosphates are all removed in the tertiary stage of water treatment. Name one other type of substance that is removed at this stage. [1]

4 Some countries in Europe use incineration to dispose of most of their waste, but other countries bury most of their waste in landfill sites. Give **two** advantages and **two** disadvantages of using each form of waste disposal. [4]

5 **a** State what is meant by **acid deposition**. [1]

b Nitrogen(II) oxide is a primary pollutant that can be formed by the reaction between nitrogen and oxygen in an internal combustion engine.

i Write an equation for the formation of nitrogen(II) oxide in the internal combustion engine. [1]

ii Explain, with the aid of a chemical equation, how nitrogen(II) oxide is removed from automobile exhaust gases. [2]

iii Nitrogen(II) oxide can be converted to nitric(V) acid in the atmosphere. Write equations for this conversion. [2]