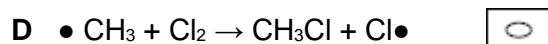
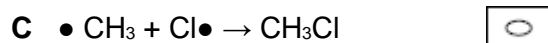
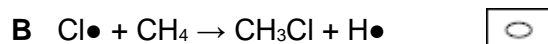
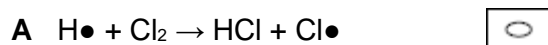


Q1.

Which is a propagation step in the chlorination of methane?



(Total 1 mark)

Q2.

Which statement is **not** correct about the pollutant sulfur dioxide?

A It can be removed from car exhaust gases by a catalytic converter.

B It can be removed from power station flue gases by reaction with calcium oxide.

C It can cause respiratory problems.

D It can cause acid rain.

(Total 1 mark)

Q3.

Which statement is correct about thermal cracking?

A A pressure between 100 and 200 kPa is used.

B Aromatic hydrocarbons are the major products.

C C–C bonds are broken.

D Zeolite catalysts are used.

(Total 1 mark)

Q4.

Which equation represents a propagation step?

- A $\cdot\text{CH}_2\text{Cl} + \text{Cl}\cdot \rightarrow \text{CH}_2\text{Cl}_2$
- B $\cdot\text{CH}_3 + \cdot\text{CH}_3 \rightarrow \text{C}_2\text{H}_6$
- C $\text{Cl}_2 \rightarrow \text{Cl}\cdot + \text{Cl}\cdot$
- D $\text{CH}_3\text{Cl} + \text{Cl}\cdot \rightarrow \cdot\text{CH}_2\text{Cl} + \text{HCl}$

(Total 1 mark)**Q5.**

An excess of methane reacts with chlorine in the presence of ultraviolet radiation.

What are the main products of this reaction?

- A CCl_4 and H_2
- B CCl_4 and HCl
- C CH_3Cl and H_2
- D CH_3Cl and HCl

(Total 1 mark)**Q6.**

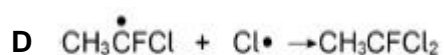
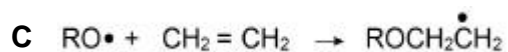
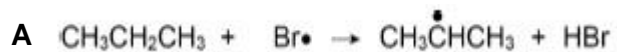
Which statement is correct about the fractional distillation of crude oil?

- A A zeolite catalyst is used.
- B Each fraction contains a mixture of hydrocarbons.
- C Gaseous fractions are formed by breaking covalent bonds.
- D The fractionating column is hottest at the top.

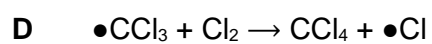
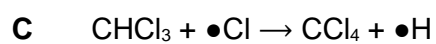
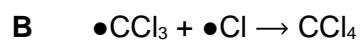
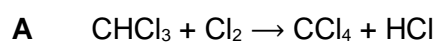
(Total 1 mark)

Q7.

Which equation represents a termination step?

**(Total 1 mark)****Q8.**

Which equation is a propagation step in the conversion of trichloromethane into tetrachloromethane by reaction with chlorine in the presence of ultraviolet light?

**(Total 1 mark)**

Q9.

The table shows possible conditions and products for the cracking of alkanes.

Which row is correct?

	Type of cracking	Conditions	Products	
A	Thermal	High pressure High temperature	Mainly alkanes	<input type="checkbox"/>
B	Thermal	Slight pressure High temperature	Mainly alkenes	<input type="checkbox"/>
C	Catalytic	Slight pressure High temperature	Mainly branched alkanes and aromatics	<input type="checkbox"/>
D	Catalytic	High pressure High temperature	Mainly branched alkanes and aromatics	<input type="checkbox"/>

(Total 1 mark)

Q10.

Which catalyst is used in the catalytic cracking of alkanes?

- A Concentrated phosphoric acid
- B Iron
- C Nickel
- D Zeolite

(Total 1 mark)

Q11.

Which correctly represents an incomplete combustion of pentane?

- A $C_5H_{12} + 8O_2 \rightarrow 5CO_2 + 6H_2O$
- B $C_5H_{12} + 8O_2 \rightarrow 4CO + CO_2 + 6H_2O$
- C $C_5H_{12} + 6O_2 \rightarrow 4CO + CO_2 + 6H_2O$
- D $C_5H_{12} + 5O_2 \rightarrow 4CO + CO_2 + 4H_2O + 2H_2$

(Total 1 mark)

Q12.

Which species is produced in a propagation step during the reaction of propane with an excess of chlorine in the presence of UV light?

- A $H\cdot$
- B C_3H_5Cl
- C $C_3H_6Cl_2$
- D C_6H_{14}

(Total 1 mark)

Q13.

Which of these substances does **not** contribute to the greenhouse effect?

- A Unburned hydrocarbons.
- B Carbon dioxide.
- C Water vapour.
- D Nitrogen.

(Total 1 mark)

Q14.

Which molecule is **not** produced when ethane reacts with bromine in the presence of ultraviolet light?

- A $C_2H_4Br_2$
- B HBr
- C H_2
- D C_4H_{10}

(Total 1 mark)

Q15.

Sulfur dioxide (SO_2) is produced when some fossil fuels are burned.

Which of the following statements is true?

- A Sulfur dioxide can be removed from waste gases in a power station by an acid-base reaction with calcium oxide.
- B Sulfur dioxide is insoluble in water.
- C Sulfur dioxide is a basic oxide.
- D Sulfur dioxide is an ionic compound.

(Total 1 mark)

Q16.

Tetradecane ($C_{14}H_{30}$) is an alkane found in crude oil. When tetradecane is heated to a high temperature, one molecule of tetradecane decomposes to form one molecule of hexane and three more molecules.

Which of the following could represent this reaction?

- A $C_{14}H_{30} \rightarrow C_6H_{14} + C_4H_8 + 2C_2H_4$
- B $C_{14}H_{30} \rightarrow C_6H_{14} + C_6H_{12} + C_2H_4$
- C $C_{14}H_{30} \rightarrow C_5H_{12} + 3C_3H_6$
- D $C_{14}H_{30} \rightarrow C_6H_{14} + C_2H_6 + 2C_3H_6$

(Total 1 mark)