Q1. 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)

Q2.Which molecule is **not** produced when ethane reacts with bromine in the presence of ultraviolet light?



(Total 1 mark)

Q3. The percentage by mass of carbon is 83.3% in

- A propane.
- **B** butane.
- **C** pentane.
- **D** hexane.

(Total 1 mark)



Q4.Which one of the following types of reaction mechanism is **not** involved in the above sequence?

C elimination

D nucleophilic addition-elimination

(Total 1 mark)

Q5. Which one of the following mechanisms is not involved in the reaction sequence below?

 $\mathsf{CH_3CH_3} \rightarrow \mathsf{CH_3CH_2Cl} \rightarrow \mathsf{CH_3CH_2OH} \rightarrow \mathsf{CH_2=CH_2} \rightarrow \mathsf{CH_3CH_2Br}$

- A electrophilic addition
- **B** electrophilic substitution
- **C** nucleophilic substitution
- **D** free-radical substitution

(Total 1 mark)

Q6.An alkane contains 30 hydrogen atoms per molecule. Its empirical formula is

- **A** C₆H₁₅
- **B** C₇H₁₅
- C C₁₄H₃₀
- D C₁₅H₃₀

(Total 1 mark)

Q7.Which one of the following is least likely to occur in the reaction between methane and chlorine?

- $A \qquad CH_4 + CI \bullet \rightarrow CH_3 \bullet + HCI$
- **B** $CH_3 \bullet + HCI \rightarrow CH_3CI + H \bullet$
- $\mathbf{C} \qquad \mathsf{CH}_{3} \bullet + \mathsf{CI}_{2} \rightarrow \mathsf{CH}_{3}\mathsf{CI} + \mathsf{CI} \bullet$
- **D** $CH_3CI + CI \bullet \rightarrow CH_2CI \bullet + HCI$

(Total 1 mark)

Q8. Which one of the following reactions involves nucleophilic addition?

- **A** $CH_3CH = CH_2 + HBr \rightarrow CH_3CHBrCH_3$
- **B** $CH_3CH_2CH_3 + Cl_2 \rightarrow CH_3CHClCH_3 + HCl$
- **C** $CH_3CH_2CH_2Br + NaOH \rightarrow CH_3CH_2CH_2OH + NaBr$
- **D** $CH_3CH_2CHO + HCN \rightarrow CH_3CH_2CH(OH)CN$

(Total 1 mark)