Chapter 13

1. What is the name of the following hydrocarbon?
   \[ \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3 \]
   A. Heptane
   B. Octane
   C. Hexane
   D. Decane

2. To which class of organic compounds does ethanal, \( \text{CH}_3\text{CHO} \), belong?
   A. Alcohols
   B. Aldehydes
   C. Esters
   D. Carboxylic acids

3. Which of the following shows the displayed formula of butane?
   A. \( \text{C}_4\text{H}_{10} \)
   B. \( \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 \)
   C. \[
   \begin{align*}
   &\text{H} & &\text{H} & &\text{H} \\
   &\text{H} & &\text{C} & &\text{C} & &\text{C} & &\text{H} \\
   &\text{H} & &\text{H} & &\text{H} & &\text{H} \\
   
   \end{align*}
   \]
   D. \[
   \text{H} \quad \text{H} \quad \text{H} \\
   \text{H} \quad \text{H} \\
   \text{H} \quad \text{H}
   \]

4 Which one of the following is an isomer of hexane?
   A 2,3-dimethylbutane
   B 2,3-dimethylpentane
   C 2-methylbutane
   D 3-methylhexane

5 Which one of the following species could act as a nucleophile in an organic reaction?
   A Ammonia, NH$_3$
   B Bromine, Br$_2$
   C Chlorine, Cl$_2$
   D Hydrogen ion, H$^+$

6 When the C–Br bond in bromomethane breaks in a process known as homolytic fission, the equation is:
   \[ \text{CH}_3\text{Br} \rightarrow \text{CH}_3\cdot + \text{Br}\cdot \]
   The two species formed are called …
   A atoms
   B free radicals
   C molecules
   D ions

7 What is the approximate bond angle in a molecule of ethene?
   A 90°
   B 109.5°
   C 120°
   D 180°
8. What type of organic reaction is shown in the following equation?

\[ \text{CH}_2=\text{CHCH}_3 + \text{H}_2 \rightarrow \text{CH}_3\text{CH}_2\text{CH}_3 \]

A. Addition
B. Elimination
C. Hydrolysis
D. Substitution

9. 1,2-dichloroethene, \( \text{C}_2\text{H}_2\text{Cl}_2 \), can exhibit which form of isomerism?

A. Structural isomerism (chain isomerism)
B. Structural isomerism (functional group isomerism)
C. Optical isomerism
D. \( \text{Cis–trans} \) isomerism

10. Which of the following molecules has a chiral centre correctly labelled with an asterisk?

A. \( \text{CH}_3\text{C}^*\text{HClCH}_3 \)
B. \( \text{CH}_3\text{C}^*\text{HClCH}_2\text{Br} \)
C. \( \text{HOCH}_2\text{C}^*\text{H(OH)CH}_2\text{OH} \)
D. \( \text{CH}_3\text{C}^*\text{Br}_2\text{CH}_3 \)