

Q1.

Which alkene shows *E-Z* isomerism?

- A 2,3-dimethylbut-2-ene
- B 4-methylpent-2-ene
- C methylpropene
- D pent-1-ene

(Total 1 mark)

Q2.

Which compound reacts with hydrogen bromide to give 2-bromo-3-methylbutane as the major product?

- A $(\text{CH}_3)_2\text{C}=\text{CHCH}_3$
- B $(\text{CH}_3)_2\text{C}=\text{CH}_2$
- C $\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}_2\text{CH}_3$
- D $(\text{CH}_3)_2\text{CHCH}=\text{CH}_2$

(Total 1 mark)

Q3.

What is the IUPAC name of the major product of the reaction between 2-ethylbut-1-ene and hydrogen bromide?

- A 1-bromo-2-ethylbutane
- B 2-bromo-2-ethylbutane
- C 2-bromo-2-methylpentane
- D 3-bromo-3-methylpentane

(Total 1 mark)

Q4.Which has *E-Z* isomers?

- A $C_2H_2Br_2$
- B C_2H_3Br
- C $C_2H_4Br_2$
- D C_2H_5Br

(Total 1 mark)**Q5.**

Which compound reacts with hydrogen bromide to give 2-bromo-3-methylbutane as the major product?

- A $(CH_3)_2C=CHCH_3$
- B $CH_3(CH_2)_2CH=CH_2$
- C $CH_3CH_2C(CH_3)=CH_2$
- D $(CH_3)_2CHCH=CH_2$

(Total 1 mark)**Q6.**Which statement is **not** correct about $CH_2=C(CH_3)CH_2Br$?

- A It displays *E-Z* isomerism.
- B It forms an addition polymer.
- C It reacts with electrophiles.
- D It decolourises bromine water.

(Total 1 mark)

Q7.

Which alkene reacts with hydrogen bromide to give 2-bromo-3-methylbutane as the major product?

- A $(\text{CH}_3)_2\text{C}=\text{CHCH}_3$
- B $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_3$
- C $\text{CH}_3\text{CH}_2\text{C}(\text{CH}_3)=\text{CH}_2$
- D $(\text{CH}_3)_2\text{CHCH}=\text{CH}_2$

(Total 1 mark)

Q8.

Which is the major product of the reaction between 2-methylbut-2-ene and iodine monochloride (ICl)?

- A $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2-\text{C}-\text{CH}_2-\text{CH}_3 \\ | \quad | \\ \text{I} \quad \text{Cl} \end{array}$
- B $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2-\text{C}-\text{CH}_2-\text{CH}_3 \\ | \quad | \\ \text{Cl} \quad \text{I} \end{array}$
- C $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{CH}-\text{CH}_3 \\ | \quad | \\ \text{Cl} \quad \text{I} \end{array}$
- D $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{CH}-\text{CH}_3 \\ | \quad | \\ \text{I} \quad \text{Cl} \end{array}$

(Total 1 mark)

Q9.

Which statement is correct about poly(chloroethene)?

- A** It has the empirical formula CHCl
- B** It decolourises bromine water.
- C** Its brittleness is reduced by plasticisers.
- D** Its polymer chain contains alternate single and double bonds.

(Total 1 mark)**Q10.**

What is the empirical formula of 4-hydroxypent-2-ene?

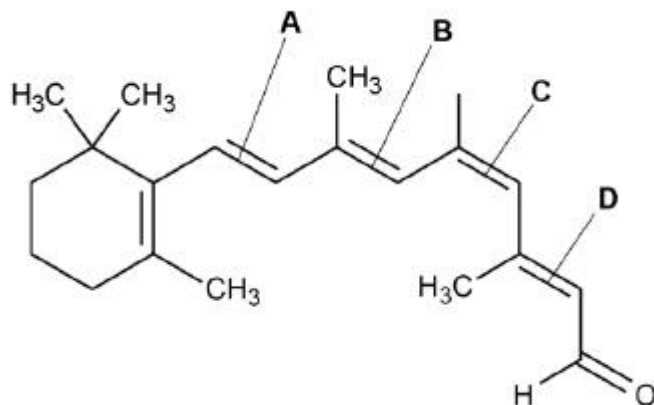
- A** $\text{C}_5\text{H}_{12}\text{O}$
- B** $\text{C}_5\text{H}_{10}\text{O}$
- C** CH_2O
- D** $\text{C}_5\text{H}_9\text{OH}$

(Total 1 mark)

Q11.

Z-Retinal, shown in the diagram, is a component in vitamin A.

Which of the double bonds, labelled **A**, **B**, **C** or **D**, is responsible for the letter Z in the name?



- A**
- B**
- C**
- D**

(Total 1 mark)

Q12.

Consider the reaction between propene and hydrogen bromide to form the major product.

Which species is formed in the mechanism of this reaction?

- A** $\text{CH}_3\text{-C}^+\text{H-CH}_2\text{Br}$
- B** $\text{CH}_3\text{-CHBr-C}^+\text{H}_2$
- C** $\text{CH}_3\text{-C}^+\text{H-CH}_3$
- D** $\text{CH}_3\text{-CH}_2\text{-C}^+\text{H}_2$

(Total 1 mark)

Q13.

Which statement about *E*-1,2-dichloroethene is correct?

- A** It has the same boiling point as *Z*-1,2-dichloroethene.
- B** It forms a polymer with the same repeating unit as *Z*-1,2-dichloroethene.
- C** It has the same IR spectrum as *Z*-1,2-dichloroethene in the range 400–1500 cm⁻¹.
- D** It has a molecular ion peak different from that of *Z*-1,2-dichloroethene in its mass spectrum.

(Total 1 mark)

Q14.

Which statement about ethene is correct?

- A** It has no geometric isomers because there is free rotation around the C=C bond.
- B** It reacts with HBr in a nucleophilic addition reaction.
- C** It burns in excess oxygen to produce carbon dioxide and water.
- D** The C=C bond is twice as strong as the C–C bond in ethane.

(Total 1 mark)

Q15.

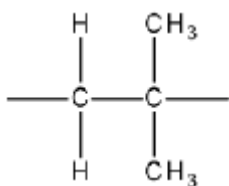
What is the major product of the reaction between but-1-ene and DBr? (D is deuterium and represents ²H)

- A** CH₂DCH₂CH₂CH₂Br
- B** CH₂DCH₂CHBrCH₃
- C** CH₃CH₂CHBrCH₂D
- C** CH₃CH₂CHDCH₂Br

(Total 1 mark)

Q16.

The repeating unit of a polymer is



Which of the following molecules would form a polymer containing this repeating unit?

- A But-1-ene
- B *E*-but-2-ene
- C *Z*-but-2-ene
- D Methylpropene

(Total 1 mark)