



# **A-Level Chemistry**

## **Optical Isomerism (Multiple Choice)**





### **Question Paper**

**Time available: 9 minutes**

**Marks available: 9 marks**

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1. Which pair of compounds does **not** form a racemic mixture when the compounds react?

- A  + HCl
- B  + HCN
- C  + HCl
- D  + HCN

(Total 1 mark)

2. Which compound does **not** show stereoisomerism?

- A 1,2-dichloropropene
- B 1,2-dichloropropane
- C 1,3-dichloropropene
- D 1,3-dichloropropane

(Total 1 mark)

3. Which compound forms optically active compounds on reduction?

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

(Total 1 mark)

4. Which one of the following can exhibit both geometrical and optical isomerism?

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

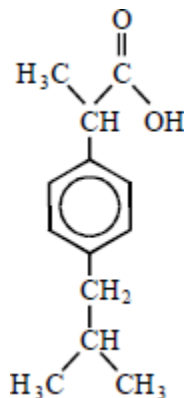
(Total 1 mark)

5. Which one of the following reactions will produce an organic compound that has optical isomers?

- A dehydration of butan-2-ol by heating with concentrated sulphuric acid
- B reduction of pentan-3-one by warming with  $\text{NaBH}_4$
- C addition of  $\text{Br}_2$  to 3-bromopropene
- D reduction of 2,3-dimethylpent-2-ene with  $\text{H}_2$  in the presence of a nickel catalyst

(Total 1 mark)

6. Ibuprofen is a drug used as an alternative to aspirin for the relief of pain, fever and inflammation. The structure of ibuprofen is shown below.



Which one of the following statements is **not** correct?

- A It has optical isomers.
- B It liberates carbon dioxide with sodium carbonate solution.
- C It undergoes esterification with ethanol.
- D It undergoes oxidation with acidified potassium dichromate(VI).

(Total 1 mark)

7. Which one of the following statements about but-2-enal,  $\text{CH}_3\text{CH}=\text{CHCHO}$ , is **not** true?

- A It has stereoisomers.
- B It shows a strong absorption in the infra-red at about  $1700\text{ cm}^{-1}$ .
- C It will turn an acidified solution of potassium dichromate(VI) green.
- D It can be dehydrated by concentrated sulphuric acid.

(Total 1 mark)

**8.**

On reduction, a racemate can be formed by

- A  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CHO}$
- B  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COCH}_3$
- C  $\text{CH}_3\text{CH}_2\text{COCH}_2\text{CH}_3$
- D  $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CHO}$

**(Total 1 mark)**

**9.**

Which one of the following reaction mixtures would give a product capable of exhibiting optical isomerism?

- A  $\text{CH}_3\text{CH}=\text{CH}_2$  + HBr
- B  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$  + NaOH
- C  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$  +  $\text{H}_2\text{SO}_4$
- D  $\text{CH}_3\text{CH}_2\text{CHO}$  + HCN

**(Total 1 mark)**