

Q1. 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** CH_3COCH_3
- D** $\text{CH}_3\text{CH}_2\text{COCH}_3$

(Total 1 mark)

Q2. 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** $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{C}=\text{CH}_2$

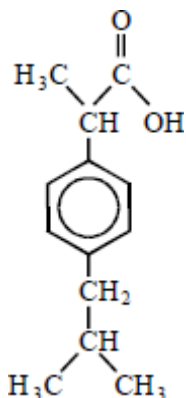
(Total 1 mark)

Q3. 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 NaBH_4
- C** addition of Br_2 to 3-bromopropene
- D** reduction of 2,3-dimethylpent-2-ene with H_2 in the presence of a nickel catalyst

(Total 1 mark)

Q4. 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.
- D It undergoes esterification with ethanol.
- D It undergoes oxidation with acidified potassium dichromate(VI).

(Total 1 mark)

Q5. Which one of the following statements about but-2-enal, CH₃CH=CHCHO, is **not** true?

- A It has stereoisomers.
- B It shows a strong absorption in the infra-red at about 1700 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)

Q6. 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)

Q7. 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** $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ + H_2SO_4
- D** $\text{CH}_3\text{CH}_2\text{CHO}$ + HCN

(Total 1 mark)