Q1. Which compound forms optically active compounds on reduction?

A $CH_3CH_2C(CH_3)=CHCH_3$ ⬭

B $CH_3CH_2C(CH_3)=CH_2$ ⬭

C CH_3COCH_3 ⬭

D $CH_3CH_2COCH_3$ ⬭

(Total 1 mark)

Q2. Which one of the following can exhibit both geometrical and optical isomerism?

A $(CH_3)_2C=CHCH(CH_3)CH_2CH_3$

B $CH_3CH_2CH=CHCH(CH_3)CH_2CH_3$

C $(CH_3)_2C=C(CH_2CH_3)_2$

D $CH_3CH_2CH(CH_3)CH(CH_3)C=CH_2$

(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

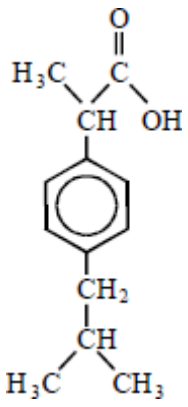
B reduction of pentan-3-one by warming with $NaBH_4$

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, $CH_3CH=CHCHO$, 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 $CH_3CH_2CH_2CH_2CHO$

B $CH_3CH_2CH_2COCH_3$

C $CH_3CH_2COCH_2CH_3$

D $CH_3CH{=}CHCH_2CHO$

(Total 1 mark)

Q7. Which one of the following reaction mixtures would give a product capable of exhibiting optical isomerism?

A $CH_3CH{=}CH_2$ + HBr

B $CH_3CH_2CH_2Br$ + NaOH

C $CH_3CH_2CH_2OH$ + H_2SO_4

D CH_3CH_2 CHO + HCN

(Total 1 mark)