Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Alkenes

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

The alkene 3-methylpent-2-ene ($CH_3CH=C(CH_3)CH_2CH_3$) reacts with hydrogen bromide to form a mixture of 3-bromo-3-methylpentane and 2-bromo-3-methylpentane.

(a) The alkene 3-methylpent-2-ene ($CH_3CH=C(CH_3)CH_2CH_3$) exists as *E* and *Z* stereoisomers.

Draw the structure of *Z*-3-methylpent-2-ene.

(1)

(b) Name and outline the mechanism for the formation of 3-bromo-3-methylpentane from this reaction of 3-methylpent-2-ene with hydrogen bromide.

Explain why more 3-bromo-3-methylpentane is formed in this reaction than 2-bromo-3-methylpentane.

(7)

(Total 8 marks)

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Q2.

Alcohols can be prepared from alkenes in various ways.

(a) On a laboratory scale, a mixture of propan-1-ol and propan-2-ol can be prepared from propene in two steps.

In step 1, propene reacts with cold, concentrated sulfuric acid to form intermediate compounds.

In step 2, the intermediate compounds react with water to form the mixture of alcohols.

Name and outline the mechanism for the reaction between propene and concentrated sulfuric acid to form the intermediate compound which gives propan-2-ol in step 2.

Explain why propan-2-ol is the major product of this preparation.

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(7)

(b) On an industrial scale ethanol can be produced from ethene by direct hydration or from glucose by fermentation.

State the conditions for the direct hydration reaction.

State two advantages and two disadvantages of the fermentation method compared with the direct hydration method.

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(6)

(Total 13 marks)

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