

AQA – Aldehydes and Ketones – A2 Chemistry P3

1. June/ 2020/Paper_3/No.25

Which compound reacts to form a ketone when warmed with an acidified solution of potassium dichromate(VI)?

[1 mark]**A** $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ **B** $(\text{CH}_3)_2\text{CHOH}$ **C** $\text{CH}_3\text{CH}_2\text{CHO}$ **D** $(\text{CH}_3)_2\text{CHCOOH}$

0 3 . 2 Propanone (CH_3COCH_3) reacts with the weak acid HCN to form a hydroxynitrile.

This hydroxynitrile is usually made by reaction of propanone with KCN followed by dilute acid, instead of with HCN

State the hazard associated with the use of KCN

Suggest a reason, other than safety, why KCN is used instead of HCN.

[2 marks]

Hazard _____

Why KCN is used _____

0 3 . 3 Outline the mechanism for the reaction of propanone with KCN followed by dilute acid.

[4 marks]

3. June/2021/Paper_3/No.26

Which compound is produced when 1-phenylethanol reacts with acidified potassium dichromate(VI)?

[1 mark]

A $C_6H_5CH_2CH_2OH$

B $C_6H_5CH_2CHO$

C $C_6H_5COCH_3$

D $C_6H_5CH(OH)CH_3$

4. June/2021/Paper_3/No.27

Which is the correct general formula for non-cyclic compounds in the homologous series?

[1 mark]

A alcohols $C_nH_{2n+2}O$

B aldehydes $C_nH_{2n+1}O$

C esters $C_nH_{2n+1}O_2$

D primary amines $C_nH_{2n+2}N$

5. June/2021/Paper_3/No.31

Which compound reacts with warm dilute aqueous sodium hydroxide?

[1 mark]

A C_6H_6

B $CH_3CH=CH_2$

C $CH_3CH_2CH_2NH_2$

D $(CH_3CO)_2O$

6. [June/ 2019/Paper_3/No.4](#)

0 4 Ethanal reacts with potassium cyanide, followed by dilute acid, to form 2-hydroxypropanenitrile.

0 4 . 1 Name the mechanism for the reaction between potassium cyanide and ethanal. **[1 mark]**

0 4 . 2 The 2-hydroxypropanenitrile formed by the reaction in question **04.1** is a mixture of equal amounts of two isomers.

State the name of this type of mixture.

Explain how the structure of ethanal leads to the formation of two isomers.

Draw 3D representations of the two isomers to show the relationship between them. **[5 marks]**

Name _____

Explanation _____

3D representations

0 4 . 3 2-Hydroxypropanenitrile can be used in the synthesis of the monomer, acrylonitrile, $\text{CH}_2=\text{CHCN}$

Suggest a suitable reagent and conditions for the conversion of 2-hydroxypropanenitrile into acrylonitrile.

[2 marks]

Reagent _____

Conditions _____

0 4 . 4 Draw a section of the polymer polyacrylonitrile, showing three repeating units.

[1 mark]