

AQA – Optical isomerism – A2 2023 Chemistry P3

1. No.2

0 2

This question is about isomerism and the dehydration of alcohols.

Pentan-2-ol has the molecular formula $C_5H_{12}O$

0 2 . 1

Draw the **displayed** formula of an unbranched position isomer of pentan-2-ol that can be dehydrated to form a single alkene.

[1 mark]

0 2 . 2

Draw the **skeletal** formula of a chain isomer of pentan-2-ol that can be dehydrated to form a mixture of alkenes.

[1 mark]

0 2 . 3

Draw the structure of an unbranched functional group isomer of pentan-2-ol.

[1 mark]

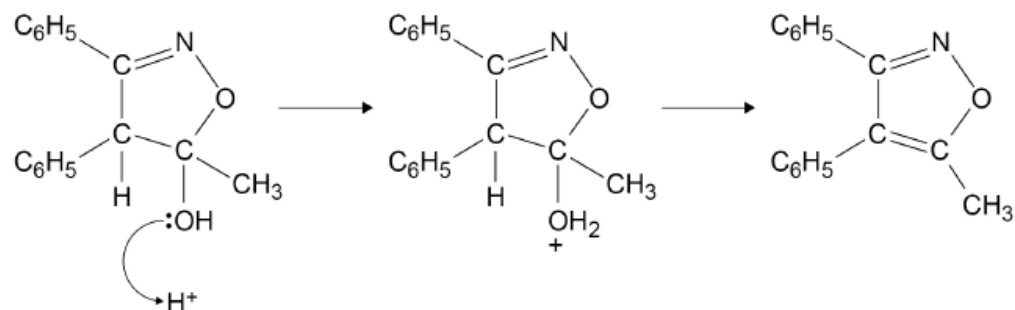
0 2 . 4

Another isomer of pentan-2-ol is an alcohol that is **not** dehydrated when heated with concentrated sulfuric acid.

Draw the structure of this isomer.

[1 mark]

0 2 . 5 An incomplete mechanism for the dehydration of a compound is shown.



Complete the mechanism for this reaction by drawing two curly arrows on the intermediate.

Name the mechanism for this reaction.

[3 marks]

0 2 . 6 An isomer of the final product can also form in the reaction in Question 02.5.

Draw the structure of this isomer.

[1 mark]

2. No.30

Most scientists believe that the concentration of ozone in the upper atmosphere should not be allowed to decrease.

Which statement is a correct reason for this belief?

[1 mark]

A Ozone helps to prevent global warming.

☐

B Ozone is an efficient disinfectant.

☐

C Ozone helps to remove pollutants such as chloroalkanes.

☐

D Ozone absorbs ultraviolet radiation.

☐

3. No.35

Which statement about enzymes is **not** correct?**[1 mark]**

- A** The tertiary structure of an enzyme influences which molecules can bind to the active site. ☐
- B** The action of enzymes can be inhibited by a molecule or ion that binds to the active site. ☐
- C** Enzymes work equally well on both optical isomers of a substrate. ☐
- D** Computers can be used to design drugs to block active sites on enzymes. ☐