

## Answer all the questions below then check your answers

- 1. What is formed when alcohols are heated with concentrated sulfuric or phosphoric acids?
- a. What type of reaction is this?
- 2. Draw the mechanism to show how propan-2-ol can be dehydrated with concentrated sulfuric acid to form propene.
- a. Write an equation for this reaction.
- 3. Cyclohexanol can be dehydrated with concentrated phosphoric acid to form cyclohexane.
- a. Draw the mechanism for this reaction.
- b. Write an equation to show this dehydration reaction.
- 3-methylbutan-2-ol can be dehydrated with concentrated sulfuric acid to form two isomers.
- a. Draw the displayed formula for 3-methylbutan-2-ol.
- b. Draw the structure of each of the two isomers that are formed when
  - 3-methylbutan-2-ol is dehydrated.

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## <u>Answers</u>

1. What is formed when alcohols are heated with concentrated sulfuric or phosphoric acids?

Alcohol + conc acid — Alkenes + water

a. What type of reaction is this?

Elimination reaction.

2. Draw the mechanism to show how propan-2-ol can be dehydrated with concentrated sulfuric acid to form propene.

The mechanism is shown on the webpage, it is also copied below:



a. Write an equation for this reaction.

 $CH_{3}CH(OH)CH_{3} + H^{+}$ 

 $CH_2=CH(CH_3) + H_2O$ 

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- 3. Cyclohexanol can be dehydrated with concentrated phosphoric acid to form cyclohexane.
- a. Draw the mechanism for this reaction.



b. Write an equation to show this dehydration reaction.



- 4. 3-methylbutan-2-ol can be dehydrated with concentrated sulfuric acid to form two isomers.
- a. Draw the displayed formula for 3-methylbutan-2-ol.

## Shown below

b. Draw the structure of each of the two isomers that are formed when

3-methylbutan-2-ol is dehydrated.

