



**CHEMISTRY ONLINE**  
— TUITION —

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# CHEMISTRY

## ORGANIC CHEMISTRY

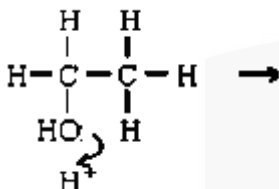
Level & Board	AQA (A-LEVEL)
TOPIC:	ALCOHOLS
PAPER TYPE:	QUESTION PAPER - 2
TOTAL QUESTIONS	10
TOTAL MARKS	31

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## Alcohols - 2

1. In the presence of a catalyst, ethanol can be dehydrated to ethene.

Complete the mechanism for this dehydration reaction. Also give a suitable catalyst for use in this reaction



(5)

2. Which one of the following isomers is not oxidised under mild reaction conditions?

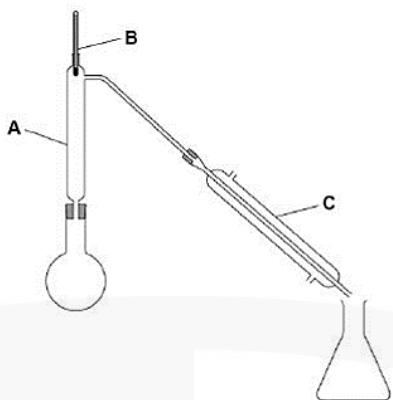
- A.  $(\text{CH}_3)_2\text{CHCH}(\text{OH})\text{COCH}_3$   
 B.  $(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{COCH}_3$   
 C.  $(\text{CH}_3)_2\text{CHCH}(\text{OH})\text{CH}_2\text{CHO}$   
 D.  $(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{CH}_2\text{CHO}$

(1)

3. A group of students wanted to produce a biofuel to power the central heating system in their school.

They collected scraps of fruits and vegetables from the kitchens and fermented them with yeast, in the absence of air, in order to produce ethanol.

The aqueous mixture was filtered to remove the remaining solids. The students then set up the apparatus shown in the diagram below and placed the aqueous mixture in the round bottomed flask.



- (a)** Describe how the students would use this apparatus to collect a sample of ethanol. Include in your answer the functions of the parts of the apparatus labelled A, B and C.

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**(6)**

- (b)** The students collected a  $20 \text{ cm}^3$  sample of liquid and weighed it. The mass of the sample was 16 g.

The density of ethanol is  $0.79 \text{ g cm}^{-3}$  and that of water  $1.00 \text{ g cm}^{-3}$ . Use these data to calculate the mass of ethanol in the sample collected.

You should assume that the volume of the sample is equal to the sum of the volumes of water and ethanol.

(2)

4.  $\text{CH}_2\text{O}$  is the empirical formula of

- A. methanol
- B. methyl methanoate
- C. ethane-1,2-diol
- D. butanal

(1)

5. An alcohol containing carbon, hydrogen and oxygen only has 64.9% carbon and 13.5% hydrogen by mass.

Using these data, show that the empirical formula of the alcohol is  $\text{C}_4\text{H}_{10}\text{O}$

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(3)

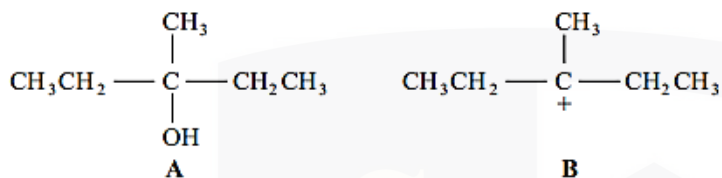
6. Which one of the following does not represent an oxidation?

- A. propene  $\rightarrow$  propane
- B. propan-1-ol  $\rightarrow$  propanal
- C. propan-1-ol  $\rightarrow$  propanoic acid

D. propanal  $\rightarrow$  propanoic acid

(1)

7. Protonation of alcohol A and subsequent loss of water, produces the intermediate B.



(a) Name alcohol A.

(1)

(b) What type of species is intermediate B?

(2)

(c) Draw the structures of the two alkenes which can be formed from species B by removal of a proton.

Label as C the alkene which shows geometrical isomerism.

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I am Sorry !!!!!

(2)

8. Which one of the following is not a suitable method for the preparation of ethanol?

- A. oxidation of ethane
- B. hydration of ethene
- C. reduction of ethanal
- D. hydrolysis of bromoethane

(1)

9. This question is about conversion of propan-2-ol.

- (a) Give a suitable reagent and state the necessary conditions for the conversion of propan-2-ol into propanone.  
Name the type of reaction.

(2)

- (b) Propanone can be converted back into propan-2-ol.  
Give a suitable reagent and write an equation for this reaction.  
(Use [H] to represent the reagent in your equation.)

(3)

10. Which one of the following cannot be produced by oxidation of propan-1-ol?

- A. carbon dioxide
- B. propanone

- C. propanal
- D. propanoic acid

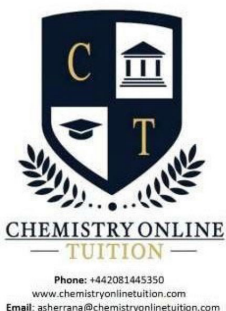
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