



**CHEMISTRY ONLINE**  
— TUITION —

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# CHEMISTRY

## ORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	ALCOHOLS
PAPER TYPE:	QUESTION PAPER - 3
TOTAL QUESTIONS	10
TOTAL MARKS	26

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## Alcohols - 3

1. The fermentation of glucose from crops is the main method for the production of ethanol.

The product is called bioethanol.

The European Union has declared that bioethanol is carbon-neutral.

**(a)** State the meaning of the term carbon-neutral.

(1)

**(b)** Other than carbon-neutrality, state the main advantage of the use of glucose from crops as the raw material for the production of ethanol.

(1)

**(c)** Give one disadvantage of the use of crops for the production of ethanol.

(1)

2. Which alcohol can be oxidised by acidified potassium dichromate (VI) but cannot be dehydrated by heating with concentrated sulfuric acid?

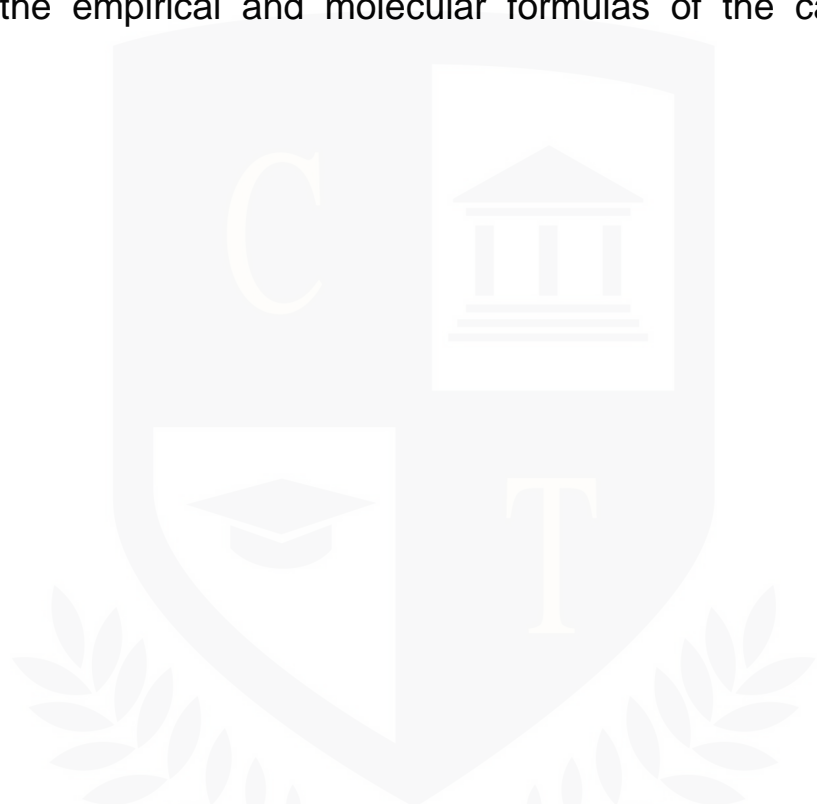
- A.** 2,3-dimethylbutan-2-ol  
**B.** 2,2-dimethylpropan-1-ol  
**C.** 2-methylpropan-2-ol  
**D.** pentan-3-ol

(1)

3. Glucose can decompose in the presence of microorganisms to form a range of products.

One of these is a carboxylic acid ( $M_r = 88.0$ ) containing 40.9% carbon and 4.5% hydrogen by mass.

Deduce the empirical and molecular formulas of the carboxylic acid formed.



(4)

4. Which statement is correct about both 2-methylbutan-1-ol and 2-methylbutan-2-ol?

- A.** They can be formed by alkaline hydrolysis of esters.  
**B.** They can be oxidised by reaction with acidified potassium dichromate(VI).  
**C.** They can be formed by hydration of 2-methylbut-2-ene.  
**D.** They have four peaks in their  $^{13}\text{C}$  NMR spectra.

(1)

5. Identify a reagent for a simple chemical test to show that oleic acid is unsaturated.

State what you would observe when oleic acid reacts with this reagent.

(5)

6. In the UK industrial ethanol is now produced by the direct hydration of ethene.

This process has largely replaced the fermentation method. Which is a likely reason for this change of method?

- A. The direct hydration route produces purer ethanol.
- B. The direct hydration route employs milder conditions.
- C. The direct hydration route does NOT use a catalyst.
- D. The direct hydration route produces ethanol by a slower reaction.

(1)

7. In the manufacture of margarine, unsaturated vegetable oils such as sunflower oil are hardened.

(a) State the reagent and conditions used in this process.

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(2)

(b) Soft and hard margarines are obtained from the same vegetable oil.

How does the structure and the melting point of a soft margarine differ from that of a hard one?

(5)

8. Which compound can be oxidised to form  $(\text{CH}_3)_2\text{CHCOCH}_3$ ?

- A. 2-methylpropan-1-ol
- B. 2,2-dimethylpropanol
- C. 2-methylbutan-2-ol
- D. 3-methylbutan-2-ol

(1)

9. State and explain the term unsaturated with example.

(2)

10. Which statement about ethanal is correct?

- A. It reacts with Tollens' reagent to form silver.
- B. It has a higher boiling point than ethanol.
- C. Its empirical and molecular formulas are different.
- D. It belongs to a homologous series with general formula  $\text{C}_n\text{H}_{2n+1}\text{O}$

(1)

I am Sorry !!!!!



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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
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