



CHEMISTRY ONLINE
— TUITION —

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CHEMISTRY

ORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	ALCOHOLS
PAPER TYPE:	SOLUTION - 4
TOTAL QUESTIONS	10
TOTAL MARKS	26

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Alcohols - 4

1.

Name of process:

Fermentation

In the process of fermentation, the essential conditions for optimal ethanol production are:

- *Utilize enzymes from yeast or zymase.*
- *Maintain a temperature within the range of 25°C to 42°C (or 298 K to 315 K).*
- *Establish anaerobic conditions by excluding oxygen or maintaining a neutral pH.*

(4)

2. c

(1)

3.

(a)

Name of the mechanism:

Nucleophilic substitution

Difficulty:

The difficulty in oxidizing 3-bromo-3-methylpentane to form 3-methylpentan-3-ol is attributed to the fact that the bromine-substituted carbon is a tertiary carbon.

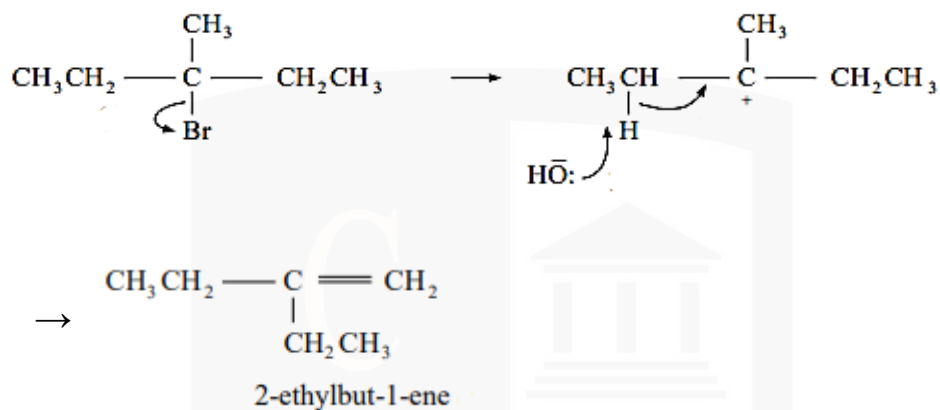
Tertiary carbons are known for being less reactive in substitution reactions due to steric hindrance.

(2)

(b)

Name of mechanism: elimination

Mechanism:



(4)

4. C

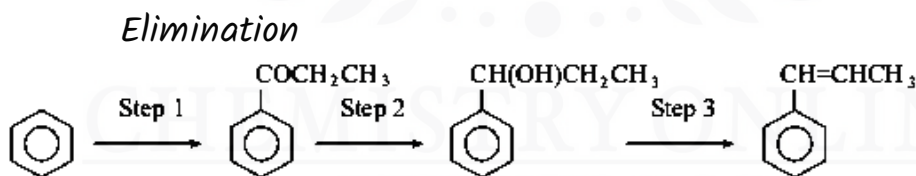
(1)

5.

Reagents:



Name of mechanism for step 3:

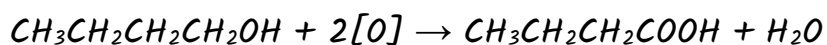


(3)

6. B

(1)

7.

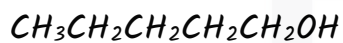
Equation:*Name of product:**Butanoic acid*

(2)

8. D

(1)

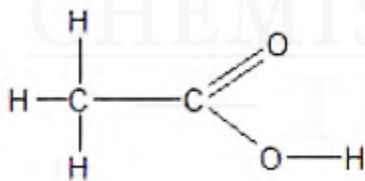
9.

Alcohol:*(pentan-1-ol)**Class of alcohol:**Primary alcohol.*

(2)

10.

(a)

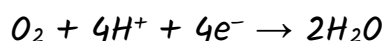
Displayed formula for CH₃COOH

(1)

I am Sorry !!!!!

(b)

Half-equation:



(1)

(c)

Half-equation for the oxidation of ethanol:



(1)

(d)

Reagents:

Potassium dichromate ($K_2Cr_2O_7$) / Sulfuric acid (H_2SO_4)

The color change associated with this reaction involves the reduction of the orange dichromate ($Cr_2O_7^{2-}$) ion to the green chromium (Cr^{3+}) ion.

Initially, the orange color of the dichromate solution will change to green, indicating the reduction of chromium during the oxidation process.

The overall color change from orange to green serves as a qualitative indicator of the completion of the oxidation reaction.

(2)

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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
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