



**CHEMISTRY ONLINE**  
— **TUITION** —

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# CHEMISTRY

## ORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	INTRODUCTION TO ORGANIC CHEMISTRY
PAPER TYPE:	SOLUTION - 3
TOTAL QUESTIONS	10
TOTAL MARKS	31

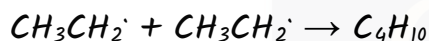
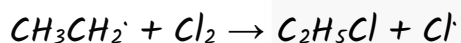
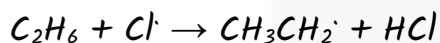
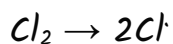
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## Introduction to Organic Chemistry - 3

1.

The conditions: uv light/sunlight  
 $T = 450\text{ }^{\circ}\text{C}$  to  $1000\text{ }^{\circ}\text{C}$

Mechanism showing how butane can be formed :



2. c

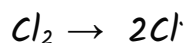
(1)

3.

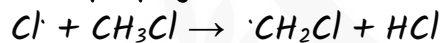
(a)

Equations for each of the step are as:

**Initiation :**



**First propagation:**



**Second propagation:**



**Termination (1,2-dichloroethane)**



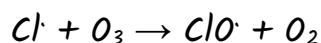
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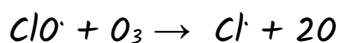
(b)

For decomposition of  $2\text{O}_3 \rightleftharpoons 3\text{O}_2$

**Chlorine free (radical)** is reactive intermediate that acts as a catalyst in this reaction.

Following are the two equations showing how this intermediate is involved as a catalyst in the decomposition of ozone.





(3)

4. C

(1)

5.

(a)

Stereoisomers are compounds with the same structural formula but exhibit different spatial arrangements or orientations of their atoms, bonds, or groups in three-dimensional space.

There are two main types of stereoisomers:

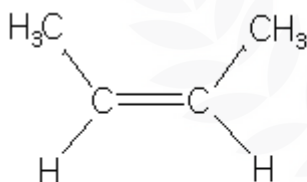
**Geometric Isomers (Cis-Trans Isomers):** These isomers arise when there is restricted rotation around a double bond or a ring.

**Optical Isomers:** Optical isomers result from the presence of chiral centers in a molecule. Chirality is a property of a molecule that is not superimposable on its mirror image.

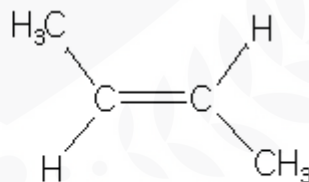
(2)

(b)

The two stereoisomers of but-2-ene are as:



cis-but-2-ene  
Z-but-2-ene



trans-but-2-ene  
E-but-2-ene

**Cis-But-2-ene:** In the cis isomer, the two substituents on the double-bonded carbons are on the same side of the double bond.

**Trans-But-2-ene:** In the trans isomer, the two substituents on the double-bonded carbons are on opposite sides of the double bond.

(2)

(c)

Name of this type of stereoisomerism: Geometric(al) or cis-trans

6. A (1)

(1)

7.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{CH}_3)_2$

2-methylpentane

$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$

(3)

8. D

(1)

9. (a)

A nucleophile is a species with an electron pair capable of serving as an electron pair donor in chemical reactions, facilitating the formation of covalent bonds with other atoms or molecules. e.g  $\text{NH}_3$

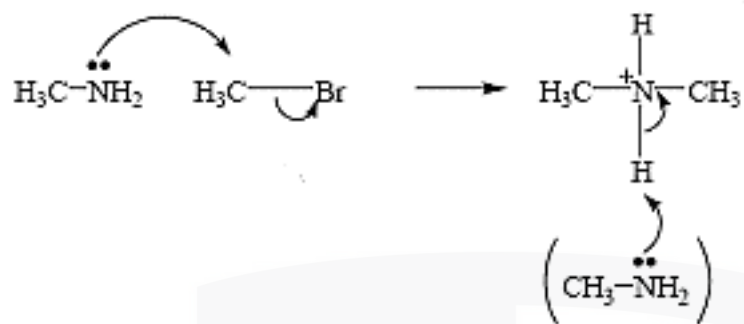
(2)

(b)

Product name: Methylamine

(1)

(c)



10. C

(3)

(1)

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I am Sorry !!!!!



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