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Important Questions On Name Reactions

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Important Questions on Name Reactions

1. What type of isomers are formed in rearrangement reactions?

A. structural isomers

B. Geometrical isomers

C. Optical isomer

D. Conformational isomers

2. What is the main difference between Hofmann and Curtius rearrangement?

A. Products formed are different

B. Intermediate formed is different

C. Reactants taken are different

D. Products formed are Isomers

3. During 1, 2-rearrangement in Wolff rearrangement, an α-diazocarbonyl compound is converted into a ketene by loss of which of the following compound?

A. Dioxygen

B. Carbon dioxide

C. Dinitrogen

D. Ammonia

4. Which Intermediate is formed in Wolff's reaction?

A. Carbene

B. Carbanion

C. Carbocation

D. Ketene

5. Which was the first molecular rearrangement identified as such by early chemists?

A. Wolff's rearrangement

B. Pinacole rearrangement

C. Favorskii rearrangement

D. Hofmann rearrangement

6. In which medium Favorskii rearrangement occurs?

A. Acidic

B. Basic

C. Neutral

D. Alkaline

7. The benzylic acid rearrangement reaction of a cyclic diketone leads to _____

A. Ring expansion

B. Ring contraction

C. Ring fusion

D. Isomers

8. Which medium is used in benzylic acid rearrangement reaction?

A. Neutral

B. Strong acidic

C. Mild acidic

D. Strong basic

9. Which type of catalytic reaction, does Dienone-phenol rearrangement reaction belong?

A. Acid catalysed

B. Base catalysed

C. Acidic

D. Neutral

10. Which pair of products would result from the acid cleavage of tert-butyl propyl ether with excess concentrated HBr at an elevated temperature?

A. tert-butyl bromide and propyl alcohol

B. tert-butyl bromide and propyl bromide

C. tert-butyl alcohol and propyl bromide

D. 2-methyl-2-butene and propyl bromide

ANSWERS:

1. A	**6. B**
2. C	**7. B**
3. C	**8. D**
4. D	**9. A**
5. B	**10. B**

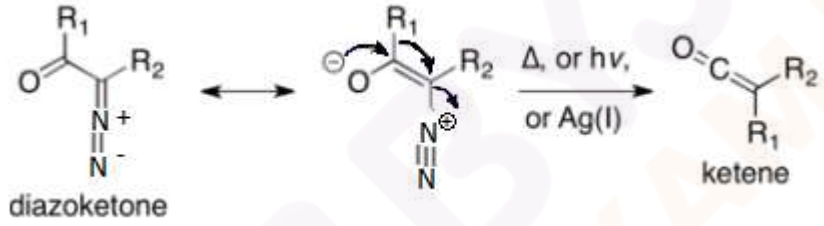
SOLUTIONS:

Solution 1:
Products formed by rearrangement reactions have same molecular formula, but their atoms have different arrangements or bonds. For example, Butane and isobutane have the same number of carbon and hydrogen atoms; so, their molecular formula is same.

Solution 2:
The Hofmann rearrangement occurs with an amide. Whereas the Curtius rearrangement occurs with an acyl azide.

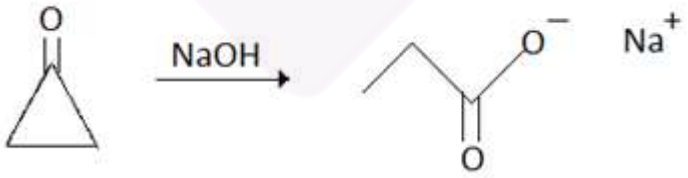
Solution 3:
The leaving group (N_2) and the migrating group (R_1) are anti-periplanar, which favours a concerted mechanism, in which nitrogen extrusion occurs concurrently with 1, 2-alkyl shift.

Solution 4:
Ketene is formed as an intermediate in Wolff's reaction. Formation of Diazonium ion will be followed by reaction in presence of heat which leads to rearrangement of bonds and ketene will be formed.

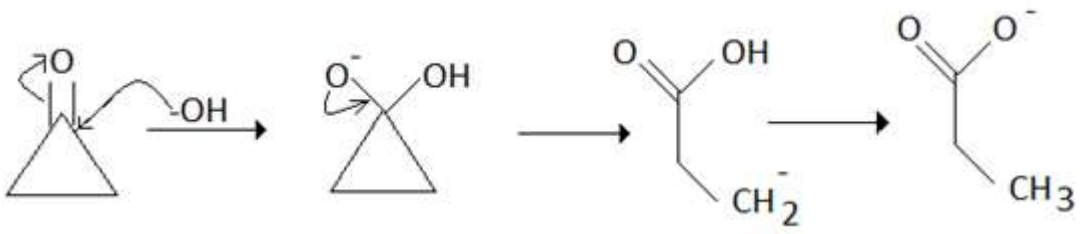


Solution 5:
The pinacol rearrangement was the first molecular rearrangement identified as such by early chemists.

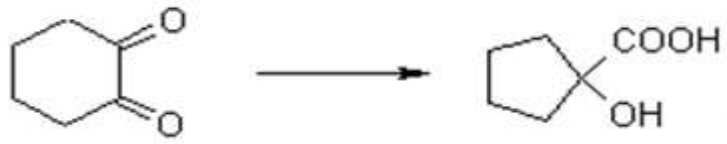
Solution 6:
It is a base catalysed reaction:



Mechanism of Favorskii rearrangement: Here OH^- group of NaOH is attacking at the keto-group and the ring will open for more stability of the molecule.

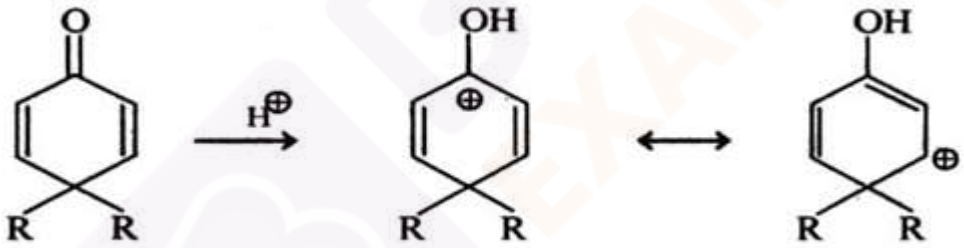


Solution 7:
The benzylic acid rearrangement reaction of a cyclic diketone leads to ring contraction. Example:



Solution 8:
The mechanism of this benzylic acid rearrangement starts with the attack of hydroxide on one of the carbonyl groups. Thus, Strong basic medium is used.

Solution 9:
The first step in the mechanism of this reaction is protonation of the most basic atom in the molecule; the oxygen of the carbonyl group.



Solution 10:
Ether + HX → Alkyl halide + Alcohol

Halide attacks at less hindered site to produce alkyl halide. Clearly the S_N2 is not the reason here, as the tertiary carbons are very much hindered for a backside attack. However, tertiary carbocations are relatively stable – and ionization (i.e., loss of a leaving group) gives an alcohol (R-OH) and a tertiary carbocation, which can then be attacked by an iodide ion to give R-I.

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