

Organic Chemistry: Some Basic Principles & **Techniques: Reaction Mechanism**

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1.

 $(CH_3)_3CCI + (CH_3)_3CO^-K^+ \rightarrow Product$

- 1. S_N Product will be more
- 2. E₂ Product will be more
- 3. Both will be the same
- 4. None of the above

2.

The correct statement regarding electrophile is

- 1. Electrophile is a negatively charge species and can form a bond by accepting a pair of electrons from a nucleophile
- 2. Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from another 6. electrophile
- 3. Electrophiles are generally neutral species and can form a bond by accepting a pair of electrons from a nucleophile
- 4. Electrophile can be either neutral or positively charged species and can form a bond by accepting a pair of electrons from a nucleophile

3.

Which of the following statement is not correct for a nucleophile?

- 1. Nucleophile is a Lewis acid
- 2. Ammonia is a nucleophile
- 3. Nucleophiles attack low electrons density sites
- 4. Nucleophiles are not electron seeking

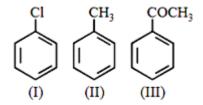
4.

Which of the following compounds will not undergo Friedel-Craft's reaction easily?

- 1. Cumene
- 2. Xylene
- 3. Nitrobenzene
- 4. Toluene

5.

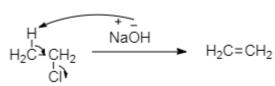
The increasing order of the reactivity of the following compounds towards electrophilic aromatic substitution reaction is:



- 1. III < I < II
- 2. III < II < I
- 3. II < I < III
- 4. II < III < I

3-Phenylpropene on reaction with HBr gives (as a major product)-

- 1. $C_6H_5CH(Br)CH_2 CH_3$
- 2. C_6H_5 CH_2 CH(Br) CH_3
- 3. $C_6H_4(Br)$ $CH_2CH_2CH_3$
- 4. $C_6H_5CH_2CH_2CH_2Br$



Most probable mechanism for this reaction is-

- 1. E1
- 2. E2
- $3. E1_{CB}$
- 4. α elimination



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8.

For $S_N 1$ reaction, preferred solvent will be

- 1. Water
- 2. Benzene
- 3. Ether
- 4. Toluene

9.

The main product of the following reaction will be:-

$$\begin{array}{c}
OH \\
CH-CH_3 \xrightarrow{conc. H_2SO_4} & Product
\end{array}$$

10.

The reaction of propene with HOCl proceeds via the addition of

- 1. H⁺ in the first step
- 2. Cl⁺ in the first step
- 3. OH in the first step
- 4. Cl⁺ and OH⁻ in a single step

11.

2-Bromopentane reacts with alcoholic KOH to give

- 1. Cis-2-Pentene
- 2. Trans-2-Pentene
- 3. 1-Pentene
- 4. None of the above

12.

Toluene when refluxed with Br_2 in the presence of light mainly gives

- 1. p-Bromotoluene
- 2. Benzyl bromide
- 3. o-Bromotoluene
- 4. Mixture of o- and p-bromotolene

13.

The major product(S) in the below reaction is-

$$H_3C-CH=CH_2 \xrightarrow[HBr]{(Ph-CO-O)_2} S$$

$$1.H_3C - CH_2 - CH_2 \operatorname{Br}_{1-\operatorname{Bromopropane}}$$

$$\begin{array}{c} 2.CH_3 - CH - CH_3 \\ | \\ Br \\ 2-Bromopropane \end{array}$$

3.
$$CH_3 - CH = CH_2$$

4. None of the above

14.

What type of radicals that can be formed as intermediates during monochlorination of 2-methylpropane?

- 1. Primary and tertiary
- 2.Two types of primary
- 3. primary and secondary
- 4. Two types of tertiary

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15.

$$Benzene + CH_3 \, Cl \overset{AlCl_3}{\longrightarrow} \, C_6H_5 \, CH_3$$

Mechanism & intermediate involve in the above reaction is/are

- 1. Aromatic electrophilic substitution & carbocation
- 2. Aromatic Nucleophilic substitution & carbanion
- 3. Aromatic free radical substitution & Free radical
- 4. Carbene based substitution reaction & Carbene

16.

Covalent bond can undergo fission in two different ways. The correct representation involving a heterolytic fission of $\mathrm{CH}_3-\mathrm{Br}$ is

$$CH_3$$
 Br \longrightarrow $CH_3 + Br^{\Theta}$

$$_2$$
 CH₃ $\stackrel{\frown}{-}$ Br \longrightarrow $\stackrel{\frown}{C}$ H₃ + Br $^{\ominus}$

3.
$$CH_3 \stackrel{f}{\longrightarrow} Br \longrightarrow CH_3 + Br^{\oplus}$$

$$CH_3$$
 \xrightarrow{Br} \longrightarrow $CH_3 + Br$

17.

The addition of HCl to an alkene proceeds in two steps.

The first step is the attack of H⁺ ion to portion which can be shown as

4. All of these are possible

18.

Consider the reactions:

(i)
$$(\mathrm{CH_3})_2 CH - CH_2 Br \xrightarrow{C_2 H_5 OH}$$

 $(\mathrm{CH_3})_2 CH - CH_2 OC_2 H_5 + HBr$

(ii)
$$(CH_3)_2 CH - CH_2 Br \xrightarrow{C_2 H_5 O^-}$$

 $(CH_3)_2 CH - CH_2 OC_2 H_5 + Br^-$

The mechanisms of reactions (i) and (ii) are respectively:

- $1. S_N 2$ and $S_N 1$
- $2. S_N 1$ and $S_N 2$
- $3. S_N 1$ and $S_N 1$
- $4. S_N 2$ and $S_N 2$



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19.

What products are formed when the following compound is treated with Br₂ in the presence of FeBr₃?

81~

2.

3.

20.

4.

Chlorine atom is a -

- 1. Carbocation
- 2. Nucleophile
- 3. Electrophile
- 4. Carbanion

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