



#### IV. Multiple Choice Questions

Question 1. Which of the following is correct regarding the stability of carbocation?

- (a)  $3^\circ > 2^\circ > 1^\circ$
- (b)  $1^\circ < 2^\circ < 3^\circ$
- (c)  $2^\circ > 1^\circ > 3^\circ$
- (d)  $2^\circ > 3^\circ > 1^\circ$

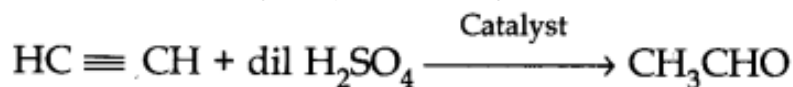
Question 2. A liquid hydrocarbon is converted to a mixture of gaseous hydrocarbon by

- (a) hydrolysis
- (b) oxidation
- (c) distillation
- (d) cracking

Question 3. The peroxide effect in anti-Markovnikov addition involves

- (a) The heterolytic fission of the double bond
- (b) The homolytic fission of the double bond
- (c) a free radical mechanism
- (d) an ionic mechanism

Question 4. The catalyst required for the given reaction is



- (a)  $\text{HgSO}_4$
- (b) Pt
- (c)  $\text{AlCl}_3$
- (d) Pd

Question 5. Which conformation of ethane has the lowest potential energy?

- (a) Eclipsed
- (b) Skewed
- (c) Staggered
- (d) All will have equal PE

Question 6. Baeyer's reagent is

- (a) aqueous  $\text{KMnO}_4$
- (b) neutral  $\text{KMnO}_4$
- (c) alkaline  $\text{KMnO}_4$
- (d) aqueous bromine water

Question 7. Benzene reacts with acetyl chloride in the presence of  $\text{AlCl}_3$  to give

- (a) acetophenone
- (b) toluene
- (c) benzophenone
- (d) ethyl benzene

Question 8. An aqueous solution of compound A gives ethane on electrolysis, the compound A is

- (a) Ethyl acetate
- (b) Sodium acetate
- (c) Sodium propionate
- (d) Sodium ethoxide

Question 9. Toluene reacts with chlorine in the presence of light to give

- (a) benzyl chloride
- (b) benzoyl chloride

(c) p-chlorotoluene

(d) o-chlorotoluene

Question 10. Which of the following is less reactive than benzene towards electrophilic substitution reactions?

(a) Nitrobenzene

(b) Aniline

(c) Bromobenzene

(d) Chlorobenzene

Answer:

1. (a)

2. (d)

3. (c)

4. (a)

5. (c)

6. (c)

7. (a)

8. (b)

9. (a)

10. (a)

#### V. Hots Questions

Question 1. What effect does branching of an alkane chain has on its boiling point?

Answer: As branching increases, the surface area of the molecule decrease which results in a small area of contact. As a result, the van der Waals force also decrease which can be overcome at a relatively lower temperature. Hence, the boiling point of an alkane chain decreases with an increase in branching.

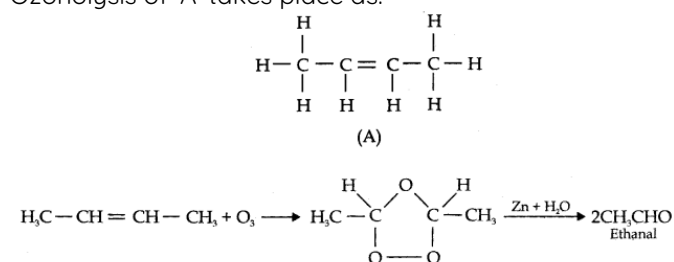
Question 2. An alkene 'A' contains three C-C, eight C-H  $\sigma$  bonds and one C-C  $\pi$  bond. 'A' on ozonolysis gives two moles of an aldehyde of molar mass 44 u. Deduce IUPAC name of 'A'.

Answer: The formation of two moles of an aldehyde indicates the presence of identical structural units on both sides of the double bond containing carbon atoms. Hence, the structure of 'A' can be represented as:  $\text{XC} = \text{CX}$

There are eight C-H  $\sigma$  bonds. Hence, there are 8 hydrogen atoms in 'A'. Also, there are three C-C bonds. Hence, there are four carbon atoms present in the structure of 'A'.

The IUPAC name of 'A' is But-2-ene.

Ozonolysis of 'A' takes place as:



The final product has molecular mass = 44u

Question 3. How will you demonstrate that double bonds of benzene are somewhat different from that of olefins?

Answer: The double bonds of olefins decolourize bromine water and discharge the pink colour of Bayer's reagent while those of benzene not.

Question 4. How will you separate propene from propyne?

Answer: By passing the mixture through ammonical silver nitrate solution when propyne reacts while propene passes over.

Question 5. Write the structure of the alkene which on reductive ozonolysis gives butanone and ethanol.

Answer:  $\text{CH}_3\text{CH}_2\text{C}(\text{CH}_3)=\text{CHCH}_3$

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