

B.Sc. Part I
Organic Chemistry

Multiple Choice

Q.1 Select Lewis acid from the following

- (a) FeCl_3 (b) H_2O (c) $\ddot{\text{N}}\text{H}_3$ (d) R-OH

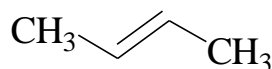
Q.2 Differentiate nucleophile from the following –

- (a) ZnCl_2 (b) SO_3 (c) AlCl_3 (d) R-NH_2

Q.3 Which of the following can make difference in optical isomers?

- (a) Heat (b) Temperature (c) Polarized light (d) Pressure

Q.4 Which of the following terms best describes the following pair of molecules?



- (a) Isomers (b) Constitutional isomerism
(c) Configurational isomers (d) Geometrical isomers

Q.5 Which one of the following statements regarding alkane is false?

- (a) Alkanes are non-polar molecules
(b) Alkanes are soluble in water
(c) Alkane experience dispersion forces
(d) Alkanes have low boiling points

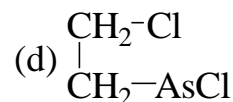
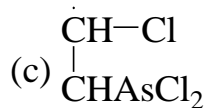
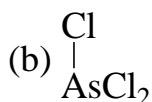
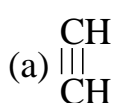
Q.6 Which of the following is the generic formula for straight chain alkanes.

- (a) $\text{C}_n\text{H}_{2n-4}$ (b) $\text{C}_n\text{H}_{2n-2}$ (c) C_nH_{2n} (d) $\text{C}_n\text{H}_{2n+2}$

Q.7 Aromatic hydrocarbons are also called

- (a) Benzene (b) Arenes
(c) Cyclic compound (d) None of these

Q.8 What is the structure of Lewisite



Q.9 3-Bromohexane can be converted into hexane using

- (a) Zn.H^+ (b) CuI (c) $(\text{CH}_3)_2\text{CuLi}$ (d) Na

Q.10 Gem dihalide on hydrolysis gives:

(a) Acetone

(b) Aldehyde

(c) Ketone

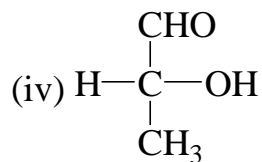
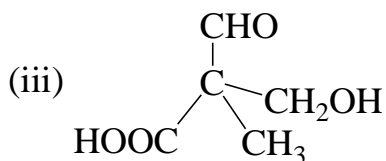
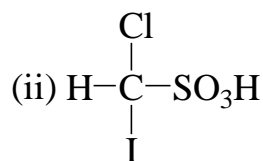
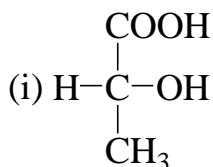
(d) Ketone and aldehyde

Short answer questions

1. What do you understand by homolytic fission of a covalent bond?
2. What are nitrenes ?
3. How product analysis is used for determination of reaction mechanism.
4. Write short note on Walden inversion.
5. Differentiate configuration and conformation.
6. Write Newmann projection formula of eclipsed and staggered form of ethane.
7. Write an example of Correy House reaction.
8. The chair form of cyclohexane is more stable than the boat form. Why?
9. How will you obtain polypropene from propene.
10. Give Diel's Alder reaction with example.
11. How will you synthesize acylonitrile from ethyne.
12. What is Huckel's (4_{n+2}) π rule?
13. What is wheland or σ complex?
14. What is Frankland's reagent.
15. Give haloform reaction.

Long Answer Questions

1. Give orbital structure of alkyl free radical. Explain its stability. Give any two mechanism of the reaction in which free radicals are formed as intermediate.
2. Explain the mechanism of S_N^1 and S_N^2 reaction with one example each. Also explain the factors affecting each type of mechanism.
3. Write name of following enantiomers showing R and S configuration



4. What are conformation ? Describe different configurational structure of n-butane with the help of Newmann projection formula.
5. Explain free radical mechanism of halogenation of alkane. Draw energy profile diagram of it by taking a suitable example.
6. Write note on –
 - (i) Saytzeff's rule
 - (ii) Acid catalyzed elimination
 - (iii) Electrophilic addition
 - (iv) Hydroboration reaction
7. Write note on the following –
 - (i) Aromaticity
 - (ii) Birch reduction and its mechanism
 - (iii) Ulmann Reaction
 - (iv) Fitting Reaction
8. What are σ and π -complex. Discuss their role in aromatic electrophilic substitution with the help of energy profile diagram.
9. Describe the mechanism of E_1 and E_2 reactions of alkyl halides with suitable examples.
10. Explain mechanism of Elimination – Addition aromatic substitution reaction.