Important Questions for Class 11 Chemistry Chapter 8: Chapter 8 of Class 11 Chemistry, "Organic Chemistry: Some Basic Principles and Techniques," introduces the fundamentals of organic chemistry, focusing on the structure, classification, and nomenclature of organic compounds. Key topics include functional groups, types of isomerism (structural and stereoisomerism), and the concept of homologous series.

It also covers the methods of preparation, identification, and analysis of organic compounds, such as distillation, crystallization, and chromatography. The chapter emphasizes the importance of functional groups in determining the properties and reactivity of organic molecules. This foundation is crucial for understanding more advanced topics in organic chemistry.

Important Questions for Class 11 Chemistry Chapter 8 Overview

Chapter 8 of Class 11 Chemistry, "Organic Chemistry: Some Basic Principles and Techniques," introduces foundational concepts crucial for understanding organic compounds. It covers topics like classification and nomenclature of organic compounds, functional groups, isomerism, and the basics of organic reactions. Understanding these principles is vital as they form the base for more complex topics in organic chemistry.

Mastery of these concepts helps students grasp the structure, behavior, and reactivity of organic molecules, which are integral to various real-world applications, including pharmaceuticals, industrial chemistry, and biochemistry. This chapter is a stepping stone for further exploration in chemistry and related fields.

Important Questions for Class 11 Chemistry Chapter 8 Organic Chemistry Some Basic Principles and Techniques

Below is the Important Questions for Class 11 Chemistry Chapter 8 Organic Chemistry Some Basic Principles and Techniques -

1. How many σ and π bonds are present in each of the following molecules?

i. $HC \equiv C - C \equiv CCH_3$

Ans: $\sigma C - C : 4, \sigma C - H : 4, \pi C = C : 4$

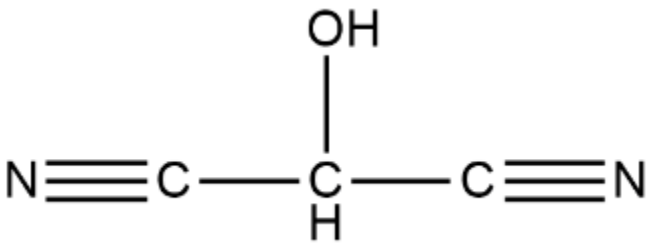
ii. $CH_2 = C = CHCH_3$

Ans: $\sigma C - C : 3, \sigma C - H : 6, \pi C = C : 2$

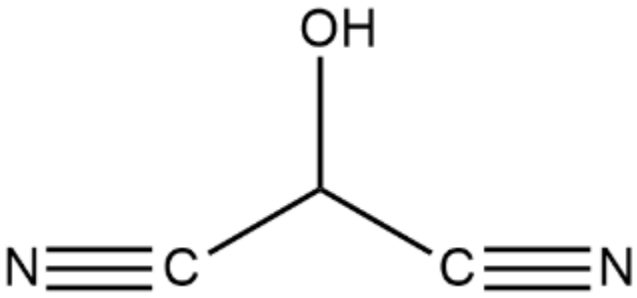
2. Why are electrons easily available to the attacking reagents in $\pi-$bonds?

Ans: The electron charge cloud of the $\pi-$bond is located above and below the plane of bonding atoms This results in the electrons being easily available to the attacking reagents.

3. Write the bond line formula for



Ans.



4. How are organic compounds classified?

Ans: (i) Acyclic or open chain compounds

(ii) Alicyclic or closed chain or ring compounds.

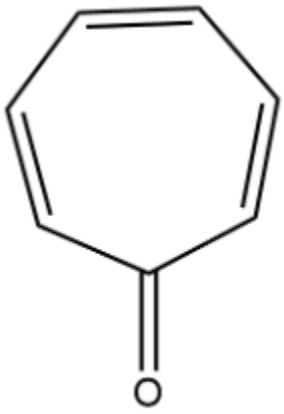
(iii) Aromatic compounds.

5.Define homologous series?

Ans: A group or a series of organic compounds each containing a characteristic functional group forms a homologous series and the members of the series are called homologous.

6. Write an example of a non-benzenoid compound.

Ans:



Tropolene

Structure of Tropolene

7. What is the cause of geometrical isomerism in alkenes?

Ans: Alkene has a π− bond and the restricted rotation around the π− bond gives rise to geometrical isomerism.

8. Name the chain isomers of C_5H_{12} which has a tertiary carbon atom.

Ans: 2-Methyl butane $(CH_3)_2CH - CH_2 - CH_3$

10. Define carbocation.

Ans: A species having a carbon atom possessing a sextet of electrons and a positive charge is called carbocation.

11. What are the nucleophiles?

Ans: The electron rich species are called nucleophiles. A nucleophile has affection for a positively charged centre.

Example- OH^-, I^-, CN^-

12. How can the mixture of kerosene oil and water be separated?

Ans: The mixture of kerosene oil and water can be separated by using a separating funnel.

13. Lassaigne's test is not shown by diazonium salts. Why?

Ans: Diazonium salts usually leave N2 on heating much before they have a chance to react with the fused sodium metal. Therefore, diazonium salts do not show positive Lassaigne's test for nitrogen.

> **14. In which $C-C$ bond of $CH_3-CH_2-CH_2-Br$, the inductive effect is expected to be the least?**
>
> **Ans:** Magnitude of inductive effect diminishes as the number of intervening bonds increases. Hence the effect is least in the third carbon $C-H$ bond.

15. Can you use potassium in place of sodium for fusing an organic compound in Lassaigne's test?

Ans: No, because potassium is more reactive than sodium.

16. Give the reason for the fusion of an organic compound with sodium metal for testing nitrogen, sulphur and halogens.

Ans: The elements present in the compound are converted from covalent form into ionic form by fusing the compound with sodium metal.

17. Write the chemical composition of the compound formed when ferric chloride is added containing both N and S.

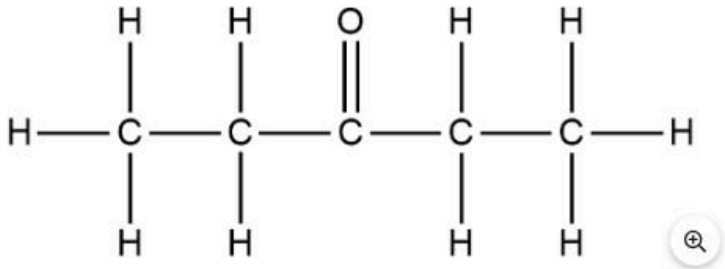
Ans:

$$FeCl_3 + NaSCN \rightarrow \underset{\textit{blood red}}{[Fe(SCN)]^{2+}} + 3NaCl$$

18. Write the expanded form of the following condensed formulas into their complete structural formulas.

i. $CH_3CH_2COCH_2CH_3$

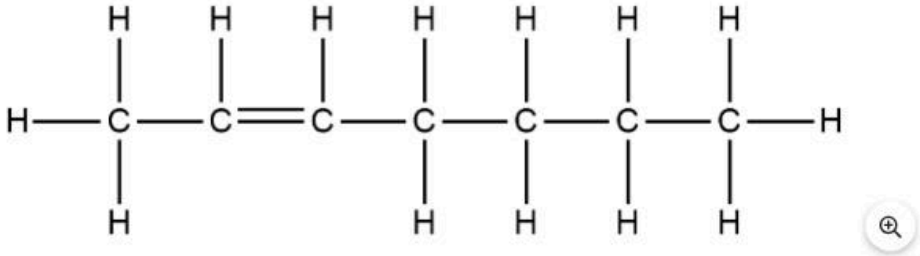
Ans:



Expanded form of $CH_3CH_2COCH_2CH_3$

ii. $CH_3CH=CH(CH_2)_3CH_3$

Ans:



Expanded form of $CH_3CH=CH(CH_2)_3CH_3$

2. How does hybridization affect electronegativity?

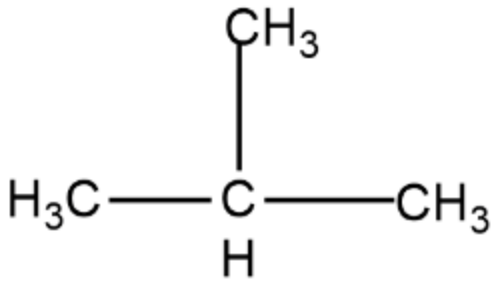
Ans: The greater the s-character of the hybrid orbitals, the greater is the electronegativity. Thus, a carbon atom having a sp-hybrid orbital with 50% s-character is more electronegative than that possessing sp2s or sp3 hybridized orbitals.

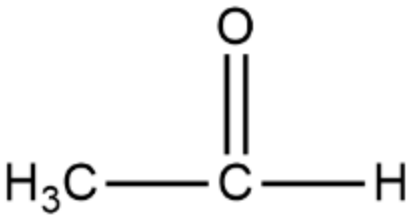
3. Why is sp hybrid orbital more electronegative than sp2 or sp3 hybridized orbitals?

Ans: The greater the s-character of the hybrid orbitals, the greater is the electronegativity. Thus, a carbon atom having a sp-hybrid orbital with 50% s-character is more electronegative than that possessing sp2 or sp3 hybridized orbitals.

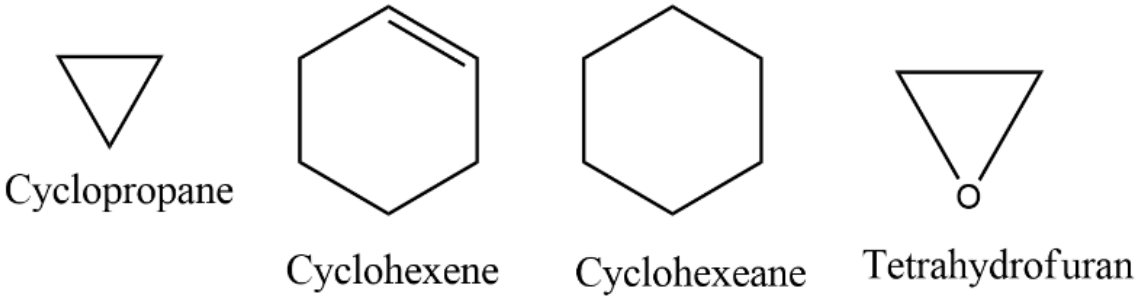
Example: Hydroxyl group (-OH), Aldehyde group (-CHO), Carboxylic acid group (-COOH), etc.

4. Give two examples of aliphatic compounds.

(i) 

(ii) 

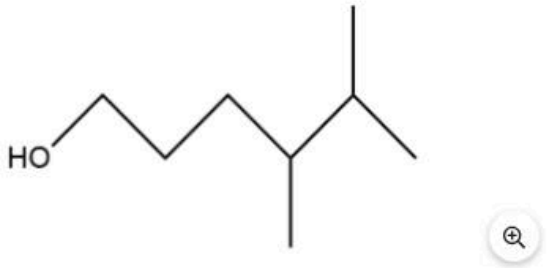
5. Write an example of an alicyclic compound.



6. For each of the following compounds write a condensed formula and also their bond line formula.

i. $HOCH_2CH_2CH_2CH(CH_3)CH(CH_3)CH_3$

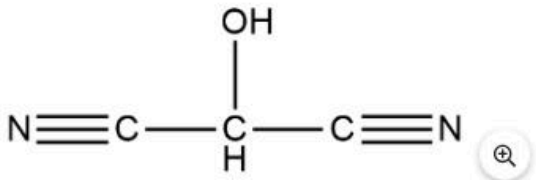
Ans: condensed formula - $HO(CH_2)_5CHCH_3CH(CH_3)_2$



Showing Bond line formula of $HOCH_2CH_2CH_2CH(CH_3)CH(CH_3)CH_3$

Bond line formula -

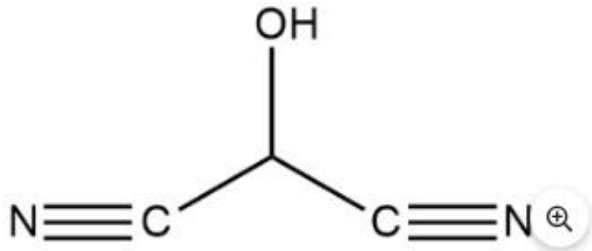
ii.



Showing structure of CNCHOHCN

Ans: condensed formula - $HOCH(CN)_2$

Bond line formula -



Bond line structure of CNCHOHCN

Benefits of Solving Important Questions for Class 11 Chemistry Chapter 8

Solving important questions for Class 11 Chemistry Chapter 8, "Organic Chemistry: Some Basic Principles and Techniques," offers several benefits to students. Here are the key advantages:

1. **Strengthens Conceptual Understanding**

The chapter covers fundamental concepts such as functional groups, types of organic reactions, and basic techniques used in organic chemistry. Solving important questions helps reinforce these concepts, allowing students to grasp the theoretical aspects more clearly.

2. **Improves Problem-Solving Skills**

Organic chemistry often involves logical reasoning and applying principles to solve problems. Regular practice of important questions enables students to improve their analytical and problem-solving skills, which are crucial for mastering the subject.

3. **Boosts Exam Preparation**

By focusing on important questions, students can familiarize themselves with the types of problems likely to appear in exams. This targeted preparation boosts confidence and helps in time management during exams.

4. **Builds a Strong Foundation for Advanced Topics**

Organic chemistry forms the basis for more complex topics in higher studies, such as reaction mechanisms and spectroscopy. Solving key questions ensures that students have a solid foundation, making it easier to understand advanced concepts later.

5. **Enhances Accuracy and Speed**

With practice, students develop better accuracy in solving problems and improve their speed, which is essential for performing well in competitive exams.