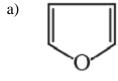
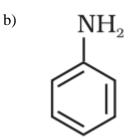
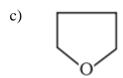
	INDIAN SCHOOL AL WADI AL KABIR		
Class: XI	DEPARTMENT: SCIENCE 2022-23 SUBJECT: CHEMISTRY		Date of completion: III week of November, 2022
Worksheet No:06 with answers	TOPIC: ORGANIC CHEMISTRY – SOME BASIC PRINCIPLES AND TECHNIQUES		Note: A4 FILE FORMAT
NAME OF THE STUDENT		CLASS & SEC:	ROLL NO.

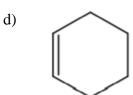
MULTIPLE CHOICE QUESTIONS

- 1. IUPAC name of CH₃CH(OH)CH₂CH₂CH=CH₂ is
 - a) Hex-1-en-5-ol
 - b) Hex-2-en-6-ol
 - c) 2-Hydroxyhex-5-ene
 - d) Hex-5-en-2-ol
- 2. What is the type of hybridisation of each carbon in CH₃CN?
 - a) sp^3 , sp
 - b) sp², sp
 - c) sp^3 , sp^2
 - d) Only sp³
- **3.** Which of the following is a heterocyclic aromatic compound?



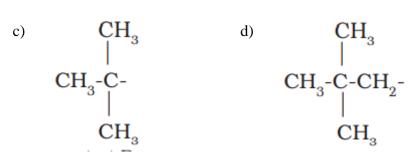






- 4. The shape around carbon in Methanal is
 - a) tetrahedral
 - b) trigonal planar
 - c) linear
 - d) trigonal pyramidal
- 5. Identify Isobutyl from the following:

a)
$$CH_3$$
- CH_2 - CH_3 CH_3 - CH_3 - CH_3 CH_3



- Which of the following represents the correct order of decreasing priority? 6.
 - a) Aldehyde > Amine > Ketone
 - b) Ketone > Aldehyde > Amine
 - c) Aldehyde > Ketone > Amine
 - d) Ketone > Amine > Aldehyde
- 7. 2-Methylbutane and 2,2-Dimethylpropane are
 - a) Metamers
 - b) Chain isomers
 - c) Position isomer
 - d) Functional group isomers
- 8. Identify the most stable free radical from the following.
- b) $\dot{C} H (CH_3)_2$ d) $\dot{C} H_2 CH_3$
- a) Ċ H₃
 c) Ċ (CH₃)₃

- **9.** A reagent that takes away an electron pair from reactive site is called
 - a) electrophile
- b) nucleophile

c) carbanion

- d) Free radical
- **10.** The functional group that shows negative resonance effect is
 - a) halogen

b) - OH

c) - CHO

 $d) - NH_2$

Read the given passage and answer the questions that follow:

The movement of electrons in organic reactions can be shown by curved-arrow notation. It shows how changes in bonding occur due to electronic redistribution during the reaction. To show the change in position of a pair of electrons, curved arrow starts from the point from where an electron pair is shifted and it ends at a location to which the pair of electrons may move.

- **11.** Define inductive effect.
- **12.** Which of the following is a temporary effect?

Electromeric Effect or Hyperconjugation.

13. Differentiate between positive electromeric effect and negative electromeric Effect.

Assertion and Reason Type

14. Assertion: Ethanoic acid and Methyl methanoate are functional group isomers.

Reason: Ethanoic acid and Methyl methanoate have same molecular formula but different functional groups.

- a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
- b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
- c) Assertion is correct, but reason is wrong statement.
- d) Assertion is wrong, but reason is correct statement.
- **15.** Assertion: C-C bond in Chloroethane is slightly polar.

Reason: This is due to electromeric effect.

- a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
- b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
- c) Assertion is correct, but reason is wrong statement.
- d) Assertion is wrong, but reason is correct statement.

16. Assertion: NH₄Cl can be separated from NaCl by sublimation.

Reason: Both NH₄Cl and NaCl are sublimable compounds.

- a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
- b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
- c) Assertion is correct, but reason is wrong statement.
- d) Assertion is wrong, but reason is correct statement.

Question – Answer Type:

17. Write the IUPAC name of the following compound.

1

18. Define Hyperconjugation.

1

19. Arrange the following carbocation in the increasing order of stability.

1

1

- CH₃CH₂⁺, (CH₃)₃C⁺, (CH₃)₂CH⁺, CH₃⁺
- **20.** Kjeldahl method is not applicable to compounds containing nitrogen in nitro and azo groups and nitrogen present in the ring. Why?
 - 2
- **21.** Differentiate between Nucleophiles and Electrophiles with one example each.
- 2

22. Describe the method of column chromatography.

2

23. Draw the resonance structures of Aniline.

Explain the quantitative analysis of:

24. Describe the qualitative analysis of Nitrogen and Sulphur.

3

25.

- a) Dumas method for Nitrogen
- b) Carius method for Halogen

ANSWERS

1.	d) Hex-5-en-2-ol		
2.	a) sp ³ , sp		
3.	a) 0		
4.	b) trigonal planar		
5.	b) CH ₃ -CH-CH ₂ - CH ₃		
	CH_3		
6.	c) Aldehyde > Ketone > Amine		
7.	b) Chain isomers		
8.	c) \dot{C} (CH ₃) _{3,}		
9.	a) electrophile		
10.	c) - CHO		
11.	Polarisation of σ - bond caused by the polarisation of adjacent σ -bond is called inductive effect.		
12.	Electromeric Effect		
13.	In positive electromeric effect, the π -electrons of the multiple bond are transferred to that atom to which the reagent gets attached.		
	In negative electromeric effect, the π - electrons of the multiple bond are transferred to that atom to which the attacking reagent does not get attached.		
14.	a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.		
15.	c) Assertion is correct, but reason is wrong statement.		
16.	c) Assertion is correct, but reason is wrong statement.		
17.	2-Chloro-1-methyl-4-nitrobenzene		
18.	Hyperconjugation involves delocalisation of σ electrons of C—H bond of an alkyl group directly attached to an atom of unsaturated system or to an atom with an unshared p orbital.		
19.	$CH_3^+ < CH_3CH_2^+ < (CH_3)_2CH^+ < (CH_3)_3C^+$		
20.	This is because nitrogen in nitro and azo groups and nitrogen present in the ring does not change to ammonium sulphate.		
21.	A reagent that brings an electron pair to the reactive site is called a nucleophile.		
	Eg: - OH ⁻ , NH ₃		
	A reagent that takes away an electron pair from reactive site is called electrophile.		
	Eg: - H ⁺ , BF ₃		

Column chromatography involves separation of a mixture over a column of adsorbent (stationary phase) packed in a glass tube. The mixture is placed on the top of the adsorbent column packed in a glass tube. An appropriate eluent, which is a liquid, is allowed to flow down the column slowly. Depending upon the degree to which the compounds are adsorbed, complete separation takes place. The most readily adsorbed substances are retained near the top and others come down to various distances in the column.

23.

24. Nitrogen

Experiment

The sodium fusion extract is boiled with iron (II) sulphate and then acidified with conc. H_2SO_4

Observation

Prussian blue colour

$$\begin{aligned} &6\text{CN}^- + \text{Fe}^{2+} \rightarrow & [\text{Fe}(\text{CN})_6]^{4-} \\ &3[\text{Fe}(\text{CN})_6]^{4-} + 4\text{Fe}^{3+} \xrightarrow{\text{xH}_2\text{O}} & \text{Fe}_4[\text{Fe}(\text{CN})_6]_3.\text{xH}_2\text{O} \\ & \text{Prussian blue} \end{aligned}$$

<u>Sulphur</u>

Experiment

The sodium fusion extract is acidified with acetic acid and lead acetate is added to it.

Observation

A black precipitate.

$$S^{2-} + Pb^{2+} \longrightarrow PbS$$
Black

25. a) Dumas method for Nitrogen

The nitrogen containing organic compound, when heated with copper oxide in an atmosphere of carbon dioxide, yields free nitrogen in addition to carbon dioxide and water. Traces of nitrogen oxides formed are reduced to nitrogen by passing the gaseous mixture over heated copper gauze. The mixture of gases so produced is collected over an aqueous solution of potassium hydroxide which absorbs carbon dioxide. Nitrogen is collected in the upper part of the graduated tube.

Percentage of nitrogen =
$$\frac{28 \times V \times 100}{22400 \times m}$$

b) Carius method for Halogen

A known mass of an organic compound is heated with fuming nitric acid in the presence of silver nitrate contained in a hard glass tube known as Carius tube. Carbon and hydrogen present in the compound are oxidised to carbon dioxide and water. The halogen present forms the corresponding silver halide (AgX). It is filtered, washed, dried and weighed.

Percentage of halogen

 $= \frac{\text{atomic mass of } X \times m_1 \times 100}{\text{molecular mass of } AgX \times m}$

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