GOVERNMENT OF KARNATAKA
DEPARTMENT OF SCHOOL EDUCATION (PRE-UNIVERSITY)
18TH CROSS, MALLESHWARAM, BENGALURU – 560 012
CHAPTERWISE MULTIPLE CHOICE QUESTIONS FOR COMPETATIVE EXAM
SUBJECT: I PUC CHEMISTRY
UNIT: 08-ORGANIC CHEMISTRY: SOME BASIC PRINCIPLES AND TECHNIQUES

1. Tetravalence of Carbon and Shapes of Organic Compounds

Carbon possesses four valence electrons and forms stable covalent bonds. The spatial arrangement and geometry of molecules depend directly on its hybridization state (sp^3, sp^2, or sp):

sp^3 Hybridization: Results in a **Tetrahedral** geometry with 109.5° bond angles (e.g., Methane, CH_4, and Alkanes). It involves single bonds only, which are exclusively σ (sigma) bonds.

sp^2 Hybridization: Results in a **Trigonal Planar** geometry with 120° bond angles (e.g., Ethene, C_2H_4, and Alkenes). It contains one double bond made of one σ bond and one π (pi) bond.

sp Hybridization: Results in a **Linear** geometry with 180° bond angles (e.g., Ethyne, C_2H_2, and Alkynes). It contains one triple bond consisting of one σ bond and two π bonds.

> *Key Operational Rule: Every single covalent bond is a σ bond. A double bond contains exactly 1 σ and 1 π bond. A triple bond contains exactly 1 σ and 2 π bonds. π bonds are formed by the sideways overlap of unhybridized p-orbitals and do not impact structural geometry directly.*

2. Structural Representations of Organic Compounds

Organic compounds are illustrated using four foundational conventions to highlight structural layout or 3D configuration:

Complete Formula: Explicitly draws out every covalent bond line (both single and multiple) connecting every atom in the molecule.

Condensed Formula: Simplifies drawings by omitting some or all bond lines, grouping identical structural units with subscripts (e.g., $CH_3CH_2CH_2CH_3$ or $CH_3(CH_2)_2CH_3$).

Bond-Line Formula: Highly efficient notation where carbon and hydrogen atoms are omitted. Vertices and line endings represent carbon atoms, while lines denote carbon-carbon bonds. Heteroatoms and their attached hydrogens (like -OH or $-NH_2$) are drawn explicitly.

Three-Dimensional (3D) Representation: Employs spatial wedge conventions: Solid Wedges represent bonds projecting out of the page towards the viewer; Dashed Wedges denote bonds pointing away into the page; Normal Lines indicate bonds lying within the flat plane of the paper.

3. Classification of Organic Compounds

Organic molecules are broadly classified into structural frameworks as summarized below:

A. Acyclic or Open-Chain Compounds

Also termed aliphatic compounds, these consist of straight or branched carbon chains (e.g., butane, isobutane).

B. Cyclic or Closed-Chain Compounds

Homocyclic / Carbocyclic: The ring network contains only carbon atoms. These are further divided into:

Alicyclic: Aliphatic cyclic compounds displaying properties akin to open-chain analogs (e.g., cyclohexane, cyclopropane).

Aromatic: Special unsaturated cyclic frameworks exhibiting extraordinary stability due to Huckel's rule delocalization. Can be Benzenoid (containing a benzene ring, like naphthalene) or non-benzenoid (aromatic but without a benzene core, like tropolone).

Heterocyclic: Cyclic rings that contain one or more heteroatoms (atoms other than carbon, such as N, O, S) inside the ring structure. They can be Alicyclic (e.g., Tetrahydrofuran) or Aromatic (e.g., Pyridine, Furan).

4. Nomenclature of Organic Compounds (IUPAC System)

The systematic international naming framework follows a strict formulaic assembly line:

Prefix(es) + Word Root + Primary Suffix + Secondary Suffix

Word Root: Designates the total number of carbon atoms present in the selected principal longest continuous carbon chain (Meth-, Eth-, Prop-, But-, Pent-, Hex-, etc.).

Primary Suffix: Specifies the degree of saturation or unsaturation within the principal carbon chain: '-ane' for all single bonds, '-ene' for double bonds, and '-yne' for triple bonds.

Secondary Suffix: Denotes the high-priority functional group governing the chemical characteristics of the molecule (e.g., '-ol' for alcohols, '-al' for aldehydes, '-one' for ketones, and '-oic acid' for carboxylic acids).

Prefixes: Identify subordinate substituents, structural branches, or lower-priority functional groups treated as side attachments (e.g., bromo-, chloro-, methyl-, nitro-).

Core IUPAC Nomenclature Directives

Longest Chain Rule: Select the longest continuous carbon chain containing the principal functional group and multiple bonds as the parent structural spine.

Lowest Locant Rule: Number the principal chain from the direction that awards the lowest numerical positions (locants) to functional groups, multiple bonds, and substituents, prioritized in that sequence.

Priority Rule for Polyfunctional Compounds: When a molecule contains more than one functional group, choose the principal functional group based on the official decreasing seniority hierarchy:

> $–COOH > –SO_3H > –COOR > –COCl > –CONH_2 > –CN > –CHO > >C=O > –OH > –NH_2 > >C=C< > –C≡C–$

5. Isomerism

Isomerism describes molecules possessing identical molecular formulas but presenting distinct chemical structures or unique spatial layouts, leading to different physical or chemical properties.

A. Structural Isomerism

Arises from differences in the connectivity or arrangement of atoms within the structural skeleton:

Chain Isomerism: Variations in the arrangement of the carbon skeleton (e.g., n-pentane and isopentane).

Position Isomerism: The carbon skeleton is identical, but the position of a functional group or substituent differs (e.g., propan-1-ol and propan-2-ol).

Functional Isomerism: Molecules share formulas but contain entirely different functional groups (e.g., Ethanol [alcohol] and Dimethyl Ether [ether], or acetone and propanal).

Metamerism: Caused by the unequal distribution of alkyl radical groups on either side of a polyvalent functional group (e.g., diethyl ether and methyl propyl ether around the -O- linkage).

B. Stereoisomerism

Molecules match in atomic connectivity but differ exclusively in how their atoms are oriented in three-dimensional space. It splits into Geometrical Isomerism (cis/trans variations arising from restricted rotation) and Optical Isomerism (non-superimposable mirror images or enantiomers).

6. Concepts in Organic Reaction Mechanisms

An organic reaction represents a step-by-step sequence of electron movements, bond breakages, and bond formations:

Organic Substrate + Attacking Reagent → [Reactive Intermediate] → Products + By-products

A. Covalent Bond Fission

Homolytic Fission: A symmetrical cleavage where each bonding partner retains exactly one electron from the shared pair. This process yields highly reactive, neutral species bearing an unpaired electron, known as **Free Radicals** ($R\bullet$). Influenced by UV light or peroxides.

Heterolytic Fission: An unsymmetrical cleavage where the more electronegative atom detaches with both shared bonding electrons. This leaves one fragment electron-deficient and positively charged (**Carbocation**, R^+) and the other electron-rich and negatively charged (**Carbanion**, R^-).

B. Attacking Reagents

Nucleophiles ('Nucleus-Loving'): Electron-rich chemical entities possessing a lone pair of electrons or carrying a formal negative charge (e.g., OH^-, CN^-, H_2O, NH_3). They attack electron-deficient, positive centers.

Electrophiles ('Electron-Loving'): Electron-deficient chemical entities carrying a positive charge or containing an incomplete octet (e.g., H^+, Cl^+, NO_2^+, $AlCl_3$, BF_3). They seek out electron-dense sites.

C. Electronic Displacement Effects

Inductive Effect (I-Effect): A **permanent** transmission of charge along a chain of σ bonds due to electronegativity variances. It dampens rapidly down the carbon chain. It is split into **-I effect** (electron-withdrawing groups like -NO_2, -F, -Cl) and **+I effect** (electron-donating groups like alkyl chains: -CH_3, -CH_2CH_3).

Electromeric Effect (E-Effect): A **temporary** electronic displacement where a complete shift of π-electrons to one of the double/triple bonded atoms takes place exclusively at the requirement of an attacking reagent.

Resonance / Mesomeric Effect (R or M Effect): A **permanent** polarity generated via the interaction of two π-bonds or between a π-bond and a lone pair on an adjacent atom through a conjugated system. Includes **+R effect** (donates electron density into the conjugated network, e.g., -OH, -NH_2) and **-R effect** (pulls electron density out, e.g., -NO_2, -CHO, -COOH).

Hyperconjugation (No-Bond Resonance): A **permanent** stabilizing interaction involving the delocalization of σ-electrons belonging to a C-H bond of an alkyl group attached directly to an unsaturated system or an atom with an unshared p-orbital.

> *Stability Orders of Reactive Intermediates (Governed by Inductive & Hyperconjugation effects):*
> • *Carbocations (R^+): Tertiary (3°) > Secondary (2°) > Primary (1°) > Methyl (CH_3^+)*
> • *Free Radicals ($R\bullet$): Tertiary (3°) > Secondary (2°) > Primary (1°) > Methyl ($CH_3\bullet$)*
> • *Carbanions (R^-): Methyl (CH_3^-) > Primary (1°) > Secondary (2°) > Tertiary (3°)*

7. Purification Techniques of Organic Compounds

Purification strategies rely extensively on harnessing differences in the underlying physical characteristics of the target compound versus its impurities:

Sublimation: Used to separate substances that transition directly from a solid to a gaseous state upon heating from non-sublimable impurities (e.g., isolating Camphor, Iodine, or Naphthalene).

Crystallization: Standard procedure based on differences in solubility profiles. The crude compound dissolves in a hot solvent in which it is highly soluble, filtering out insoluble matter, and then cools slowly to form pure crystals while impurities stay dissolved in the mother liquor.

Distillation: Used to separate volatile liquids from non-volatile impurities or to isolate liquids with varying boiling points:
Simple Distillation: Separates liquids with large boiling point differences (> 25 K).

Fractional Distillation: Utilizes a fractionating column to separate liquids with close boiling points (e.g., crude petroleum components).

Vacuum Distillation (Reduced Pressure): For compounds that decompose at or below their normal boiling points (e.g., purifying Glycerol).

Steam Distillation: Isolates steam-volatile liquids that are completely immiscible with water (e.g., isolating aniline or essential oils).

Differential Extraction: Extracts an organic compound from an aqueous medium by shaking it with an organic solvent in which the compound exhibits significantly higher solubility, using a separating funnel.

Chromatography: Advanced modern analytical technique based on the differential distribution/migration of components between a Mobile Phase and a Stationary Phase. Divided into Adsorption Chromatography (e.g., Column Chromatography, Thin Layer Chromatography [TLC]) and Partition Chromatography (e.g., Paper Chromatography).

8. Qualitative and Quantitative Analysis

A. Qualitative Analysis (Detection of Elements)

While Carbon and Hydrogen are identified by heating with Copper(II) oxide (generating CO_2 which turns lime water milky, and H_2O which turns anhydrous $CuSO_4$ blue), foreign elements are identified via Lassaigne's Test.

Lassaigne's Test (Sodium Fusion Test): The organic compound is fused with metallic sodium, safely converting covalent links into water-soluble ionic sodium salts: $Na + C + N \rightarrow NaCN$; $2Na + S \rightarrow Na_2S$; $Na + X \rightarrow NaX$ (where X = Cl, Br, I).

Nitrogen Detection: The sodium fusion extract is boiled with Iron(II) sulfate and acidified with concentrated HCl. A distinctive Prussian Blue coloration (Ferric Ferrocyanide, $Fe_4[Fe(CN)_6]_3$) confirms Nitrogen.

Sulfur Detection: Extract treated with Sodium Nitroprusside yields a vibrant Violet Coloration indicating sulfur.

Halogen Detection: Extract is acidified with HNO_3 and treated with Silver Nitrate ($AgNO_3$). White ppt soluble in NH_4OH confirms Chlorine; Pale Yellow ppt partially soluble in NH_4OH confirms Bromine; Yellow ppt completely insoluble in NH_4OH confirms Iodine.

B. Quantitative Analysis (Estimation of Percent Composition)

Carbon & Hydrogen: Estimated via Liebig's Combustion Method. The compound is burned completely with CuO; produced CO_2 is absorbed in a KOH bulb and H_2O in a $CaCl_2$ guard tube. Weights are calculated from the mass differences.

Nitrogen: Estimated using one of two primary historical methods:

Dumas Method: The nitrogen-containing organic compound is heated with CuO in a CO_2 atmosphere to liberate N_2 gas, whose volume is precisely collected and measured over a KOH solution at STP.

Kjeldahl Method: The compound is digested with concentrated H_2SO_4 to convert organic nitrogen into Ammonium Sulfate, which is subsequently decomposed with NaOH to liberate NH_3 gas. The ammonia is absorbed in a known excess of standard acid. (Note: This method fails for compounds containing nitrogen inside a ring [e.g., pyridine] or linked to oxygen/nitrogen bonds [e.g., nitro, azo groups]).

Halogens (Carius Method): A known mass of the compound is heated with fuming nitric acid and silver nitrate in a sealed tube. Halogens turn into silver halides (AgX), which are filtered, washed, dried, and weighed.

Sulfur: Heated in a Carius tube with fuming HNO_3, converting sulfur into sulfuric acid, which is then precipitated as Barium Sulfate ($BaSO_4$) by adding $BaCl_2$ and weighed.

Phosphorus: Oxidized with fuming HNO_3 into phosphoric acid, which is precipitated as ammonium phosphomolybdate or magnesium pyrophosphate ($Mg_2P_2O_7$) and weighed.

8.2 Tetravalence of carbon: shapes of organic compounds:

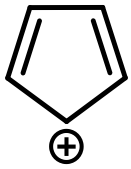
1. Arrange the following in the increasing order of electronegativity.

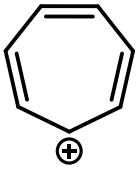
   (a) $sp^2 < sp < sp^3$ (b) $sp^3 < sp^2 < sp$

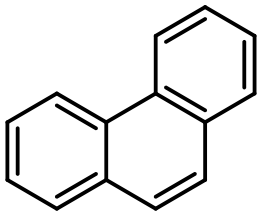
   (c) $sp < sp^2 < sp^3$ (d) $sp^3 < sp < sp^2$

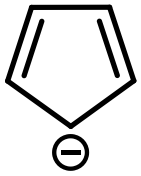
8.3 Structural representations of organic compounds

2. Which of the following is not an aromatic compound? **(KCET-2025)**

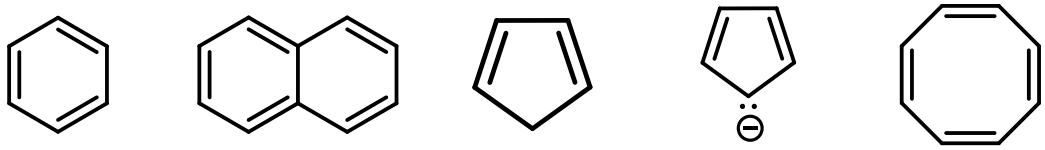
   (a) 

   (b) 

   (c) 

   (d) 

3. Among the following.



I **II** **III** **IV** **V**

The set which represents aromatic species is **(KCET-2023)**

(a) I, II and III (b) III, IV and V

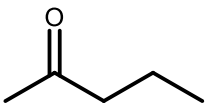
(c) II and III (d) I, II and IV

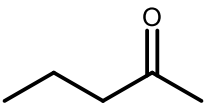
4. Arrange benzene, n-hexane and ethyne in decreasing order of their acidic behaviour. **(KCET-2021)**

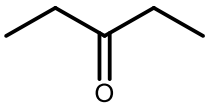
   (a) Benzene > n-hexane > Ethyne (b) n-hexane > Benzene > Ethyne

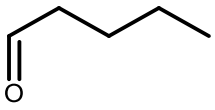
   (c) Ethyne > n-hexane > Benzene (d) Ethyne > Benzene > n-hexane

5. The bond-line formula of $CH_3CH_2COCH_2CH_3$

   (a) 

   (b) 

   (c) 

   (d) 

8.4 Classification of organic compounds

6. The successive members of a homologous series differ by a unit

   (a) $–CH_3$ (b) CH_3CH_3

   (c) $–CH_2–$ (d) $–CH_2CH_3$

7. Pick out the option that is not a functional group from the following.

(a) Hydroxyl group (b) Benzene group

(c) Aldehyde group (d) Carboxylic acid group

8. Common name for the compound $C_6H_5OCH_3$ is

(a) Acetophenone (b) Anisole

(c) Aniline (d) Methoxybenzene

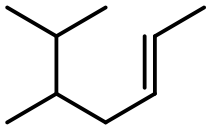
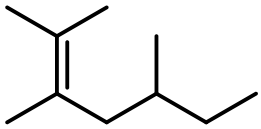
9. Non-benzenoid compound among the following

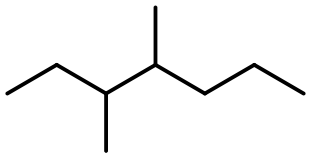
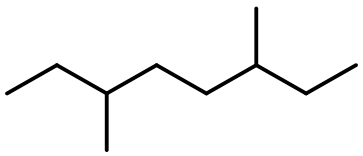
(a) Benzene (b) Aniline

(c) Naphthalene (d) Tropone

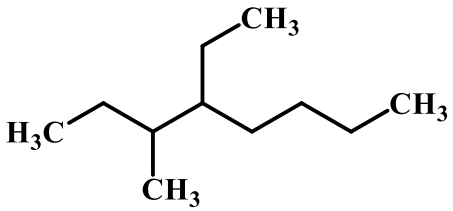
8.5 Nomenclature of organic compounds

10. Structure of the compound whose IUPAC name is 5,6-dimethylhept-2-ene is

(a)  (b) 

(c)  (d) 

11. The IUPAC name of the following compound



(a) 2,3-Diemethylheptane (b) 3-Methyl-4-ethyloctane

(c) 5-ethyl-6-methyloctane (d) 4-Ethyl-3-methyloctane

12. The correct decreasing order of priority for the functional groups of organic compounds in the IUPAC system of nomenclature is

(a) –COOH, –SO_3H, –$CONH_2$, –CHO (b) –SO_3H, –COOH, –$CONH_2$, –CHO

(c) –CHO, –COOH, –SO_3H, –$CONH_2$ (d) –$CONH_2$, –CHO, –SO_3H, –COOH

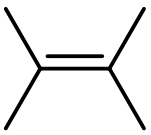
13. The IUPAC name of the given organic compound is **(KCET-2025)**

$HC\equiv C-CH=CH-CH=CH_2$

(a) Hex-1-yn-3,5-diene (b) Hex-5-yn-1,3-diene

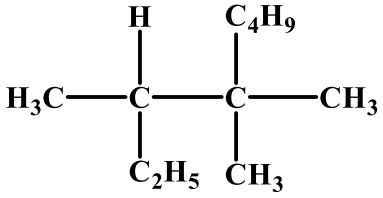
(c) Hex-1,3-dien-5-yne (d) Hex-3,5-dien-1-yne

14. IUPAC name of the compound is

 is

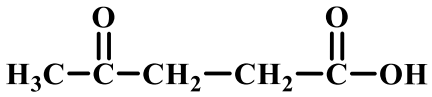
(a) 2,3-dimethylbut-2-ene
(b) 2,3-dimethyl butyne
(c) 1,1,2,2-tetra methyl ethene
(d) 2,3-dimethyl butene

15. The IUPAC name of the following compound **(KCET-2023)**



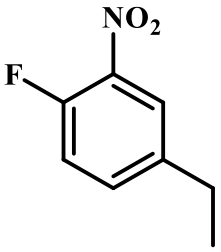
(a) 3,4,4-Trimethylheptane
(b) 2-Ethyl-3,3-dimethylheptane
(c) 3,4,4-Trimethyloctane
(d) 2-Butyl-2-methyl-3-thyl-butane

16. The IUPAC name for **(KCET-2022)**



(a) 1,4-dioxopentanol
(b) 1-carboxybutan-3-one
(c) 4-oxopentanoic acid
(d) 1-hydroxy pentane-1,4-dione

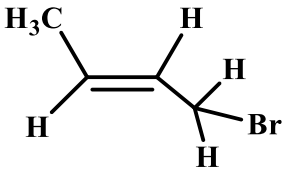
17. The correct IUPAC name of **(KCET-2021)**



is

(a) 4-ethyl-1-fluoro-2-nitrobenzene
(b) 1-ethyl-4-fluoro-3-nitrobenzene
(c) 3-ethyl-6-fluoronitrobenzene
(d) 3-ethyl-6-fluoronitrobenzene

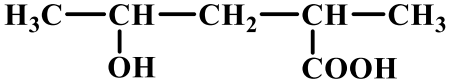
18. IUPAC name of the compound **(KCET-2016)**



is

(a) l-bromobut-2-ene
(b) 2-bromo-2-butene
(c) bromobutene
(d) l-bromobut-3-ene

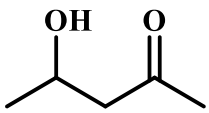
19. IUPAC name of **(KCET-2013)**



is

(a) 4-hydroxy-1-methyl pentanoic acid
(b) 4-hydroxy-2-methyl pentanoic acid
(c) 2-hydroxy-4-methyl pentanoic acid
(d) 2-hydroxy-2-methyl pentanoic acid

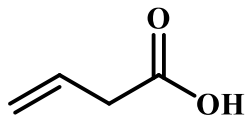
20. IUPAC name of **(KCET-2013)**



is

(a) 4-hydroxy-2-pentanone
(b) 2-hydroxy-4-pentanone
(c) 2-oxo-4-pentanol
(d) 4-keto-2-pentanol

21. The IUPAC name of **(KCET-2011)**



is

(a) but-3-enoic acid
(b) but-1-enoic acid
(c) pent-4-enoic acid
(d) prop-2-enoic acid

8.6 Isomerism

22. What structural relationship exists between pentane, 2-methylbutane, and 2,2-dimethylpropane?
(a) Chain isomers
(b) Position isomers
(c) Functional isomers
(d) Metamers

23. What is the basic definition of position isomerism?
(a) Isomers differ in the position of a functional group or substituent on the same chain
(b) Isomers differ in the length of the carbon chain
(c) Isomers differ in the nature of their functional group
(d) Isomers differ in the distribution of alkyl groups around a heteroatom

24. Propan-1-ol and propan-2-ol represent which type of isomerism?
(a) Chain isomerism
(b) Position isomerism
(c) Metamerism
(d) Functional isomerism

25. Ethanol and methoxymethane share the same molecular formula (C_2H_6O). What type of isomers are they?
(a) Chain isomers
(b) Position isomers
(c) Metamers
(d) Functional isomers

26. Which of the following classes of compounds is most prone to showing metamerism?
(a) Ethers
(b) Monohydric alcohols
(c) Alkanes
(d) Alkyl halides

27. What is required for a molecule to show cis-trans (geometrical) isomerism?
(a) A completely flexible carbon-carbon single bond.
(b) A single asymmetric chiral carbon center.
(c) Restricted rotation and two different groups attached to each alkene carbon.
(d) A terminal triple bond.

28. Which of the following compounds exhibits cis-trans isomerism?
(a) But-1-ene
(b) But-2-ene
(c) Propene
(d) 2-Methylpropene

29. What is the relationship between diethyl ether and methyl propyl ether?
    (a) Metamers
    (b) Chain isomers
    (c) Functional isomers
    (d) Tautomers

8.7 Fundamental concepts in organic reaction mechanism

30. What type of bond cleavage occurs when a shared pair of electrons is split equally between two bonded atoms?
    (a) Heterolytic cleavage
    (b) Electrolytic cleavage
    (c) Symmetric ionization
    (d) Homolytic cleavage
31. Which of the following reactive intermediates possesses a carbon atom with a positive charge and six valence electrons?
    (a) Carbocation
    (b) Carbanion
    (c) Free radical
    (d) Carbene
32. The correct order of relative stability for alkyl carbocations is
    (a) Tertiary = Secondary = Primary
    (b) Secondary > Tertiary > Primary
    (c) Tertiary > Secondary > Primary > Methyl
    (d) Methyl > Primary > Secondary > Tertiary
33. What is the hybridization state and shape of a typical alkyl free radical carbon?
    (a) sp and linear
    (b) sp^3 and tetrahedral
    (c) dsp^2 and square planar
    (d) sp^2 and planar
34. The intermediate is a negatively charged chemical species containing a trivalent carbon with eight valence electrons:
    (a) Carbocation
    (b) Carbanion
    (c) Free radical
    (d) Nitrene
35. Which of the following chemical species acts as an electrophile?
    (a) BF_3
    (b) NH_3
    (c) H_2O
    (d) Cl^-
36. The electron displacement effect that involves the permanent polarization of a sigma bond due to electronegativity differences is
    (a) Electromeric effect
    (b) Inductive effect
    (c) Resonance effect
    (d) Hyperconjugation
37. The following group that exerts a strong -I (minus inductive) effect:
    (a) $-CH_3$
    (b) $-CH_2CH_3$
    (c) $-NO_2$
    (d) -COO-
38. What type of electron displacement involves the delocalization of pi-electrons or lone pairs through overlapping p-orbitals in conjugated systems?
    (a) Resonance (Mesomeric) effect
    (b) Inductive effect
    (c) Hyperconjugation
    (d) Steric hindrance

39. Which of the following is a neutral nucleophile?

(a) OH^- (b) CN^-

(c) Br^- (d) H_2O

8.8 Methods of purification of Organic compounds

40. In Lassaigne's test for detecting elements, why is the organic compound first fused with metallic sodium?

(a) To oxidize carbon and hydrogen into gases.

(b) To convert covalent bonds into water-soluble ionic species.

(c) To separate the organic compound from impurities.

(d) To reduce the density of the compound.

41. Which ion is formed in Lassaigne's filtrate when both nitrogen and sulfur are simultaneously present in an organic compound?

(a) Thiocyanate ion (b) Cyanide ion

(c) Sulfide ion (d) Sulfate ion

42. The appearance of a Prussian blue precipitate in Lassaigne's test confirms the presence of which element?

(a) Sulfur (b) Chlorine

(c) Nitrogen (d) Phosphorus

43. Which compound gives a distinctive violet color when treated with sodium nitroprusside in Lassaigne's test for sulfur?

(a) Sodium sulfide (Na_2S) (b) Sodium cyanide (NaCN)

(c) Sodium chloride (NaCl) (d) Sodium thiocyanate (NaSCN)

44. When testing for halogens, why is the Lassaigne's extract boiled with concentrated nitric acid before adding silver nitrate?

(a) To oxidize the halogens to free halogens.

(b) To neutralize the sodium hydroxide completely.

(c) To decompose any cyanide or sulfide ions that would interfere with the test.

(d) To accelerate the precipitation of silver chloride.

45. A white precipitate obtained after adding $AgNO_3$ to an acidified Lassaigne's extract, which is readily soluble in ammonium hydroxide, confirms:

(a) Chlorine (b) Bromine

(c) Iodine (d) Nitrogen

46. How is carbon detected qualitatively during the copper (II) oxide oxidation test?

(a) By the formation of a blue solution with anhydrous copper sulfate.

(b) By a sharp popping sound upon heating.

(c) By the appearance of a silver mirror on the tube walls.

(d) By passing the evolved gas into lime water, which turns turbid.

47. In Liebig's combustion method for estimating carbon and hydrogen, how is the mass of water formed determined?

(a) By the increase in weight of an anhydrous calcium chloride tube.

(b) By the increase in weight of a potassium hydroxide (KOH) bulb.

(c) By direct volumetric measurement in a graduated cylinder.

(d) By calculating the loss of mass of the copper oxide tube.

48. Which method involves heating an organic compound with metallic sodium followed by estimating nitrogen volumetrically as nitrogen gas?

(a) Kjeldahl's method (b) Carius method

(c) Dumas method (d) Liebig's method

49. In Kjeldahl's method for estimating nitrogen, the organic compound is digested with concentrated sulfuric acid to convert nitrogen into:

(a) Nitric acid (b) Ammonium sulfate

(c) Ammonia gas (d) Nitrogen gas

50. The Carius method is universally applied in organic chemistry for the quantitative estimation of:

(a) Oxygen only (b) Nitrogen only

(c) Carbon and Hydrogen (d) Halogens and Sulfur

51. An organic compound weighing 0.30 g gave 0.282 g of silver bromide (AgBr) in a Carius estimation. What is the percentage of bromine? (At. mass: Ag=108, Br=80)

(a) 40% (b) 20%

(c) 60% (d) 80%

Answer Key:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
b	a	d	d	c	c	b	b	d	a
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
d	a	c	a	c	c	a	a	b	a
21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
a	a	a	b	d	a	c	b	a	d
31.	32.	33.	34.	35.	36.	37.	38.	39.	40.
a	c	d	b	a	b	c	a	d	b
41.	42.	43.	44.	45.	46.	47.	48.	49.	50.
a	c	a	c	a	d	a	c	b	d
51.									
a									

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