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JEE MAIN PRINCIPLES RELATED TO PRACTICAL CHEMISTRY — PYQS

Max. Marks: 268 **Questions:** 67

Section A (MCQ) — 50 questions

Q.1 Given below are two statements :
Statement-I: Vapours of the liquid with higher boiling point condense before vapours of the liquid with lower boiling points in fractional distillation.
Statement-II: The vapours rising up in the fractionating column become richer in high boiling component of the mixture.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 8th April Evening Shift]

(1) Both Statement-I and Statement-II are true
(2) Both Statement-I and Statement-II are false
(3) Statement-I is true but Statement-II is false
(4) Statement-I is false but Statement-II is true

Scan or tap for the full solution

Q.2 R_f value for 2-methylpropene in a solvent system (Ethyl acetate + ether) is 0.42. 2-methylpropene is treated with dilute H_2SO_4 to give major organic product (X). R_f value for (X) in the same solvent system under identical condition will be:

[JEE Main 2026 (Online) 6th April Morning Shift]

(1) 0.42 (2) 0.82 (3) 0.62 (4) 0.12

Scan or tap for the full solution

Q.3 Given below are two statements :
Statement-I: A mixture of $C_{12}H_{22}O_{11}$ (sugar) and NaCl can be separated by dissolving sugar in alcohol, due to differential solubility.
Statement-II: Rose essence from rose petals is separated by steam distillation due to its high volatility and insolubility in H_2O.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 6th April Evening Shift]

(1) Both Statement-I and Statement-II are true
(2) Both Statement-I and Statement-II are false
(3) Statement-I is true but Statement-II is false
(4) Statement-I is false but Statement-II is true

Scan or tap for the full solution

Q.4 Treatment of a gas 'X' with a freshly prepared ferrous sulphate solution gives a compound 'Y' as a brown ring. The compounds X and Y are:

[JEE Main 2026 (Online) 6th April Evening Shift]

(1) NO and $[Fe(NO)]SO_4$
(2) NO_2 and $[Fe(NO_2)]SO_4$
(3) N_2O and $[Fe(N_2O)]SO_4$
(4) N_2O_4 and $[Fe(N_2O_4)]SO_4$

Scan or tap for the full solution

Q.5 Given below are two statements :
Statement-I: Sodium dichromate and potassium dichromate are classified as primary standards in titrimetric analysis.
Statement-II: Phenolphthalein is a weak base, therefore it dissociates in acidic medium.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 5th April Morning Shift]

(1) Both Statement-I and Statement-II are true
(2) Both Statement-I and Statement-II are false
(3) Statement-I is true but Statement-II is false
(4) Statement-I is false but Statement-II is true

Scan or tap for the full solution

Q.6 Match **List - I** with **List - II**.

[JEE Main 2026 (Online) 5th April Evening Shift]

Purification technique		Used to separate	
A.	Simple distillation	I.	Steam volatile compound
B.	Fractional distillation	II.	Two liquids with large difference in boiling points
C.	Steam distillation	III.	Liquid decomposing at its boiling point
D.	Distillation under reduced pressure	IV.	Two liquids with close boiling points

(1) A-II, B-III, C-I, D-IV
(2) A-II, B-IV, C-I, D-III
(3) A-II, B-IV, C-III, D-I
(4) A-IV, B-III, C-II, D-I

Scan or tap for the full solution

Q.7 A paper dipped in a dil. H_2SO_4 solution of 'X' upon treatment with SO_2 gas turns into green. The compound 'X' is :

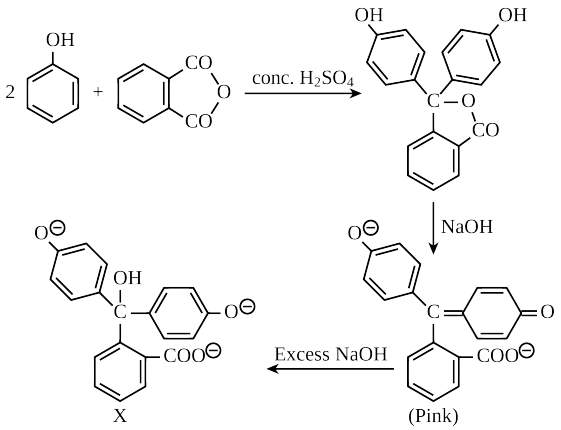
[JEE Main 2026 (Online) 5th April Evening Shift]

(1) KI-starch (2) $KMnO_4$
(3) $Pb(CH_3COO)_2$ (4) $K_2Cr_2O_7$

Scan or tap for the full solution

Q.8 Identify the colour of compound 'X' in the sequence of the reaction.

[JEE Main 2026 (Online) 4th April Morning Shift]



(1) Violet (2) Green
(3) Red (4) Colourless

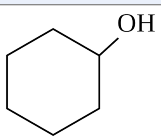
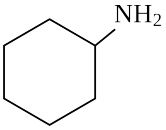
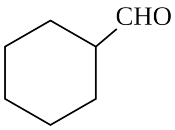
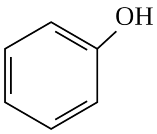
Scan or tap for the full solution

Q.9 Among Fe^{3+}, Pb^{2+}, Cu^{2+} and Mn^{2+}, identify the one that gets precipitated out while passing H_2S in presence of NH_4OH as group reagent. The highest possible oxidation state of the corresponding metal is [JEE Main 2026 (Online) 4th April Evening Shift]

(1) +3 (2) +4 (3) +2 (4) +7

Scan or tap for the full solution

Q.10 Match the **LIST-I** with **LIST-II**

List-I Compound		List-II Test	
A.		I.	Hinsberg's reagent test
B.		II.	Phthalein dye test
C.		III.	Lucas test
D.		IV.	Tollen's test

Choose the correct answer from the options given below: [JEE Main 2026 (Online) 4th April Evening Shift]

(1) A-III, B-I, C-IV, D-II
(2) A-III, B-IV, C-I, D-II
(3) A-I, B-III, C-II, D-IV
(4) A-I, B-II, C-III, D-IV

Scan or tap for the full solution

Q.11 Given below are two statements :

Statement-I: 1,2,3-Trihydroxypropane can be separated from water by simple distillation.

Statement-II: An azeotropic mixture cannot be separated by fractional distillation.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 2nd April Morning Shift]

(1) Both Statement-I and Statement-II are true
(2) Both Statement-I and Statement-II are false
(3) Statement-I is true but Statement-II is false
(4) Statement-I is false but Statement-II is true

Scan or tap for the full solution

Q.12 Match **List - I** with **List - II**.

[JEE Main 2026 (Online) 2nd April Morning Shift]

Mixture of Compounds		Reagent used to distinguish	
A.	Diethyl amine + Ethyl amine	I.	Bromine water
B.	Acetaldehyde + Acetone	II.	$CHCl_3$ + KOH, Δ
C.	Ethanol + Phenol	III.	Neutral $FeCl_3$
D.	Benzoic acid + Cinnamic acid	IV.	Ammoniacal silver nitrate

(1) A-IV, B-II, C-I, D-III
(2) A-IV, B-II, C-III, D-I
(3) A-II, B-IV, C-I, D-III
(4) A-II, B-IV, C-III, D-I

Scan or tap for the full solution

Q.13 A salt with few drops of conc. HCl gives apple green colour in flame test. The group precipitate of the salt is dissolved in acetic acid and treated with K_2CrO_4 to give yellow precipitate. When the sodium carbonate extract of the salt solution is heated with conc. HNO_3 and ammonium molybdate, it resulted a canary yellow precipitate. The cation and anion present in the salt are respectively,

[JEE Main 2026 (Online) 2nd April Morning Shift]

(1) Ca^{2+} and SO_4^{2-} (2) Ba^{2+} and PO_4^{3-}
(3) Mn^{2+} and PO_4^{3-} (4) Ba^{2+} and SO_4^{2-}

Scan or tap for the full solution

Q.14 Complete combustion of X g of an organic compound gave 0.25 g of CO_2 and 0.12 g of H_2O. If the % of carbon is 25% and of hydrogen is 4.89%, then X = _____ $\times 10^{-3}$ g. (Nearest integer)
(Molar mass of C, H and O are 12, 1 and 16 g mol^{-1} respectively.)

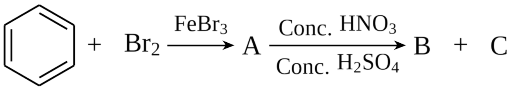
[JEE Main 2026 (Online) 2nd April Evening Shift]

(1) 273 (2) 27 (3) 2730 (4) 227

Scan or tap for the full solution

Q.15 Method used for separation of mixture of products (B and C) obtained in the following reaction is

[JEE Main 2026 (Online) 28th January Morning Shift]



(1) simple distillation
(2) sublimation
(3) fractional distillation
(4) steam distillation

Scan or tap for the full solution

Q.16 Given below are two statements:
Statement-I: Griess-Ilosvay test is used for the detection of nitrite ion, which involves the use of sulphanilic acid and α-naphthylamine reagent.
Statement-II: In the above test, sulphanilic acid is diazotized by the acidified nitrite ion, which on further coupling with α-naphthylamine forms an azo-dye.

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2026 (Online) 28th January Morning Shift]

(1) Statement-I is true but Statement-II is false
(2) Both Statement-I and Statement-II are false
(3) Statement-I is false but Statement-II is true
(4) Both Statement-I and Statement-II are true

Scan or tap for the full solution

Q.17 A student has been given 0.314 g of an organic compound and asked to estimate sulphur. During the experiment, the student has obtained 0.4813 g of barium sulphate. The percentage of sulphur present in the compound is _____. (Given molar mass in g mol^{-1} S : 32, $BaSO_4$: 233)

[JEE Main 2026 (Online) 28th January Evening Shift]

(1) 63.15% (2) 21.05%
(3) 48.24% (4) 42.10%

Scan or tap for the full solution

Q.18 Consider three metal chlorides x, y and z, where x is water soluble at room temperature, y is sparingly soluble in water at room temperature and z is soluble in hot water. x, y and z are respectively

[JEE Main 2026 (Online) 24th January Morning Shift]

(1) AgCl, Hg_2Cl_2 and $PbCl_2$
(2) $CuCl_2$, AgCl and $PbCl_2$
(3) $AlCl_3$, $PbCl_2$ and $BaCl_2$
(4) $MgCl_2$, AgCl and $AlCl_3$

Scan or tap for the full solution

Q.19 In the Group analysis of cations, Ba^{2+} & Ca^{2+} are precipitated respectively as

[JEE Main 2026 (Online) 24th January Evening Shift]

(1) sulphide & sulphide
(2) hydroxide & carbonate
(3) chromate & sulphide
(4) carbonate & carbonate

Scan or tap for the full solution

Q.20 Match **List - I** with **List - II**.

[JEE Main 2026 (Online) 23rd January Morning Shift]

Functional group (detection)		Change observed during detection	
A.	Unsaturation (Baeyer's test)	I.	Red colour appears
B.	Alcoholic group (Ceric ammonium nitrate test)	II.	Silver mirror appears
C.	Aldehyde group (Tollens' reagent)	III.	Violet colour appears
D.	Phenolic group ($FeCl_3$ test)	IV.	Discharge of pink colour

(1) A-IV, B-I, C-II, D-III
(2) A-III, B-IV, C-I, D-II
(3) A-III, B-IV, C-II, D-I
(4) A-IV, B-III, C-II, D-I

Scan or tap for the full solution

Q.21 Given below are two statements :

Statement-I: Sublimation is used for the separation and purification of compounds with low melting point.

Statement-II: The boiling point of a liquid increases as the external pressure is reduced.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 23rd January Morning Shift]

(1) Both Statement-I and Statement-II are false

(2) Statement-I is true but Statement-II is false

(3) Both Statement-I and Statement-II are true

(4) Statement-I is false but Statement-II is true

Scan or tap for the full solution

Q.22 In Carius method 0.2425 g of an organic compound gave 0.5253 g silver chloride. The percentage of chlorine in the organic compound is

[JEE Main 2026 (Online) 23rd January Evening Shift]

(1) 87.65% (2) 53.58%

(3) 37.57% (4) 34.79%

Scan or tap for the full solution

Q.23 Identify the correct statements :

Choose the correct answer from the options given below :

A. Hydrated salts can be used as primary standard.

B. Primary standard should not undergo any reaction with air.

C. Reactions of primary standard with another substance should be instantaneous and stoichiometric.

D. Primary standard should not be soluble in water.

E. Primary standard should have low relative molar mass.

[JEE Main 2026 (Online) 22nd January Evening Shift]

(1) D and E Only (2) A, B and E Only

(3) A, B, C and E Only (4) A, B and C Only

Scan or tap for the full solution

Q.24 When 1 g of compound (X) is subjected to Kjeldahl's method for estimation of nitrogen, 15 mL 1 M H_2SO_4 was neutralized by ammonia evolved. The percentage of nitrogen in compound (X) is :

[JEE Main 2026 (Online) 22nd January Evening Shift]

(1) 0.21 (2) 21 (3) 42 (4) 0.42

Scan or tap for the full solution

Q.25 Consider the following reactions.

$$\underset{\text{(Hot solution)}}{PbCl_2} + K_2CrO_4 \longrightarrow A + 2KCl$$

$$A + NaOH \rightleftharpoons B + Na_2CrO_4$$

$$PbSO_4 + 4CH_3COONH_4 \longrightarrow (NH_4)_2SO_4 + X$$

In the above reactions, A, B and X are respectively.

[JEE Main 2026 (Online) 21st January Morning Shift]

(1) $Na_2[Pb(OH)_2]$, $PbCrO_4$ and $[Pb(NH_3)_4]SO_4$

(2) $Na_2[Pb(OH)_2]$, $PbCrO_4$ and $(NH_4)_2[Pb(CH_3COO)_4]$

(3) $PbCrO_4$, $Na_2[Pb(OH)_4]$ and $(NH_4)_2[Pb(CH_3COO)_4]$

(4) $PbCrO_4$, $Na_2[Pb(OH)_4]$ and $[Pb(NH_3)_4]SO_4$

Scan or tap for the full solution

Q.26 In Carius method, 0.75 g of an organic compound gave 1.2 g of barium sulphate, find percentage of sulphur (molar mass 32 g mol^{-1}). Molar mass of barium sulphate is 233 g mol^{-1}.

[JEE Main 2026 (Online) 21st January Morning Shift]

(1) 4.55% (2) 16.48%

(3) 10.30% (4) 21.97%

Scan or tap for the full solution

Q.27 On heating a mixture of common salt and $K_2Cr_2O_7$ in equal amount along with concentrated H_2SO_4 in a test tube, a gas is evolved. Formula of the gas evolved and oxidation state of the central metal atom in the gas respectively are:

[JEE Main 2026 (Online) 21st January Evening Shift]

(1) $Cr_2O_2Cl_2$ and +3 (2) $Cr_2O_2Cl_2$ and +6

(3) CrO_2Cl_2 and +6 (4) CrO_2Cl_2 and +5

Scan or tap for the full solution

Q.28 By usual analysis, 1.00 g of compound (X) gave 1.79 g of magnesium pyrophosphate. The percentage of phosphorus in compound (X) is : (nearest integer)

(Given, molar mass in g mol^{-1}: O = 16, Mg = 24, P = 31) [JEE Main 2026 (Online) 21st January Evening Shift]

(1) 40 (2) 30 (3) 20 (4) 50

Scan or tap for the full solution

Q.29 On combustion 0.210 g of an organic compound containing C, H and O gave 0.127 g H_2O and 0.307 g CO_2. The percentages of hydrogen and oxygen in the given organic compound respectively are:

[JEE Main 2025 (Online) 8th April Evening Shift]

(1) 7.55, 43.85 (2) 6.72, 53.41
(3) 6.72, 39.87 (4) 53.41, 39.6

Scan or tap for the full solution

Q.30 Match the **LIST-I** with **LIST-II**

LIST-I (Reagent)		LIST-II (Functional Group detected)	
A.	Sodium bicarbonate solution	I.	double bond/unsaturation
B.	Neutral ferric chloride	II.	carboxylic acid
C.	Ceric ammonium nitrate	III.	phenolic –OH
D.	Alkaline $KMnO_4$	IV.	alcoholic –OH

Choose the correct answer from the options given below: [JEE Main 2025 (Online) 8th April Evening Shift]

(1) A-II, B-III, C-I, D-IV
(2) A-II, B-IV, C-III, D-I
(3) A-III, B-II, C-IV, D-I
(4) A-II, B-III, C-IV, D-I

Scan or tap for the full solution

Q.31 When a salt is treated with sodium hydroxide solution it gives gas X. On passing gas X through reagent Y a brown coloured precipitate is formed. X and Y respectively, are

[JEE Main 2025 (Online) 7th April Morning Shift]

(1) X = NH_3 and Y = HgO
(2) X = NH_4Cl and Y = KOH
(3) X = NH_3 and Y = K_2HgI_4 + KOH
(4) X = HCl and Y = NH_4Cl

Scan or tap for the full solution

Q.32 A mixture of 1 g each of chlorobenzene, aniline, and benzoic acid is dissolved in 50 mL ethyl acetate and placed in a separating funnel. 5 M NaOH (30 mL) was added in the same funnel. The funnel was shaken vigorously and then kept aside. The ethyl acetate layer in the funnel contains :

[JEE Main 2025 (Online) 7th April Evening Shift]

(1) chlorobenzene and aniline
(2) benzoic acid and aniline
(3) benzoic acid
(4) benzoic acid and chlorobenzene

Scan or tap for the full solution

Q.33 Match **List-I** with **List-II**

List-I (Separation of)		List-II (Separation Technique)	
A.	Aniline from aniline-water mixture	I.	Simple distillation
B.	Glycerol from spent-lye in soap industry	II.	Fractional distillation
C.	Different fractions of crude oil in petroleum industry	III.	Distillation at reduced pressure
D.	Chloroform-Aniline mixture	IV.	Steam distillation

Choose the correct answer from the options given below : [JEE Main 2025 (Online) 4th April Evening Shift]

(1) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)
(2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)
(3) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)
(4) (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

Scan or tap for the full solution

Q.34 Compounds that should not be used as primary standards in titrimetric analysis are :

A. $Na_2Cr_2O_7$ B. Oxalic acid
C. NaOH D. $FeSO_4 \cdot 6H_2O$
E. Sodium tetraborate

Choose the most appropriate answer from the options given below:

[JEE Main 2025 (Online) 3rd April Evening Shift]

(1) C, D and E Only (2) B and D Only
(3) D and E Only (4) A, C and D Only

Scan or tap for the full solution

Q.35 In Dumas' method for estimation of nitrogen 0.4 g of an organic compound gave 60 mL of nitrogen collected at 300 K temperature and 715 mm Hg pressure. The percentage composition of nitrogen in the compound is (Given : Aqueous tension at 300 K = 15 mm Hg)

[JEE Main 2025 (Online) 3rd April Evening Shift]

(1) 15.71% (2) 17.46% (3) 7.85% (4) 20.95%

Scan or tap for the full solution

Q.36 Choose the correct tests with respective observations.

Choose the correct answer from the options given below :

A. $CuSO_4$ (acidified with acetic acid) + $K_4[Fe(CN)_6]$ ⟶ Chocolate brown precipitate.

B. $FeCl_3 + K_4[Fe(CN)_6] \longrightarrow$ Prussian blue precipitate.

C. $ZnCl_2 + K_4[Fe(CN)_6]$, neutralised with $NH_4OH \longrightarrow$ White or bluish white precipitate.

D. $MgCl_2 + K_4[Fe(CN)_6] \longrightarrow$ Blue precipitate.

E. $BaCl_2 + K_4[Fe(CN)_6]$, neutralised with $NaOH \longrightarrow$ White precipitate.

[JEE Main 2025 (Online) 2nd April Morning Shift]

(1) A, D and E only (2) A, B and C only
(3) B, D and E only (4) C, D and E only

Scan or tap for the full solution

Q.37 In Dumas' method for estimation of nitrogen, 0.5 gram of an organic compound gave 60 mL of nitrogen collected at 300 K temperature and 715 mm Hg pressure. The percentage composition of nitrogen in the compound (Aqueous tension at 300 K = 15 mm Hg) is _____%.

[JEE Main 2025 (Online) 2nd April Evening Shift]

(1) 20.87 (2) 12.57 (3) 1.257 (4) 18.67

Scan or tap for the full solution

Q.38 Formation of $Na_4[Fe(CN)_5NOS]$, a purple coloured complex formed by addition of sodium nitroprusside in sodium carbonate extract of salt indicates the presence of:

[JEE Main 2025 (Online) 2nd April Evening Shift]

(1) Sulphide ion (2) Sulphite ion
(3) Sulphate ion (4) Sodium ion

Scan or tap for the full solution

Q.39 Match **List-I** with **List-II**.

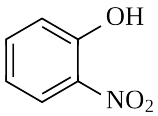
List-I (Purification technique)		**List-II (Mixture of organic compounds)**	
A.	Distillation (simple)	I.	Diesel + Petrol
B.	Fractional distillation	II.	Aniline + Water
C.	Distillation under reduced pressure	III.	Chloroform + Aniline
D.	Steam distillation	IV.	Glycerol + Spent-lye

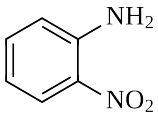
Choose the correct answer from the options given below: [JEE Main 2025 (Online) 2nd April Evening Shift]

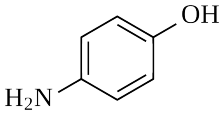
(1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)
(2) (A)-(III), (B)-(IV), (C)-(II), (D)-(I)
(3) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)
(4) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

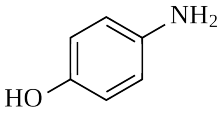
Scan or tap for the full solution

Q.40 The steam volatile compounds among the following are :

A. 

B. 

C. 

D. 

Choose the correct answer from the options given below :

[JEE Main 2025 (Online) 29th January Morning Shift]

(1) (B) and (D) Only (2) (A), (B) and (C) Only
(3) (A) and (B) Only (4) (A) and (C) Only

Scan or tap for the full solution

Q.41 Given below are two statements :

Statement-I: In partition chromatography, stationary phase is thin film of liquid present in the inert support.

Statement-II: In paper chromatography, the material of paper acts as a stationary phase.

In the light of the above statements, choose the **correct** answer from the options given below :

[JEE Main 2025 (Online) 29th January Evening Shift]

(1) Statement-I is true but Statement-II is false
(2) Statement-I is false but Statement-II is true
(3) Both Statement-I and Statement-II are false
(4) Both Statement-I and Statement-II are true

Scan or tap for the full solution

Q.42 Given below are two statements:

Statement-I: In the oxalic acid vs $KMnO_4$ (in the presence of dil H_2SO_4) titration the solution needs to be heated initially to 60°C, but no heating is required in Ferrous ammonium sulphate (FAS) vs $KMnO_4$ titration (in the presence of dil H_2SO_4)

Statement-II: In oxalic acid vs $KMnO_4$ titration, the initial formation of $MnSO_4$ takes place at high temperature, which then acts as catalyst for further reaction. In the case of FAS vs $KMnO_4$, heating oxidizes Fe^{2+} into Fe^{3+} by oxygen of air and error may be introduced in the experiment.

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2025 (Online) 28th January Morning Shift]

(1) Statement-I is false but Statement-II is true
(2) Statement-I is true but Statement-II is false
(3) Both Statement-I and Statement-II are true
(4) Both Statement-I and Statement-II are false

Scan or tap for the full solution

Q.43 The metal ion whose electronic configuration is not affected by the nature of the ligand and which gives a violet colour in non-luminous flame under hot condition in borax bead test is

[JEE Main 2025 (Online) 28th January Morning Shift]

(1) Cr^{3+} (2) Ti^{3+} (3) Ni^{2+} (4) Mn^{2+}

Scan or tap for the full solution

Q.44 The purification method based on the following physical transformation is :

$$\underset{(X)}{\text{Solid}} \xrightarrow{\text{Heat}} \underset{(X)}{\text{Vapour}} \xrightarrow{\text{Cool}} \underset{(X)}{\text{Solid}}$$

[JEE Main 2025 (Online) 28th January Evening Shift]

(1) Extraction (2) Crystallization
(3) Distillation (4) Sublimation

Scan or tap for the full solution

Q.45 Identify the inorganic sulphides that are yellow in colour :

A. $(NH_4)_2S$ B. PbS
C. CuS D. As_2S_3
E. As_2S_5

Choose the **correct** answer from the options given below :

[JEE Main 2025 (Online) 28th January Evening Shift]

(1) (D) and (E) only
(2) (A) and (B) only
(3) (A), (D) and (E) only
(4) (A) and (C) only

Scan or tap for the full solution

Q.46 Given below are two statements I and II.

Statement-I: Dumas method is used for estimation of "Nitrogen" in an organic compound.

Statement-II: Dumas method involves the formation of ammonium sulphate by heating the organic compound with conc H_2SO_4.

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2025 (Online) 24th January Morning Shift]

(1) Statement-I is true but Statement-II is false
(2) Statement-I is false but Statement-II is true
(3) Both Statement-I and Statement-II are true
(4) Both Statement-I and Statement-II are false

Scan or tap for the full solution

Q.47 Find the compound 'A' from the following reaction sequences.

$$A \xrightarrow{\text{aqua-regia}} B \xrightarrow[\text{(2) AcOH}]{\text{(1) } KNO_2,\ NH_4OH} \text{yellow ppt}$$

[JEE Main 2025 (Online) 24th January Evening Shift]

(1) NiS (2) MnS (3) ZnS (4) CoS

Scan or tap for the full solution

Q.48 Given below are two statements:

Statement-I: In Lassaigne's test, the covalent organic molecules are transformed into ionic compounds.

Statement-II: The sodium fusion extract of an organic compound having N and S gives prussian blue colour with $FeSO_4$ and $Na_4[Fe(CN)_6]$

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2025 (Online) 23rd January Morning Shift]

(1) Both Statement-I and Statement-II are false
(2) Statement-I is false but Statement-II is true
(3) Both Statement-I and Statement-II are true
(4) Statement-I is true but Statement-II is false

Scan or tap for the full solution

Q.49 Identify A, B and C in the given below reaction sequence

[JEE Main 2025 (Online) 23rd January Evening Shift]

$$A \xrightarrow{HNO_3} Pb(NO_3)_2 \xrightarrow{H_2SO_4} B$$

$$B \xrightarrow[\text{(3) } K_2CrO_4]{\text{(1) Ammonium acetate, (2) Acetic acid}} C \text{ (Yellow ppt)}$$

(1) $PbCl_2$, $PbSO_4$, $PbCrO_4$
(2) PbS, $PbSO_4$, $Pb(CH_3COO)_2$
(3) PbS, $PbSO_4$, $PbCrO_4$
(4) $PbCl_2$, $Pb(SO_4)_2$, $PbCrO_4$

Scan or tap for the full solution

Q.50 Given below are two statements :

Statement-I: Nitrogen, sulphur, halogen and phosphorus present in an organic compound are detected by Lassaigne's Test.

Statement-II: The elements present in the compound are converted from covalent form into ionic form by fusing the compound with

Magnesium in Lassaigne's test.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2025 (Online) 22nd January Evening Shift]

(1) Both Statement-I and Statement-II are false

(2) Statement-I is true but Statement-II is false

(3) Statement-I is false but Statement-II is true

(4) Both Statement-I and Statement-II are true

Scan or tap for the full solution

Section B (Numerical) — 17 questions

Q.51 In an estimation of sulphur by Carius method 0.2 g of the substance gave 0.6 g of $BaSO_4$. The percentage of sulphur in the substance is _____%.
(Given molar mass in g mol^{-1} S : 32, $BaSO_4$: 233)

[JEE Main 2026 (Online) 5th April Morning Shift]

Scan or tap for the full solution

Q.52 2.0 g of a bromo hydrocarbon (X) was subjected to Carius analysis, gave 3.36 g of AgBr. The percentage of carbon in the compound (X) is 26.7%. Total number of carbon atoms in the empirical formula for compound (X) is _____.
(Given molar mass in g mol^{-1} H : 1, C : 12, Br : 80, Ag : 108)

[JEE Main 2026 (Online) 4th April Morning Shift]

Scan or tap for the full solution

Q.53 In sulphur estimation, 2.0×10^{-3} mol of an organic compound (X) (molar mass 76 g mol^{-1}) gave 0.4813 g of barium sulphate (molar mass 233 g mol^{-1}). The percentage of sulphur in the compound (X) is _____ $\times 10^{-1}$ % (Nearest integer)

[JEE Main 2026 (Online) 4th April Evening Shift]

Scan or tap for the full solution

Q.54 0.53 g of an organic compound (x) when heated with excess of nitric acid (concentrated) and then with silver nitrate gave 0.75 g of silver bromide precipitate. 1.0 g of (x) gave 1.32 g of CO_2 gas on combustion. The percentage of hydrogen in the compound (x) is _____ %. [Nearest Integer]
[Given: Molar mass in g mol^{-1} H : 1, C : 12, Br : 80, Ag : 108, O : 16; Compound (x) : $C_xH_yBr_z$]

[JEE Main 2026 (Online) 28th January Morning Shift]

Scan or tap for the full solution

Q.55 In Dumas method for estimation of nitrogen, 0.50 g of an organic compound gave 70 mL of nitrogen collected at 300 K and 715 mm pressure. The percentage of nitrogen in the organic compound is _____ %.
(Aqueous tension at 300 K is 15 mm).

[JEE Main 2026 (Online) 24th January Morning Shift]

Scan or tap for the full solution

Q.56 0.25 g of an organic compound "A" containing carbon, hydrogen and oxygen was analysed using the combustion method. There was an increase in mass of $CaCl_2$ tube and potash tube at the end of the experiment. The amount was found to be 0.15 g and 0.1837 g, respectively. The percentage of oxygen in compound A is ____ %. (Nearest integer)
(Given: molar mass in g mol^{-1} H : 1, C : 12, O : 16)

[JEE Main 2026 (Online) 24th January Evening Shift]

Scan or tap for the full solution

Q.57 Sodium fusion extract of an organic compound (Y) with $CHCl_3$ and chlorine water gives violet color to the $CHCl_3$ layer. 0.15 g of (Y) gave 0.12 g of the silver halide precipitate in Carius method. Percentage of halogen in the compound (Y) is _____. (Nearest integer)
(Given : molar mass g mol^{-1} C:12, H:1, Cl:35.5, Br:80, I:127)

[JEE Main 2026 (Online) 22nd January Morning Shift]

Scan or tap for the full solution

Q.58 An organic compound weighing 500 mg, produced 220 mg of CO_2, on complete combustion. The percentage composition of carbon in the compound is _____ %. (nearest integer)
(Given molar mass in g mol^{-1} of C : 12, O : 16)

[JEE Main 2025 (Online) 7th April Morning Shift]

Scan or tap for the full solution

Q.59 In Dumas' method 292 mg of an organic compound released 50 mL of nitrogen gas (N_2) at 300 K temperature and 715 mm Hg pressure. The percentage composition of 'N' in the organic compound is _____ % (Nearest integer) (Aqueous tension at 300 K = 15 mm Hg)

[JEE Main 2025 (Online) 7th April Evening Shift]

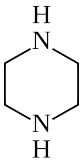
Scan or tap for the full solution

Q.60 In Dumas' method for estimation of nitrogen 1 g of an organic compound gave 150 mL of nitrogen collected at 300 K temperature and 900 mm Hg pressure. The percentage composition of nitrogen in the compound is _____ % (nearest integer)
(Aqueous tension at 300 K = 15 mm Hg)

[JEE Main 2025 (Online) 4th April Morning Shift]

Scan or tap for the full solution

Q.61 During estimation of nitrogen by Dumas' method of compound X (0.42 g)



X

_____ mL of N_2 gas will be liberated at STP. (nearest integer)
(Given molar mass in g mol^{-1} : C:12, H:1, N:14)

[JEE Main 2025 (Online) 3rd April Morning Shift]

Scan or tap for the full solution

Q.62 0.5 g of an organic compound on combustion gave 1.46 g of CO_2 and 0.9 g of H_2O. The percentage of carbon in the compound is _____. (Nearest integer)
[Given : Molar mass (in g mol^{-1}) C:12, H:1, O:16]

[JEE Main 2025 (Online) 3rd April Morning Shift]

Scan or tap for the full solution

Q.63 In the sulphur estimation, 0.20 g of a pure organic compound gave 0.40 g of barium sulphate. The percentage of sulphur in the compound is _____ $\times 10^{-1}$%.
(Molar mass : O = 16, S = 32, Ba = 137 in g mol^{-1})

[JEE Main 2025 (Online) 29th January Evening Shift]

Scan or tap for the full solution

Q.64 Among the following cations, the number of cations which will give characteristic precipitate in their identification tests with $K_4[Fe(CN)_6]$ is _____.
Cu^{2+}, Fe^{3+}, Ba^{2+}, Ca^{2+}, NH_4^+, Mg^{2+}, Zn^{2+}

[JEE Main 2025 (Online) 24th January Morning Shift]

Scan or tap for the full solution

Q.65 In Carius method of estimation of halogen, 0.25 g of an organic compound gave 0.15 g of silver bromide (AgBr). The percentage of Bromine in the organic compound is _____ $\times 10^{-1}$% (Nearest integer).
(Given : Molar mass of Ag is 108 and Br is 80 g mol^{-1})

[JEE Main 2025 (Online) 24th January Evening Shift]

Scan or tap for the full solution

Q.66 During " S " estimation, 160 mg of an organic compound gives 466 mg of barium sulphate. The percentage of Sulphur in the given compound is _____ %.
(Given molar mass in g mol^{-1} of
Ba:137, S:32, O:16)

[JEE Main 2025 (Online) 23rd January Morning Shift]

Scan or tap for the full solution

Q.67 In Carius method for estimation of halogens, 180 mg of an organic compound produced 143.5 mg of AgCl. The percentage composition of chlorine in the compound is _____ %. (Given : molar mass in g mol^{-1} of Ag:108, Cl:35.5)

[JEE Main 2025 (Online) 22nd January Morning Shift]

Scan or tap for the full solution

ANSWER KEY

Section A (MCQ) — 50 questions

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

Section B (Numerical) — 17 questions

Ques.	51	52	53	54	55
Ans.	**41 or 42**	**5**	**435**	**4**	**15**
Ques.	56	57	58	59	60
Ans.	**73**	**43**	**12**	**18**	**20**
Ques.	61	62	63	64	65
Ans.	**109**	**80**	**275**	**4**	**255**
Ques.	66	67			
Ans.	**40**	**20**			