EdLoop JEE

CHEMISTRY · JEE MAIN

Purification & Characterisation

Previous Year Questions with answers

161 questions · **134** papers · **2004–2026** · newest paper first

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What is in this PDF: every Purification & Characterisation question we hold from past JEE Main and AIEEE papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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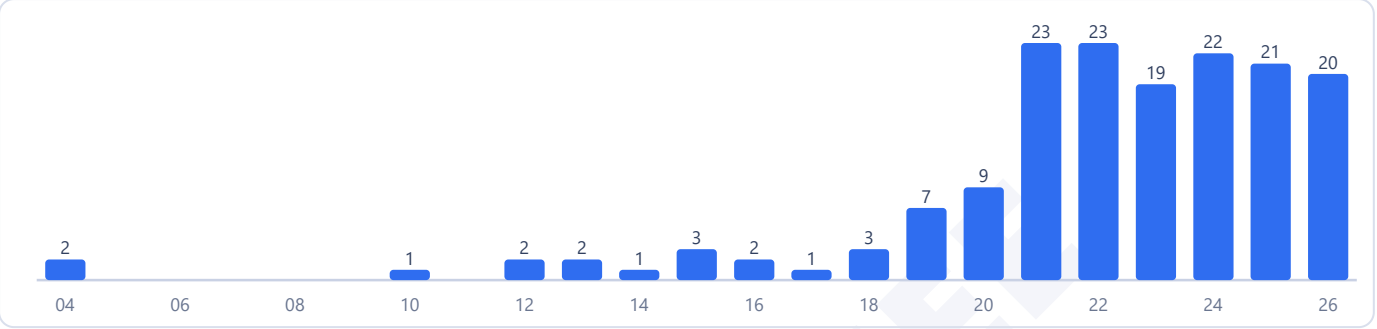
Chapter at a glance

3.1%	161	118 of 162	112 / 49
of Chemistry questions, 2019–2026	questions, 2004–2026	papers asked it, 2019–2026	MCQ / numerical, 2004–2026

Trend. Rising: 1.1 questions per paper in 2024–2026 against 0.8 in 2019–2023.

Questions per year



Counts are the questions we hold: 161 in 134 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2004–2026)



How often it comes up

Purification and characterisation covers laboratory separation methods and elemental analysis under Unit 13: Purification and Characterisation of Organic Compounds in the Class 11 curriculum, holding rank 17 of 31 chapters with a 3.1% share of the chemistry section. In the 2019 to 2026 testing window, Purification & Characterisation accounted for 144 questions across 162 exam papers, delivering a 3.1% share of the chemistry section and standing at rank 17 of 31 chapters. During the 2002 to 2018 phase, it contributed 17 questions across 38 papers with a 1.3% share. Between 2024 and 2026, question volume expanded to 63 questions across 58 papers, capturing a 4.1% share. The chapter's appearance frequency has trended up across recent shifts.

The chapter has appeared every year from 2019 to 2026. Across 2019 to 2026, it averaged 0.9 questions per paper, rising to 1.1 questions per paper in the 2024 to 2026 interval. It produces a remarkably large number of numerical problems: 49 numerical answer questions were set between 2019 and 2026, mostly testing percentage compositions.

Most-asked topics

The syllabus divides across three core topics:

- Quantitative Analysis: The largest topic with 74 total questions (67 in 2019 to 2026), examined continuously through 2026. This area centers on elemental estimations: Dumas and Kjeldahl methods for nitrogen, Carius method for halogens and sulfur, and precipitation as magnesium pyrophosphate for phosphorus.
- Purification Methods: Yielded 61 total questions (57 in 2019 to 2026), tested through 2026. Focuses on distillation techniques (steam distillation for aniline, vacuum distillation for glycerol decomposition prevention), paper and thin layer chromatography (Rf values), and column chromatography.
- Qualitative Analysis: Contributed 26 total questions (20 in 2019 to 2026), evaluated through 2025. Covers sodium fusion extract preparation (Lassaigne's test), detection of nitrogen via Prussian blue, sulfur via sodium nitroprusside (purple coloration), and halogens via silver nitrate precipitates.

What the questions look like

Examiners heavily favor direct arithmetic calculations for elemental percentages. A classic numerical question gives sample mass, volume and normality of standardized acid consumed by evolved ammonia, and asks for the nitrogen percentage via the Kjeldahl formula.

In purification, questions describe physical property differences between mixture components (such as boiling point gaps or steam volatility) and ask candidates to choose the correct separation procedure. Lassaigne extract questions test why sodium metal is used and which nitrogenous compounds (like hydrazine or diazonium salts) fail the test.

How to practise it

Mastering this chapter requires memorizing elemental formulas alongside purification criteria:

1. Memorize quantitative estimation formulas: Be fluent with percentage equations for Carius halogens, Carius sulfur, Kjeldahl nitrogen, Dumas nitrogen (using dry nitrogen volume at STP), and phosphorus. 2. Remember exceptions to Kjeldahl's method: Nitrogen in nitro groups, azo groups, and pyridine rings does not convert into ammonium sulfate under Kjeldahl conditions. 3. Classify distillation techniques: Know exact classic examples: aniline purifies by steam distillation; glycerol purifies by distillation under reduced pressure; petroleum fractions separate by fractional distillation. 4. Learn Lassaigne test colors: Prussian blue for nitrogen, violet for sulfur with nitroprusside, and yellow precipitate soluble in excess ammonia for phosphate. 5. Practise rapid arithmetic: With 49 numerical questions recorded between 2019 and 2026, calculation speed without calculator aid is critical.

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Q1 JEE Main 2026 · 8 Apr · Shift 2 MCQ

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 :

(A) Both **Statement I** and **Statement II** are true
(B) Both **Statement I** and **Statement II** are false
(C) **Statement I** is true but **Statement II** is false
(D) **Statement I** is false but **Statement II** is true

Answer: (C) Statement I is true but **Statement II** is false · Official NTA final key

Q2 JEE Main 2026 · 6 Apr · Shift 1 MCQ

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:

(A) 0.42
(B) 0.82
(C) 0.62
(D) 0.12

Answer: (D) 0.12 · Official NTA final key

Q3 JEE Main 2026 · 6 Apr · Shift 2 MCQ

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 seperated 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 :

(A) Both **Statement I** and **Statement II** are true
(B) Both **Statement I** and **Statement II** are false
(C) **Statement I** is true but **Statement II** is false
(D) **Statement I** is false but **Statement II** is true

Answer: (A) Both Statement I and **Statement II** are true · Official NTA final key

Q4 JEE Main 2026 · 5 Apr · Shift 1 Numerical

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, $BaSO_4$: 231)

Numerical value type: the answer is a number.

Accepted answers: 41 or 42. · Official NTA final key

Q5 JEE Main 2026 · 5 Apr · Shift 2 MCQ

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

List - I Purification technique	List - II 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

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

(A) A-II, B-III, C-I, D-IV
(B) A-II, B-IV, C-I, D-III
(C) A-II, B-IV, C-III, D-I
(D) A-IV, B-III, C-II, D-I

Answer: (B) A-II, B-IV, C-I, D-III · Official NTA final key

Q6 JEE Main 2026 · 4 Apr · Shift 1 Numerical

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)

Numerical value type: the answer is a number.

Answer: 5. · Official NTA final key

Q7 JEE Main 2026 · 4 Apr · Shift 2 Numerical

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)

Numerical value type: the answer is a number.

Answer: 435. · Official NTA final key

Q8 JEE Main 2026 · 2 Apr · Shift 1 MCQ

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 :

(A) Both **Statement I** and **Statement II** are true
(B) Both **Statement I** and **Statement II** are false
(C) **Statement I** is true but **Statement II** is false
(D) **Statement I** is false but **Statement II** is true

Answer: (D) Statement I is false but Statement II is true · Official NTA final key

Q9 JEE Main 2026 · 2 Apr · Shift 2 MCQ

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.)

(A) 273
(B) 27
(C) 2730
(D) 227

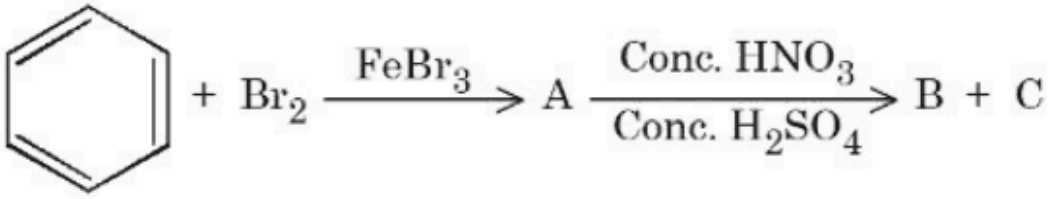
Answer: (A) 273 · Official NTA final key

Q10 JEE Main 2026 · 28 Jan · Shift 1 MCQ

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

(see the figure above)

Q.59 Method used for separation of mixture of products (B and C) obtained in the following reaction is



Options
1. simple distillation
2. sublimation
3. fractional distillation
4. steam distillation

(A) simple distillation
(B) sublimation
(C) fractional distillation
(D) steam distillation

Answer: (C) fractional distillation · Official NTA final key

Q11 JEE Main 2026 · 28 Jan · Shift 1 Numerical

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) : $C_xH_yBr_z$]

Numerical value type: the answer is a number.

Answer: 4. · Official NTA final key

Q12 JEE Main 2026 · 28 Jan · Shift 2 MCQ

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)

(A) 21.05%
(B) 48.24%
(C) 42.10%
(D) 63.15%

Answer: (A) 21.05% · Official NTA final key

Q13 JEE Main 2026 · 24 Jan · Shift 1 Numerical

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).

Numerical value type: the answer is a number.

Answer: 15. · Official NTA final key

Q14 JEE Main 2026 · 24 Jan · Shift 2 Numerical

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)

Numerical value type: the answer is a number.

Answer: 73. · Official NTA final key

Q15 JEE Main 2026 · 23 Jan · Shift 1 MCQ

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 :

(A) Both **Statement I** and **Statement II** are false

(B) **Statement I** is false but **Statement II** is true

(C) **Statement I** is true but **Statement II** is false

(D) Both **Statement I** and **Statement II** are true

Answer: (A) Both **Statement I** and **Statement II** are false · Official NTA final key

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Q16 JEE Main 2026 · 23 Jan · Shift 2 MCQ

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

(A) 37.57%

(B) 34.79%

(C) 53.58%

(D) 87.65%

Answer: (C) 53.58% · Official NTA final key

Q17 JEE Main 2026 · 22 Jan · Shift 1 Numerical

Sodium fusion extract of an organic compound (Y) with $CHCl_3$ and chlorine water gives violet color to the $CHCl_3$ layer. 0.15g 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)

Numerical value type: the answer is a number.

Answer: 43. · Official NTA final key

Q18 JEE Main 2026 · 22 Jan · Shift 2 MCQ

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 :

(A) 21
(B) 42
(C) 0.21
(D) 0.42

Answer: (B) 42 · Official NTA final key

Q19 JEE Main 2026 · 21 Jan · Shift 1 MCQ

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}.

(A) 16.48%
(B) 10.30%
(C) 21.97%
(D) 4.55%

Answer: (C) 21.97% · Official NTA final key

Q20 JEE Main 2026 · 21 Jan · Shift 2 MCQ

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)

(A) 20
(B) 40
(C) 30
(D) 50

Answer: (D) 50 · Official NTA final key

Q21 JEE Main 2025 · 8 Apr · Shift 2 MCQ

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:

(A) 6.72, 53.41
(B) 6.72, 39.87
(C) 7.55, 43.85
(D) 53.41, 39.6

Answer: (A) 6.72, 53.41 · Key from source paper

Q22 JEE Main 2025 · 7 Apr · Shift 1 Numerical

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 $C : 12, O : 16$)

Numerical value type: the answer is a number.

Answer: 12. · Key from source paper

Q23 JEE Main 2025 · 7 Apr · Shift 2 MCQ

Mixture of 1 g each of chlorobenzene, aniline and benzoic acid is dissolved in 50 mL ethyl acetate and placed in a separating funnel. 5M 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 :

(A) benzoic acid and aniline
(B) benzoic acid and chlorobenzene
(C) benzoic acid
(D) chlorobenzene and aniline

Answer: (D) chlorobenzene and aniline · Key from source paper

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Q24 JEE Main 2025 · 7 Apr · Shift 2 Numerical

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 $300K = 15mm\,Hg$)

Numerical value type: the answer is a number.

Answer: 18. · Key from source paper

Q25 JEE Main 2025 · 4 Apr · Shift 1 Numerical

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 $300K = 15mm\,Hg$)

Numerical value type: the answer is a number.

Answer: 20. · Key from source paper

Q26 JEE Main 2025 · 4 Apr · Shift 2 MCQ

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 :

A (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

B (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

C (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

D (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

Answer: (B) (A)-(IV), (B)-(III), (C)-(II), (D)-(I) · Key from source paper

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Q27 JEE Main 2025 · 3 Apr · Shift 1 Numerical

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 $(in\ gmol^{-1})$ C:12,H:1,O:16]

Numerical value type: the answer is a number.

Answer: 80. · Key from source paper

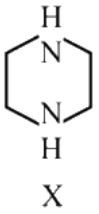
Q28 JEE Main 2025 · 3 Apr · Shift 1 Numerical

During estimation of nitrogen by Dumas' method of compound $X(0.42g)$

(see the figure above)

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

23. During estimation of nitrogen by Dumas' method of compound $\mathrm{X}(0.42\,\mathrm{g})$



X

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

Numerical value type: the answer is a number.

Answer: 109. · Key from source paper

Q29 JEE Main 2025 · 3 Apr · Shift 2 MCQ

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 $300K = 15mmHg$)

(A) 17.46%
(B) 7.85%
(C) 20.95%
(D) 15.71%

Answer: (D) 15.71% · Key from source paper

Q30 JEE Main 2025 · 2 Apr · Shift 2 MCQ

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 _____ %

(A) 20.87
(B) 18.67
(C) 12.57
(D) 1.257

Answer: (C) 12.57 · Key from source paper

Q31 JEE Main 2025 · 2 Apr · Shift 2 MCQ

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 :

A (A)-(III),(B)-(IV),(C)-(II),(D)-(I)

B (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

C (A)-(II),(B)-(II),(C)-(IV),(D)-(I)

D (A) -(III),(B)-(I),(C)-(IV),(D)-(II)

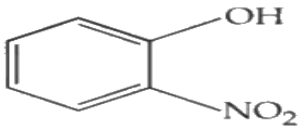
Answer: (D) (A) -(III),(B)-(I),(C)-(IV),(D)-(II) · Key from source paper

Q32 JEE Main 2025 · 29 Jan · Shift 1 MCQ

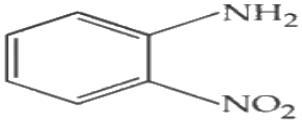
The steam volatile compounds among the following are : (A) (B) (C) (D) Choose the correct answer from the options given below :

(see the figure above)

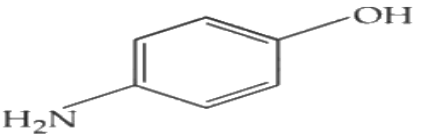
Q56.



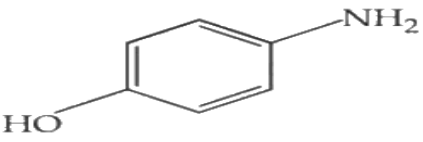
The steam volatile compounds among the following are : (A)



(B)



(C)



(D)

Choose the correct answer from the options given below :

(1) (B) and (D) Only (2) (A) and (C) Only

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

A (B) and (D) Only

B (A) and (C) Only

C (A), (B) and (C) Only

D (A) and (B) Only

Answer: (D) (A) and (B) Only · Key from source paper

Q33 JEE Main 2025 · 29 Jan · Shift 2 MCQ

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 :

(A) Statement I is true but Statement II is false
(B) Statement I is false but Statement II is true
(C) Both Statement I and Statement II are false
(D) Both Statement I and Statement II are true

Answer: (A) Statement I is true but Statement II is false · Key from source paper

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Q34 JEE Main 2025 · 29 Jan · Shift 2 Numerical

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 gmol^{-1})

Numerical value type: the answer is a number.

Answer: 275. · Key from source paper

Q35 JEE Main 2025 · 28 Jan · Shift 2 MCQ

The purification method based on the following physical transformation is :

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

(A) Distillation
(B) Extraction
(C) Sublimation
(D) Crystallization

Answer: (C) Sublimation · Key from source paper

Q36 JEE Main 2025 · 24 Jan · Shift 1 MCQ

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

(A) Statement I is true but Statement II is false
(B) Both Statement I and Statement II are false
(C) Statement I is false but Statement II is true
(D) Both Statement I and Statement II are true

Answer: (A) Statement I is true but Statement II is false · Key from source paper

Q37 JEE Main 2025 · 24 Jan · Shift 2 Numerical

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})

Numerical value type: the answer is a number.

Answer: 255. · Key from source paper

Q38 JEE Main 2025 · 23 Jan · Shift 1 MCQ

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 $\mathrm{FeSO_4}$ and $\mathrm{Na_4\,[Fe(CN)_6]}$ In the light of the above statements, choose the correct answer from the options given below.

(A) Statement I is true but Statement II is false
(B) Both Statement I and Statement II are false
(C) Both Statement I and Statement II are true
(D) Statement I is false but Statement II is true

Answer: (A) Statement I is true but Statement II is false · Key from source paper

Q39 JEE Main 2025 · 23 Jan · Shift 1 Numerical

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 gmol^{-1} of Ba : 137, S : 32, O : 16)

Numerical value type: the answer is a number.

Answer: 40. · Key from source paper

Q40 JEE Main 2025 · 22 Jan · Shift 1 Numerical

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 gmol^{-1} of Ag : 108, Cl : 35.5)

Numerical value type: the answer is a number.

Answer: 20. · Key from source paper

Q41 JEE Main 2025 · 22 Jan · Shift 2 MCQ

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 anower from the options given below :

(A) Statement I is false but Statement II is true
(B) Both Statement I and Statement II are true
(C) Both Statement I and Statement II are false
(D) Statement I is true but Statement II is false

Answer: (D) Statement I is true but Statement II is false · Key from source paper

Q42 JEE Main 2024 · 9 Apr · Shift 1 MCQ

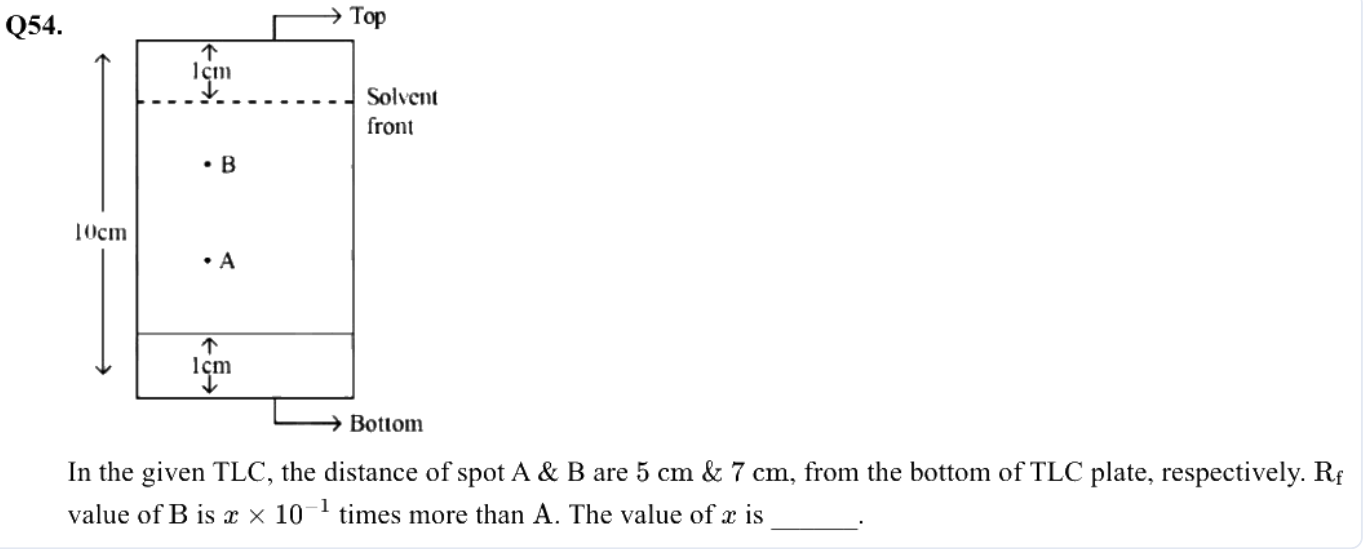
Methods used for purification of organic compounds are based on :

(A) nature of compound and presence of impurity.
(B) neither on nature of compound nor on the impurity present.
(C) nature of compound only.
(D) presence of impurity only.

Answer: (A) nature of compound and presence of impurity. · Key from source paper

Q43 JEE Main 2024 · 9 Apr · Shift 2 Numerical

see figure



In the given TLC, the distance of spot A & B are 5 cm & 7 cm, from the bottom of TLC plate, respectively. R_f value of B is $x \times 10^{-1}$ times more than A. The value of x is _____.

Numerical value type: the answer is a number.

Answer: 15. · Key from source paper

Q44 JEE Main 2024 · 8 Apr · Shift 1 MCQ

Match List I with List II Choose the correct answer from the options given below:

List-I (Molecule)	List-II (Shape)
A. $Fe_4[Fe(CN)_6]_3 \cdot xH_2O$	I. Violet

B. $[Fe(CN)_5NOS]^{4-}$ II. Blood Red A

C. $[Fe(SCN)]^{2+}$ III. Prussian Blue

D. $(NH_4)_3PO_4 \cdot 12MoO_3$ IV. Yellow

(A) A-III, B-I, C-II, D-IV

(B) A-I, B-II, C-III, D-IV

(C) A-IV, B-I, C-II, D-III

(D) A-II, B-III, C-IV, D-I

Answer: (A) A-III, B-I, C-II, D-IV · Key from source paper

Q45 JEE Main 2024 · 8 Apr · Shift 2 MCQ

Given below are two statements : Statement (I) : Kjeldahl method is applicable to estimate nitrogen in pyridine. Statement (II) : The nitrogen present in pyridine can easily be converted into ammonium sulphate in Kjeldahl method. In the light of the above statements, choose the correct answer from the options given below

(A) Both Statement I and Statement II are true

(B) Both Statement I and Statement II are false

(C) Statement I is false but Statement II is true

(D) Statement I is true but Statement II is false

Answer: (B) Both Statement I and Statement II are false · Key from source paper

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Q46 JEE Main 2024 · 8 Apr · Shift 2 MCQ

In qualitative test for identification of presence of phosphorous, the compound is heated with an oxidising agent. Which is further treated with nitric acid and ammonium molybdate respectively. The yellow coloured precipitate obtained is :

(A) $Na_3PO_4 \cdot 12MoO_3$

(B) $(NH_4)_3PO_4 \cdot 12MoO_3$

(C) $MoPO_4.21NH_4NO_3$

(D) $(NH_4)_3PO_4 \cdot 12(NH_4)_2MoO_4$

Answer: (B) $(NH_4)_3PO_4 \cdot 12MoO_3$ · Key from source paper

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Q47 JEE Main 2024 · 6 Apr · Shift 1 MCQ

Which of the following statements are correct? A. Glycerol is purified by vacuum distillation because it decomposes at its normal boiling point. B. Aniline can be purified by steam distillation as aniline is miscible in water. C. Ethanol can be separated from ethanol water mixture by azeotropic distillation because it forms azeotrope. D. An organic compound is pure, if mixed M.P. is remained same. Choose the most appropriate answer from the options given below :

(A) A, B, C only
(B) A, C, D only
(C) A, B, D only
(D) B, C, D only

Answer: (B) A, C, D only · Key from source paper

Q48 JEE Main 2024 · 6 Apr · Shift 2 MCQ

The correct statement among the following, for a "chromatography" purification method is :

(A) Organic compounds run faster than solvent in the thin layer chromatographic plate.
(B) R_f is an integral value.
(C) R_f of a polar compound is smaller than that of a non-polar compound.
(D) Non-polar compounds are retained at top and polar compounds come down in column chromatography.

Answer: (C) R_f of a polar compound is smaller than that of a non-polar compound. · Key from source paper

Q49 JEE Main 2024 · 5 Apr · Shift 2 Numerical

Using the given figure, the ratio of R_f values of sample A and sample C is $x \times 10^{-2}$. Value of x is _____

(see the figure above)

Q54. Using the given figure, the ratio of R_f values of sample A and sample C is $x \times 10^{-2}$. Value of x is _____

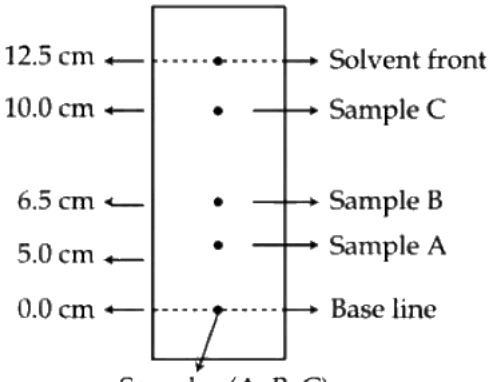

Fig : Paper chromatography of Samples

Numerical value type: the answer is a number.

Answer: 50. · Key from source paper

Q50 JEE Main 2024 · 4 Apr · Shift 1 MCQ

Which of the following nitrogen containing compound does not give Lassaigne's test?

(A) Urea
(B) Phenyl hydrazine
(C) Glycene
(D) Hydrazine

Answer: (D) Hydrazine · Key from source paper

Q51 JEE Main 2024 · 4 Apr · Shift 2 MCQ

The adsorbent used in adsorption chromatography is/are - A. silica gel B. alumina C. quick lime D. magnesia Choose the most appropriate answer from the options given below :

(A) A only
(B) B only
(C) C and D only
(D) A and B only

Answer: (D) A and B only · Key from source paper

Q52 JEE Main 2024 · 1 Feb · Shift 1 MCQ

In Kjeldahl's method for estimation of nitrogen, $\mathrm{CuSO_4}$ acts as :

(A) Reducing agent
(B) Catalytic agent
(C) Hydrolysis agent
(D) Oxidising agent

Answer: (B) Catalytic agent · Key from source paper

Q53 JEE Main 2024 · 1 Feb · Shift 2 MCQ

Lassaigne's test is used for detection of:

(A) Nitrogen and Sulphur only
(B) Nitrogen, Sulphur and Phosphorous Only
(C) Phosphorous and halogens only
(D) Nitrogen, Sulphur, and halogens

Answer: (D) Nitrogen, Sulphur, and halogens · Key from source paper

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Q54 JEE Main 2024 · 1 Feb · Shift 2 Numerical

Following Kjeldahl's method, 1 g of organic compound released ammonia, that neutralised 10 mL of $2\mathrm{MH_2SO_4}$. The percentage of nitrogen in the compound is _____ % .

Numerical value type: the answer is a number.

Answer: 56. · Key from source paper

Q55 JEE Main 2024 · 31 Jan · Shift 1 MCQ

'Adsorption' principle is used for which of the following purification method?

(A) Extraction
(B) Chromatography
(C) Distillation
(D) Sublimation

Answer: (B) Chromatography · Key from source paper

Q56 JEE Main 2024 · 31 Jan · Shift 1 MCQ

Match List I with List II

LIST I (Technique)	LIST II (Application)
A. Distillation	I. Separation of glycerol from spent-lye
B. Fractional distillation	II. Aniline - Water mixture
C. Steam distillation	III. Separation of crude oil fractions
D. Distillation under reduced pressure	IV. Chloroform-Aniline

Choose the correct answer from the options given below:

(A) A-IV, B-I, C-II, D-III
(B) A-IV, B-III, C-II. D-I
(C) A-I. B-II, C-IV, D-III
(D) A-II, B-III. C-I, D-IV

Answer: (B) A-IV, B-III, C-II. D-I · Key from source paper

Q57 JEE Main 2024 · 31 Jan · Shift 2 MCQ

The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in the vapour phase. A suitable method for the extraction of these oils from the flowers is:

(A) crystallisation
(B) distillation under reduced pressure
(C) distillation
(D) steam distillation

Answer: (D) steam distillation · Key from source paper

Q58 JEE Main 2024 · 30 Jan · Shift 1 MCQ

The Lassiagne's extract is boiled with dil HNO_3 before testing for halogens because,

(A) $AgCN$ is soluble in HNO_3
(B) Silver halides are soluble in HNO_3
(C) Ag_2S is soluble in HNO_3
(D) Na_2S and NaCN are decomposed by HNO_3

Answer: (D) Na_2S **and NaCN are decomposed by** HNO_3 · Key from source paper

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Q59 JEE Main 2024 · 30 Jan · Shift 1 Numerical

On a thin layer chromatographic plate, an organic compound moved by 3. 5 cm, while the solvent moved by 5 cm. The retardation factor of the organic compound is _____ $\times 10^{-1}$

Numerical value type: the answer is a number.

Answer: 07. · Key from source paper

Q60 JEE Main 2024 · 30 Jan · Shift 2 MCQ

Which among the following purification methods is based on the principle of "Solubility" in two different solvents?

(A) Column Chromatography
(B) Sublimation
(C) Distillation
(D) Differential Extraction

Answer: (D) Differential Extraction · Key from source paper

Q61 JEE Main 2024 · 29 Jan · Shift 1 MCQ

Appearance of blood red colour, on treatment of the sodium fusion extract of an organic compound with $FeSO_4$ in presence of concentrated H_2SO_4 indicates the presence of element/s

(A) Br
(B) N
(C) N and S
(D) S

Answer: (C) N and S · Key from source paper

Q62 JEE Main 2024 · 29 Jan · Shift 2 MCQ

Chromatographic technique/s based on the principle of differential adsorption is/are

A. Column chromatography B. Thin layer chromatography C. Paper chromatography

Choose the most appropriate answer from the options given below:

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(A) B only
(B) A only
(C) A & B only
(D) C only

Answer: (C) A & B only · Key from source paper

Q63 JEE Main 2024 · 27 Jan · Shift 2 MCQ

The technique used for purification of steam volatile water immiscible substance is:

(A) Fractional distillation
(B) Fractional distillation under reduced pressure
(C) Distillation
(D) Steam distillation

Answer: (D) Steam distillation · Key from source paper

Q64 JEE Main 2023 · 15 Apr · Shift 1 MCQ

Which of the following statement is correct for paper chromatography?

(A) Water present in the pores of the paper forms the stationary phase.
(B) Paper sheet forms the stationary phase.
(C) Water present in the mobile phase gets absorbed by the paper which then forms the stationary phase.
(D) Paper and water present in its pores together form the stationary phase.

Answer: (A) Water present in the pores of the paper forms the stationary phase. · Key from source paper

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Q65 JEE Main 2023 · 13 Apr · Shift 1 Numerical

An organic compound gives 0.220 g of CO_2 and 0.126 g of H_2O on complete combustion. If the % of carbon is 24 then the % of hydrogen is _____ $\times 10^{-1}$. (Nearest integer)

Numerical value type: the answer is a number.

Answer: 56. · Key from source paper

Q66 JEE Main 2023 · 13 Apr · Shift 2 Numerical

0.400 g of an organic compound (X) gave 0.376 g of AgBr in Carius method for estimation of bromine. % of bromine in the compound (X) is (Given: Molar mass AgBr = 188 g mol^{-1} Br = 80 g mol^{-1}

Numerical value type: the answer is a number.

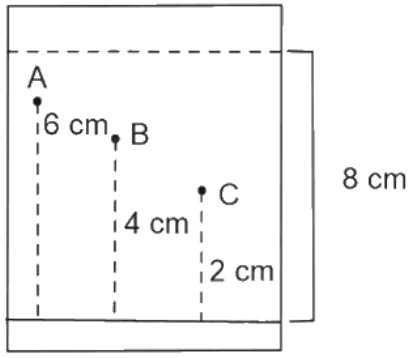
Answer: 40. · Key from source paper

Q67 JEE Main 2023 · 12 Apr · Shift 1 Numerical

Three organic compounds A, B and C were allowed to run in thin layer chromatography using hexane and gave the following result (see figure). The R_f value of the most polar compound is _____ $\times 10^{-2}$

(see the figure above)

Q44. Three organic compounds A, B and C were allowed to run in thin layer chromatography using hexane and gave the following result (see figure). The R_f value of the most polar compound is _____ $\times 10^{-2}$



Numerical value type: the answer is a number.

Answer: 25. · Key from source paper

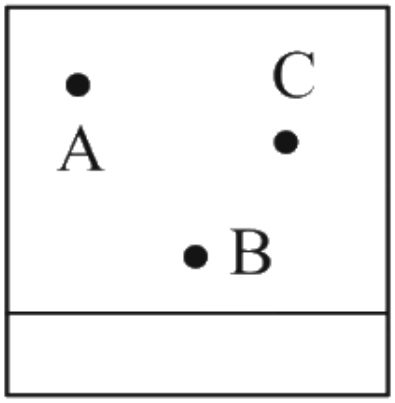
Q68 JEE Main 2023 · 11 Apr · Shift 1 MCQ

Thin layer chromatography of a mixture shows the following observation:

(see the figure above)

The correct order of elution in the silica gel column chromatography is

Q38. Thin layer chromatography of a mixture shows the following observation:



The correct order of elution in the silica gel column chromatography is

(1) B, A, C
(2) B, C, A
(3) A, C, B
(4) C, A, B

(A) B, A, C
(B) B, C, A
(C) A, C, B
(D) C, A, B

Answer: (C) A, C, B · Key from source paper

Q69 JEE Main 2023 · 10 Apr · Shift 1 MCQ

Using column chromatography, mixture of two compounds 'A' and 'B' was separated. 'A' eluted first, this indicates 'B' has

(A) low Rf, stronger adsorption
(B) high Rf, weaker adsorption
(C) high Rf, stronger adsorption
(D) low Rf, weaker adsorption

Answer: (A) low Rf, stronger adsorption · Key from source paper

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Q70 JEE Main 2023 · 10 Apr · Shift 2 MCQ

In Carius tube, an organic compound 'X' is treated with sodium peroxide to form a mineral acid 'Y'. The solution of $\mathrm{BaCl_2}$ is added to 'Y' to form a precipitate 'Z'. 'Z' is used for the quantitative estimation of an extra element. 'X' could be

(A) Cytosine
(B) A nucleotide
(C) Methionine
(D) Chloroxylenol

Answer: (C) Methionine · Key from source paper

Q71 JEE Main 2023 · 8 Apr · Shift 1 Numerical

0.5 g of an organic compound (X) with 60% carbon will produce _____ $\times 10^{-1}$ g of $\mathrm{CO_2}$ on complete combustion.

Numerical value type: the answer is a number.

Answer: 11. · Key from source paper

Q72 JEE Main 2023 · 6 Apr · Shift 1 MCQ

Match List-I with List-II.

List-I Element detected		List-II Reagent used/Product formed
A Nitrogen	I	$\mathrm{Na_2FeCN_5NO}$
B Sulphur	II	$\mathrm{AgNO_3}$

C Phosphorus	III Fe_4FeCN_{63}
D Halogen	IV $NH_{42}MoO_4$

Choose the correct answer from the options given below:

(A) A → III; B → I; C → IV; D → II

(B) A → II; B → IV; C → I; D → III

(C) A → IV; B → II; C → I; D → III

(D) A → II; B → I; C → IV; D → III

Answer: (A) A → III; B → I; C → IV; D → II · Key from source paper

Q73 JEE Main 2023 · 6 Apr · Shift 2 MCQ

From the figure of column chromatography given below, identify incorrect statements.

(see the figure above)

A. Compound 'c' is more polar than 'a' and 'b'

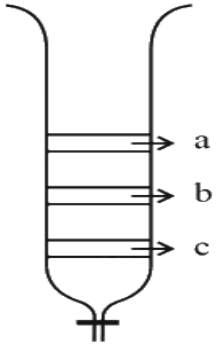
B. Compound 'a' is least polar

C. Compound 'b' comes out of the column before 'c' and after 'a'

D. Compound 'a' spends more time in the column

Choose the correct answer from the options given below

Q42. From the figure of column chromatography given below, identify incorrect statements.



A. Compound 'c' is more polar than 'a' and 'b'
B. Compound 'a' is least polar
C. Compound 'b' comes out of the column before 'c' and after 'a'
D. Compound 'a' spends more time in the column
Choose the correct answer from the options given below
(1) A, B and D only
(2) A, B and C only
(3) B and D only
(4) B, C and D only

(A) A, B and D only
(B) A, B and C only
(C) B and D only
(D) B, C and D only

Answer: (B) A, B and C only · Key from source paper

Q74 JEE Main 2023 · 1 Feb · Shift 2 MCQ

Given below are two statements:
Statement I: Sulphanilic acid gives esterification test for carboxyl group.
Statement II: Sulphanilic acid gives red colour in Lassigne's test for extra element detection.
In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Statement I is correct but Statement II is incorrect.
(B) Both Statement I and Statement II are incorrect
(C) Both Statement I and Statement II are correct
(D) Statement I is incorrect but Statement II is correct.

Answer: (D) Statement I is incorrect but Statement II is correct. · Key from source paper

Q75 JEE Main 2023 · 31 Jan · Shift 1 MCQ

Match items of column I and II

Column I (Mixture of compounds)	Column II (Separation Technique)
A. H_2O / CH_2Cl_2	i. Crystallization
B. *(see the figure above)*	ii. Differential solvent extraction
C. Kerosene/Naphthalene	iii. Column chromatography
D. $C_6H_{12}O_6$ / NaCl	iv. Fractional Distillation

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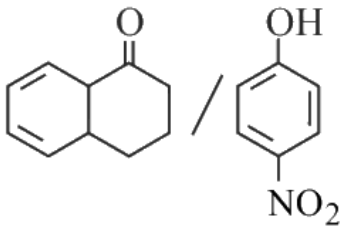
Q35. Match items of column I and II

Column I (Mixture of compounds)	Column II (Separation Technique)
A. H_2O / CH_2Cl_2	i. Crystallization
B. 	ii. Differential solvent extraction
C. Kerosene/Naphthalene	iii. Column chromatography
D. $C_6H_{12}O_6$ / NaCl	iv. Fractional Distillation

(1) A - (iii), B - (iv), C - (ii), D - (i)
(2) A - (ii), B - (iii), C - (iv), D - (i)
(3) A - (i), B - (iii), C - (ii), D - (iv)
(4) A - (ii), B - (iv), C - (i), D - (iii)

(A) A - (iii), B - (iv), C - (ii), D - (i)
(B) A - (ii), B - (iii), C - (iv), D - (i)
(C) A - (i), B - (iii), C - (ii), D - (iv)
(D) A - (ii), B - (iv), C - (i), D - (iii)

Answer: (B) A - (ii), B - (iii), C - (iv), D - (i) · Key from source paper

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Q76 JEE Main 2023 · 31 Jan · Shift 1 · Numerical

On complete combustion, 0.492 g of an organic compound gave 0.792 g of CO_2. The % of carbon in the organic compound is (Nearest integer)

Numerical value type: the answer is a number.

Answer: 44. · Key from source paper

Q77 JEE Main 2023 · 31 Jan · Shift 2 · MCQ

In Dumas method for the estimation of N_2, the sample is heated with copper oxide and the gas evolved is passed over:

(A) Copper gauze
(B) Pd
(C) Ni
(D) Copper oxide

Answer: (A) Copper gauze · Key from source paper

Q78 JEE Main 2023 · 30 Jan · Shift 1 · MCQ

Which of the following compounds would give the following set of qualitative analysis?
(i) Fehling's Test: Positive

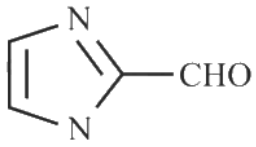
(ii) Na fusion extract upon treatment with sodium nitroprusside gives a blood red colour but not prussian blue.

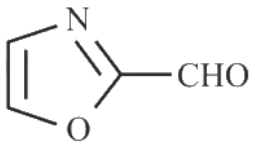
(see the figure above)

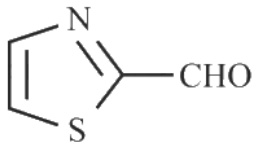
Q45. Which of the following compounds would give the following set of qualitative analysis?

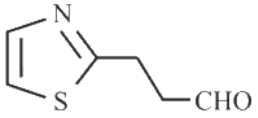
(i) Fehling's Test: Positive

(ii) Na fusion extract upon treatment with sodium nitroprusside gives a blood red colour but not prussian blue.

(1) 

(2) 

(3) 

(4) 

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (D) · Key from source paper

Q79 JEE Main 2023 · 30 Jan · Shift 2 MCQ

Match List I with List II:

List I (Mixture)

(A) $CHCl_3 + C_6H_5NH_2$

(B) $C_6H_{14} + C_5H_{12}$

(C) $C_6H_5NH_2 + H_2O$

(D) Organic compound in H_2O

List II (Separation Technique)

I Steam distillation

II Differential extraction

III Distillation

IV Fractional distillation

(A) A-IV, B-I, C-III, D-II

(B) A-III, B-IV, C-I, D-II

(C) A-II, B-I, C-III, D-IV

(D) A-III, B-I, C-IV, D-II

Answer: (B) A-III, B-IV, C-I, D-II · Key from source paper

Q80 JEE Main 2023 · 29 Jan · Shift 1 MCQ

Compound that will give positive Lassaigne's test for both nitrogen and halogen is

(A) $N_2H_4 \cdot HCl$

(B) $CH_3NH_2.HCl$

(C) NH_4Cl

(D) $NH_2OH.HCl$

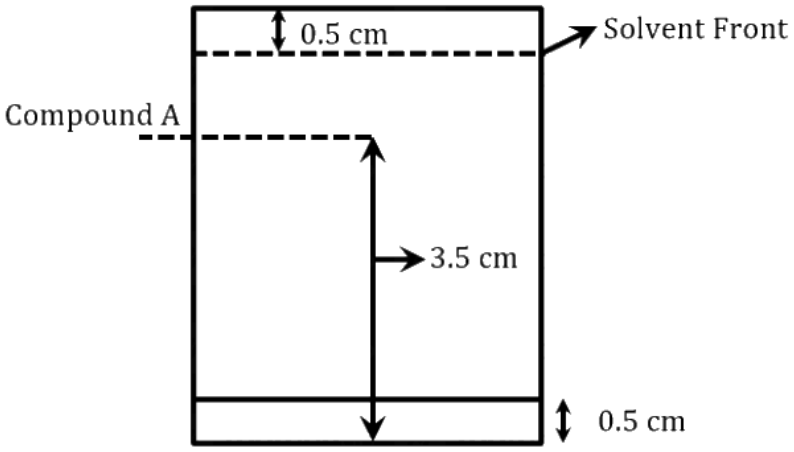
Answer: (B) $CH_3NH_2.HCl$ · Key from source paper

Q81 JEE Main 2023 · 29 Jan · Shift 1 Numerical

Following chromatogram was developed by adsorption of compound 'A' on a $6\ cm$ TLC glass plate. Retardation factor of the compound 'A' is _____ $\times 10^{-1}$.

(see the figure above)

Q43. Following chromatogram was developed by adsorption of compound 'A' on a 6 cm TLC glass plate. Retardation factor of the compound 'A' is _____ $\times 10^{-1}$.



Numerical value type: the answer is a number.

Answer: 6. · Key from source paper

Q82 JEE Main 2023 · 25 Jan · Shift 1 Numerical

In sulphur estimation. 0.471 g of an organic compound gave 1.4439 g of barium sulphate. The percentage of sulphur in the compound is _____ (Nearest Integer)
(Given: Atomic mass Ba: 137u : S : 32u, O : 16u)

Numerical value type: the answer is a number.

Answer: 42. · Key from source paper

Q83 JEE Main 2022 · 28 Jul · Shift 1 Numerical

On complete combustion of $0.492\ g$ of an organic compound containing C, H and O, $0.7938\ g$ of CO_2 and $0.4428\ g$ of H_2O was produced. The % composition of oxygen in the compound is _____.

(Nearest Integer)

Numerical value type: the answer is a number.

Answer: 46. · Key from source paper

Q84 JEE Main 2022 · 28 Jul · Shift 2 MCQ

Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R
Assertion A : Thin layer chromatography is an adsorption chromatography.
Reason R : A thin layer of silica gel is spread over a glass plate of suitable size in thin layer chromatography which acts as an adsorbent. In the light of the above statements, choose the correct answer from the options given below

(A) Both A and R are true and R is the correct explanation of A
(B) Both A and R are true but R is NOT the correct explanation of A
(C) A is true but R is false
(D) A is false but R is true

Answer: (A) Both A and R are true and R is the correct explanation of A · Key from source paper

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Q85 JEE Main 2022 · 28 Jul · Shift 2 Numerical

A sample of $0.125\ \mathrm{g}$ of an organic compound when analysed by Duma's method yields $22.78\ \mathrm{mL}$ of nitrogen gas collected over KOH solution at $280\ \mathrm{K}$ and $759\ \mathrm{mmHg}$. The percentage of nitrogen in the given organic compound is _____
(a) The vapour pressure of water at $280\ \mathrm{K}$ is $14.2\ \mathrm{mmHg}$
(b) $\mathrm{R} = 0.082\ \mathrm{L\ atm\ K^{-1}\ mol^{-1}}$

Numerical value type: the answer is a number.

Answer: 22. · Key from source paper

Q86 JEE Main 2022 · 27 Jul · Shift 1 MCQ

In Carius method of estimation of halogen. 0.45 g of an organic compound gave 0.36 g of AgBr. Find out the percentage of bromine in the compound.
(Molar masses : AgBr = 188 g $\mathrm{mol^{-1}}$: Br = 80 g $\mathrm{mol^{-1}}$)

(A) 34.04%
(B) 40.04%
(C) 36.03%
(D) 38.04%

Answer: (A) 34.04% · Key from source paper

Q87 JEE Main 2022 · 27 Jul · Shift 2 MCQ

Match List-I with List-II

List-I (Mixture)	List-II (Purification Process)
A Chloroform & Aniline	I Steam distillation
B Benzoic acid & Napthalene	II Sublimation
C Water & Aniline	III Distillation
D Napthalene & Sodium chloride	IV Crystallisation

(A) A – IV, B – III, C – I, D – II
(B) A – III, B – I, C – IV, D – II
(C) A – III, B – IV, C – II, D – I
(D) A – III, B – IV, C – I, D – II

Answer: (D) A – III, B – IV, C – I, D – II · Key from source paper

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Q88 JEE Main 2022 · 26 Jul · Shift 1 MCQ

Which technique among the following, is most appropriate in separation of a mixture of 100 mg of p-nitrophenol and picric acid?

(A) Steam distillation
(B) 2 – 5 ft long column of silica gel
(C) Sublimation
(D) Preparative TLC (Thin Layer Chromatography)

Answer: (D) Preparative TLC (Thin Layer Chromatography) · Key from source paper

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Q89 JEE Main 2022 · 25 Jul · Shift 1 Numerical

While estimating the nitrogen present in an organic compound by Kjeldahl's method, the ammonia evolved from 0.25 g of the compound neutralized 2.5 mL of $2\mathrm{M}\ \mathrm{H_2SO_4}$. The percentage of nitrogen present in organic compound is _____.

Numerical value type: the answer is a number.

Answer: 56. · Key from source paper

Q90 JEE Main 2022 · 25 Jul · Shift 2 Numerical

The separation of two coloured substances was done by paper chromatography. The distances travelled by solvent front, substance A and substance B from the base line are $3.25\ \mathrm{cm}$, $2.08\ \mathrm{cm}$ and $1.05\ \mathrm{cm}$ respectively. The ratio of $\mathrm{R_f}$ values of A to B is (Answer the nearest integer)

Numerical value type: the answer is a number.

Answer: 2. · Key from source paper

Q91 JEE Main 2022 · 29 Jun · Shift 1 Numerical

Kjeldahl's method was used for the estimation of nitrogen in an organic compound. The ammonia evolved from $0.55\ \mathrm{g}$ of the compound neutralised $12.5\ \mathrm{mL}$ of $1\mathrm{M}\ \mathrm{H_2SO_4}$ solution. The percentage of

nitrogen in the compound is (Nearest integer)

Numerical value type: the answer is a number.

Answer: 64. · Key from source paper

Q92 JEE Main 2022 · 28 Jun · Shift 1 MCQ

Which one of the following techniques is not used to spot components of a mixture separated on thin layer chromatographic plate?

(A) I_2 (Solid)
(B) U.V. Light
(C) Visualisation agent as a component of mobile phase
(D) Spraying of an appropriate reagent

Answer: (C) Visualisation agent as a component of mobile phase · Key from source paper

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Q93 JEE Main 2022 · 28 Jun · Shift 1 MCQ

The formula of the purple colour formed in Laissaigne's test for sulphur using sodium nitroprusside is

(A) $Na_4[Fe(CN)_5(NOS)]$
(B) $NaFe[Fe(CN)_6]$
(C) $Na[Cr(NH_3)_2(NCS)_4]$
(D) $Na_2[Fe(CN)_5(NO)]$

Answer: (A) $Na_4[Fe(CN)_5(NOS)]$ · Key from source paper

Q94 JEE Main 2022 · 28 Jun · Shift 1 Numerical

In the estimation of bromine, 0.5 g of an organic compound gave 0.40 g of silver bromide. The percentage of bromine in the given compound is _____ % (nearest integer)
(Relative atomic masses of Ag and Br are 108u and 80u, respectively).

Numerical value type: the answer is a number.

Answer: 34. · Key from source paper

Q95 JEE Main 2022 · 28 Jun · Shift 2 Numerical

The complete combustion of 0.492 g of an organic compound containing 'C', 'H' and 'O' gives 0.793 g of CO_2 and 0.442 g of H_2O. The percentage of oxygen composition in the organic compound is _____ .(nearest integer)

Numerical value type: the answer is a number.

Answer: 46. · Key from source paper

Q96 JEE Main 2022 · 27 Jun · Shift 1 MCQ

Which of the following is structure of a separating funnel?
(see the figure above)

Q50. Which of the following is structure of a separating funnel?



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q97 JEE Main 2022 · 27 Jun · Shift 2 Numerical

0.25 g of an organic compound containing chlorine gave 0.40 g of silver chloride in Carius estimation. The percentage of chlorine present in the compound is [in nearest integer]
(Given: Molar mass of Ag is $108\ \text{g mol}^{-1}$ and that of Cl is $35.5\ \text{g mol}^{-1}$)

Numerical value type: the answer is a number.

Answer: 40. · Key from source paper

Q98 JEE Main 2022 · 26 Jun · Shift 1 MCQ

Given below are two statements :
Statement I : In 'Lassaigne's Test', when both nitrogen and sulphur are present in an organic compound, sodium thiocyanate is formed.
Statement II : If both nitrogen and sulphur are present in an organic compound, then the excess of sodium used in sodium fusion will decompose the sodium thiocyanate formed to give NaCN and Na_2S.

In the light of the above statements, choose the most appropriate answer from the options a: given below

(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect.
(C) Statement I is correct but Statement II is incorrect.
(D) Statement I is incorrect but Statement II is correct.

Answer: (A) Both Statement I and Statement II are correct. · Key from source paper

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Q99 JEE Main 2022 · 26 Jun · Shift 1 Numerical

On complete combustion 0.30 g of an organic compound gave 0.20 g of carbon dioxide and 0.10 g of water. The percentage of carbon in the given organic compound is _____ (Nearest Integer)

Numerical value type: the answer is a number.

Answer: 18. · Key from source paper

Q100 JEE Main 2022 · 25 Jun · Shift 1 MCQ

Phenol on reaction with dilute nitric acid, gives two products. Which method will be most efficient for large scale separation?

(A) Chromatographic separation
(B) Steam distillation
(C) Fractional Crystallisation
(D) Sublimation

Answer: (B) Steam distillation · Key from source paper

Q101 JEE Main 2022 · 25 Jun · Shift 2 MCQ

Given below are two statements: one is labelled as Assertion and the other is labelled as Reason.
Assertion: A mixture contains benzoic acid and napthalene. The pure benzoic acid can be separated out by the use of benzene.
Reason: Benzoic acid is soluble in hot water.
In the light of the above statements, choose the most appropriate answer from the options given below.

(A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(C) Assertion is true but Reason is false.
(D) Assertion is false but Reason is true.

Answer: (D) Assertion is false but Reason is true. · Key from source paper

Q102 JEE Main 2022 · 25 Jun · Shift 2 MCQ

During halogen test, sodium fusion extract is boiled with concentrated HNO_3 to

(A) remove unreacted sodium
(B) decompose cyanide or sulphide of sodium
(C) extract halogen from organic compound
(D) maintain the pH of extract.

Answer: (B) decompose cyanide or sulphide of sodium · Key from source paper

Q103 JEE Main 2022 · 24 Jun · Shift 1 Numerical

A $0.166\ g$ sample of an organic compound was digested with conc. H_2SO_4 and then distilled with NaOH. The ammonia gas evolved was passed through $50.0\ mL$ of $0.5\ N\ H_2SO_4$. The used acid required $30.0\ mL$ of $0.25\ N$ NaOH for complete neutralization. The mass percentage of nitrogen in the organic compound is

Numerical value type: the answer is a number.

Answer: 63. · Key from source paper

Q104 JEE Main 2022 · 24 Jun · Shift 2 MCQ

$120\ g$ of an organic compound which contains only carbon and hydrogen on complete combustion gives $330\ g$ of CO_2 and $270\ g$ of water. The percentage of carbon and hydrogen in the organic compound are respectively

(A) 25 and 75
(B) 40 and 60
(C) 60 and 40
(D) 75 and 25

Answer: (D) 75 and 25 · Key from source paper

Q105 JEE Main 2022 · 24 Jun · Shift 2 Numerical

$0.2\ g$ of an organic compound was subjected to estimation of nitrogen by Dumas method in which volume of N_2 evolved (at STP) was found to be $22.400\ mL$. The percentage of nitrogen in the compound is - [nearest integer] (Given: Molar mass of N_2 is $28\ g\ mol^{-1}$, Molar volume of N_2 at STP : $22.4\ L$)

Numerical value type: the answer is a number.

Answer: 14. · Key from source paper

Q106 JEE Main 2021 · 31 Aug · Shift 1 MCQ

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Assertion (A): A simple distillation can be used to separate a mixture of propanol and propanone.

Reason (R): Two liquids with a difference of more than $20^{\circ}C$ in their boiling points can be separated by simple distillations.
In the light of the above statements, choose the most appropriate answer from the options given below :

(A) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(B) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(C) (A) is true but (R) is false.
(D) (A) is false but (R) is true.

Answer: (B) Both (A) and (R) are correct and (R) is the correct explanation of (A). · Key from source paper

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Q107 JEE Main 2021 · 31 Aug · Shift 2 Numerical

The transformation occurring in Duma's method is given below
$C_2H_7\,N + 2x + \frac{y}{2}CuO \rightarrow xCO_2 + \frac{y}{2}H_2O + \frac{z}{2}\,N_2 + 2x + \frac{y}{2}Cu$
The value of y is (Integer answer)

Numerical value type: the answer is a number.

Answer: 7. · Key from source paper

Q108 JEE Main 2021 · 27 Aug · Shift 1 Numerical

The number of moles of CuO, that will be utilized in Dumas method for estimating nitrogen in a sample of 57.5 g of N, N-dimethylaminopentane is _____$\times 10^{-2}$. (Nearest integer)

Numerical value type: the answer is a number.

Answer: 1125. · Key from source paper

Q109 JEE Main 2021 · 27 Aug · Shift 1 Numerical

In Carius method for estimation of halogens, 0.2 g of an organic compound gave 0.188 g of AgBr. The percentage of bromine in the compound is _____. (Nearest integer)
[Atomic mass: Ag = 108, Br = 80]

Numerical value type: the answer is a number.

Answer: 40. · Key from source paper

Q110 JEE Main 2021 · 26 Aug · Shift 1 MCQ

Which one of the following complexes is violet in colour?

(A) $Fe_4[Fe(CN)_6]_3 \cdot H_2O$
(B) $[Fe(CN)_5NOS]^{4-}$
(C) $[Fe(SCN)_6]^{4-}$
(D) $[Fe(CN)_6]^{4-}$

Answer: (B) $[Fe(CN)_5NOS]^{4-}$ · Key from source paper

Q111 JEE Main 2021 · 26 Aug · Shift 2 Numerical

In the sulphur estimation, 0.471 g of an organic compound gave 1.44 g of barium sulfate. The percentage of sulphur in the compound is. (Nearest integer) (Atomic Mass of $Ba = 137u$)

Numerical value type: the answer is a number.

Answer: 42. · Key from source paper

Q112 JEE Main 2021 · 27 Jul · Shift 1 Numerical

An organic compound is subjected to chlorination to get compound A using 5.0 g of chlorine. When 0.5 g of compound A is reacted with $AgNO_3$ [Carius Method], the percentage of chlorine in compound A is when it forms 0.3849 g of AgCl. (Round off to the Nearest Integer)
(Atomic masses of Ag and Cl are 107.87 and 35.5 respectively)

Numerical value type: the answer is a number.

Answer: 19. · Key from source paper

Q113 JEE Main 2021 · 27 Jul · Shift 2 MCQ

Which one of the following set of elements can be detected using sodium fusion extract?

(A) Sulfur, Nitrogen, Phosphorus, Halogens
(B) Phosphorus, Oxygen, Nitrogen, Halogens
(C) Nitrogen, Phosphorus, Carbon, Sulfur
(D) Halogens, Nitrogen, Oxygen, Sulfur

Answer: (A) Sulfur, Nitrogen, Phosphorus, Halogens · Key from source paper

Q114 JEE Main 2021 · 25 Jul · Shift 2 Numerical

0.8 g of an organic compound was analysed by Kjeldahl's method for the estimation of nitrogen. If the percentage of nitrogen in the compound was found to be 42%, then _____ mL of $1M$ H_2SO_4 would have been neutralized by the ammonia evolved during the analysis.

Numerical value type: the answer is a number.

Answer: 12. · Key from source paper

Q115 JEE Main 2021 · 22 Jul · Shift 1 MCQ

Which purification technique is used for high boiling organic liquid compound (decomposes near its boiling point) ?

(A) Simple distillation
(B) Steam distillation
(C) Fractional distillation
(D) Reduced pressure distillation

Answer: (D) Reduced pressure distillation · Key from source paper

Q116 JEE Main 2021 · 20 Jul · Shift 2 MCQ

In Carius method, halogen containing organic compound is heated with fuming nitric acid in the presence of:

(A) HNO_3
(B) $AgNO_3$
(C) $CuSO_4$
(D) $BaSO_4$

Answer: (B) $AgNO_3$ · Key from source paper

Q117 JEE Main 2021 · 20 Jul · Shift 2 Numerical

When 0.15 g of an organic compound was analyzed using Carius method for estimation of bromine, 0.2397 g of $AgBr$ was obtained. The percentage of bromine in the organic compound is _____ . (Nearest integer)
[Atomic mass : Silver = 108, Bromine = 80]

Numerical value type: the answer is a number.

Answer: 68. · Key from source paper

Q118 JEE Main 2021 · 17 Mar · Shift 1 MCQ

Given below are two statements:
Statement-I: Retardation factor (R_f) can be measured in meter/centimetre.
Statement-II: R_f value of a compound remains constant in all solvents.
Choose the most appropriate answer from the options given below:

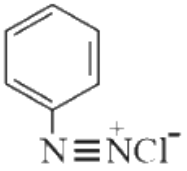
(A) Statement-I is true but statement-II is false
(B) Both statement-I and statement-II are true
(C) Both statement-I and statement-II are false
(D) Statement-I is false but statement-II is true

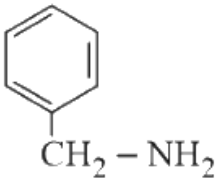
Answer: (C) Both statement-I and statement-II are false · Key from source paper

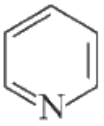
Q119 JEE Main 2021 · 17 Mar · Shift 2 MCQ

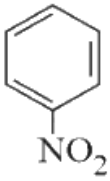
Nitrogen can be estimated by Kjeldahl's method for which of the following compound?

Q37. Nitrogen can be estimated by Kjeldahl's method for which of the following compound?

(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q120 JEE Main 2021 · 16 Mar · Shift 1 MCQ

In chromatography technique, the purification of a compound is independent of:

(A) Mobility or flow of solvent system
(B) Solubility of the compound
(C) Length of the column or TLC Plate
(D) Physical state of the pure compound

Answer: (D) Physical state of the pure compound · Key from source paper

Q121 JEE Main 2021 · 16 Mar · Shift 1 Numerical

Complete combustion of 750 g of an organic compound provides 420 g of CO_2 and 210 g of H_2O. The percentage composition of carbon and hydrogen in organic compound is 15.3 and _____ respectively. (Round off to the Nearest Integer)

Numerical value type: the answer is a number.

Answer: 3. · Key from source paper

Q122 JEE Main 2021 · 16 Mar · Shift 2 MCQ

Match List-I with List-II

List-I (Test/Reagents/Observation(s))	List-II (Species detected)
(a) Lassaigne's Test	(i) Carbon
(b) Cu(II) oxide	(ii) Sulphur
(c) Silver nitrate	(iii) N, S, P, and halogen
(d) The sodium fusion extract gives black precipitate with acetic acid and lead acetate	(iv) Halogen Specifically

The correct match is :

(A) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)
(B) (a) – (i), (b) – (iv), (c) – (iii), (d) – (ii)
(C) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii)
(D) (a) – (i), (b) – (ii), (c) – (iv), (d) – (iii)

Answer: (C) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii) · Key from source paper

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Q123 JEE Main 2021 · 16 Mar · Shift 2 Numerical

In Duma's method of estimation of nitrogen, $0.1840\ \mathrm{g}$ of an organic compound gave $30\ \mathrm{mL}$ of nitrogen collected at $287\ \mathrm{K}$ and $758\ \mathrm{mm}$ of Hg pressure. The percentage composition of nitrogen in the compound is _____. (Round off to the Nearest Integer).
[Given : Aqueous tension at $287\ \mathrm{K} = 14\ \mathrm{mm}$ of Hg]

Numerical value type: the answer is a number.

Answer: 19. · Key from source paper

Q124 JEE Main 2021 · 26 Feb · Shift 1 MCQ

Given below are two statements:
Statement I: A mixture of chloroform and aniline can be separated by simple distillation.
Statement II: When separating aniline from a mixture of aniline and water by steam distillation aniline boils below its boiling point.
In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Both Statement I and Statement II are true
(B) Statement I is true but Statement II is false
(C) Statement I is false but Statement II is true
(D) Both Statement I and Statement II are false

Answer: (A) Both Statement I and Statement II are true · Key from source paper

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Q125 JEE Main 2021 · 26 Feb · Shift 1 MCQ

Which of the following is a FALSE statement?

(A) Carius tube is used in the estimation of sulphur in an organic compound.

(B) Phosphoric acid produced on oxidation of phosphorus present in an organic compound is precipitated as $Mg_2P_2O_7$ by adding magnesia mixture.

(C) Carius method is used for the estimation of nitrogen in an organic compound.

(D) Kjeldahl's method is used for the estimation of nitrogen in an organic compound.

Answer: (C) Carius method is used for the estimation of nitrogen in an organic compound. · Key from source paper

Q126 JEE Main 2021 · 25 Feb · Shift 1 MCQ

Complete combustion of $1.80\ g$ of an oxygen containing compound $(C_xH_yO_z)$ gave $2.64\ g$ of CO_2 and $1.08\ g$ of H_2O. The percentage of oxygen in the organic compound is :

(A) 53.33

(B) 50.33

(C) 51.63

(D) 63.53

Answer: (A) 53.33 · Key from source paper

Q127 JEE Main 2021 · 25 Feb · Shift 1 Numerical

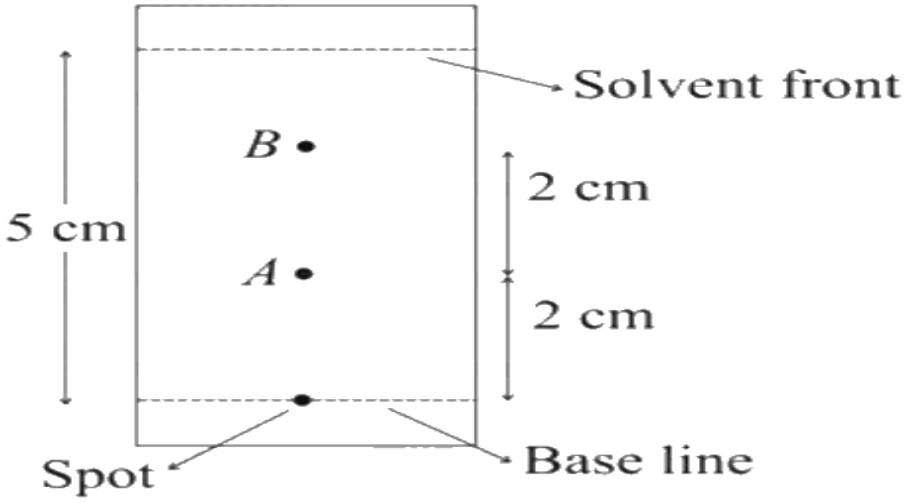
Using the provided information in the following paper chromatogram:

(see the figure above)

Paper chromatography for compounds A and B.

The calculated R_f value of A is _____ $\times 10^{-1}$.

Q56. Using the provided information in the following paper chromatogram:



Paper chromatography for compounds A and B.

The calculated R_f value of A is _____ $\times 10^{-1}$.

Numerical value type: the answer is a number.

Answer: 4. · Key from source paper

Q128 JEE Main 2021 · 25 Feb · Shift 2 MCQ

Which of the following compound is added to the sodium extract before addition of silver nitrate for testing of halogens?

(A) Nitric acid
(B) Sodium hydroxide
(C) Ammonia
(D) Hydrochloric acid

Answer: (A) Nitric acid · Key from source paper

Q129 JEE Main 2020 · 6 Sep · Shift 1 Numerical

In an estimation of bromine by Carius method, 1.6g of an organic compound gave 1.88g of AgBr. The mass percentage of bromine in the compound is _____
(Atomic mass, Ag = 108, Br = 80 gmol^{-1})

Numerical value type: the answer is a number.

Answer: 50. · Key from source paper

Q130 JEE Main 2020 · 6 Sep · Shift 2 MCQ

Match the following :
Test/Method Reagent
(i) Lucas Test (a) $C_6H_5SO_2Cl$ / aq. KOH
(ii) Dumas method (b) HNO_3 / $AgNO_3$
(iii) Kjeldahl's method (c) CuO / CO_3
(iv) Hinsberg Test (d) Conc. HCl and $ZnCl_2$
(e) $H_2\ SO_4$

(A) (i)-(d), (ii)-(c), (iii)-(b), (iv)-(e)
(B) (i)-(b), (ii)-(d), (iii)-(e), (iv)-(a)
(C) (i)-(d), (ii)-(c), (iii)-(e), (iv)-(a)
(D) (i)-(b), (ii)-(a), (iii)-(c), (iv)-(d)

Answer: (C) (i)-(d), (ii)-(c), (iii)-(e), (iv)-(a) · Key from source paper

Q131 JEE Main 2020 · 3 Sep · Shift 1 MCQ

Glycerol is separated in soap industries by :

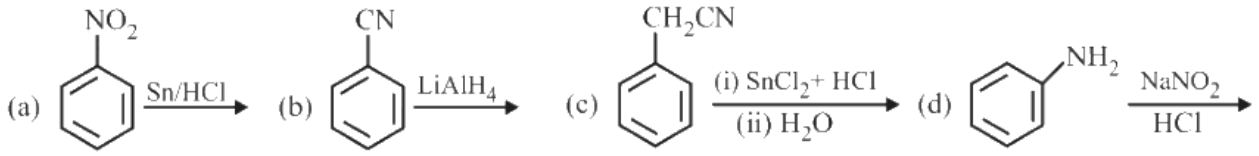
(A) Fractional distillation
(B) Differential distillation
(C) Steam distillation
(D) Distillation under reduced pressure

Answer: (D) Distillation under reduced pressure · Key from source paper

Q132 JEE Main 2020 · 3 Sep · Shift 1 MCQ

The Kjeldahl method of Nitrogen estimation fails for which of the following reaction products?
(see the figure above)

Q32. The Kjeldahl method of Nitrogen estimation fails for which of the following reaction products?



(1) (c) and (d)
(2) (a) and (d)
(3) (a), (c) and (d)
(4) (b) and (c)

(A) (c) and (d)
(B) (a) and (d)
(C) (a), (c) and (d)
(D) (b) and (c)

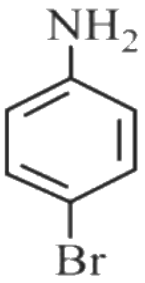
Answer: (A) (c) and (d) · Key from source paper

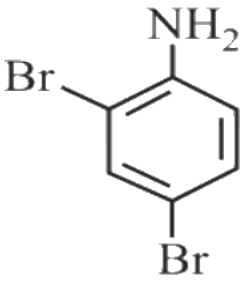
Q133 JEE Main 2020 · 2 Sep · Shift 1 MCQ

In Carius method of estimation of halogen, 0.172 g of an organic compound showed presence of 0.08 g of bromine. Which of these is the correct structure of the compound ?

Q35. In Carius method of estimation of halogen, 0.172 g of an organic compound showed presence of 0.08 g of bromine. Which of these is the correct structure of the compound ?

(1) $CH_3\ CHBr_2$

(2) 

(3) 

(4) $H_3C - CH_2 - Br$

(A) $CH_3\ CHBr_2$

(B) *see figure*

(C) *see figure*

(D) $H_3C - CH_2 - Br$

Answer: (B) · Key from source paper

Q134 JEE Main 2020 · 8 Jan · Shift 1 MCQ

A flask contains a mixture of isohexane and 3 -methylpentane. One of the liquids boils at $63^{\circ}C$ while the other boils at $60^{\circ}C$. What is the best way to separate the two liquids and which one will be distilled out first?

(A) fractional distillation, isohexane

(B) simple distillation, 3 -methylpentane

(C) simple distillation, isohexane

(D) fractional distillation, 3 -methylpentane

Answer: (A) fractional distillation, isohexane · Key from source paper

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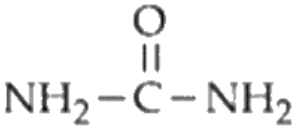
Q135 JEE Main 2020 · 8 Jan · Shift 2 MCQ

Kjeldahl's method cannot be used to estimate nitrogen for which of the following compounds?

Q33. Kjeldahl's method cannot be used to estimate nitrogen for which of the following compounds?

(1) $C_6H_5NH_2$
(2) $CH_3CH_2 - C \equiv N$
(3) $C_6H_5NO_2$
(4) 

(A) $C_6H_5NH_2$
(B) $CH_3CH_2 - C \equiv N$
(C) $C_6H_5NO_2$
(D) *see figure*

Answer: (C) $C_6H_5NO_2$ · Key from source paper

Q136 JEE Main 2020 · 7 Jan · Shift 1 MCQ

A solution of m− chloroaniline, m− chlorophenol and m− chlorobenzoic acid in ethyl acetate was extracted initially with a saturated solution of $NaHCO_3$ to give fraction A . The left over organic phase was extracted with dilute $NaOH$ solution to give fraction B . The final organic layer was labelled as fraction C . Fractions A, B and C, contain respectively:

(A) m− chlorobenzoic acid, m− chloroaniline and m− chlorophenol
(B) m− chlorobenzoic acid, m− chlorophenol and m− chloroaniline
(C) m− chlorophenol, m− chlorobenzoic acid and m− chloroanilinc
(D) m− chloroaniline, m− chlorobenzoic acid and m− chlorophenol

Answer: (B) m− chlorobenzoic acid, m− chlorophenol and m− chloroaniline · Key from source paper

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Q137 JEE Main 2020 · 7 Jan · Shift 2 MCQ

A chromatography column, packed with silica gel as stationary phase, was used to separate a mixture of compounds consisting of (A) benzanilide (B) aniline and (C) acetophenone. When the column is eluted with a mixture of solvents, hexane:ethyl acetate $(20 : 80)$, the sequence of obtained compounds is:

(A) (B), (C) and (A)
(B) (B), (A) and (C)
(C) (C), (A) and (B)
(D) (A), (B) and (C)

Answer: (C) (C), (A) and (B) · Key from source paper

Q138 JEE Main 2019 · 12 Apr · Shift 1 MCQ

An organic compound 'A' is oxidized with Na_2O_2 followed by boiling with HNO_3 . The resultant solution is then treated with ammonium molybdate to yield a yellow percipitate. Based on a above observation, the element present in the given compound is:

(A) Fluorine
(B) Phosphorus
(C) Nitrogen
(D) Sulphur

Answer: (B) Phosphorus · Key from source paper

Q139 JEE Main 2019 · 10 Apr · Shift 1 MCQ

The principle of column chromatography is:

(A) Differential adsorption of the substances on the solid phase.
(B) Differential absorption of the substances on the solid phase.
(C) Gravitational force.
(D) Capillary action

Answer: (A) Differential adsorption of the substances on the solid phase. · Key from source paper

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Q140 JEE Main 2019 · 10 Apr · Shift 2 MCQ

In chromatography, which of the following statements is incorrect for R_f?

(A) Higher R_f value means higher adsorption.
(B) The value of R_f cannot be more than one.
(C) R_f depends on the type of chromatography.
(D) R_f value of dependent on the mobile phase.

Answer: (A) Higher R_f value means higher adsorption. · Key from source paper

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Q141 JEE Main 2019 · 11 Jan · Shift 1 MCQ

The correct match between items I and II is :
Item - I (Mixture)
(A) H_2O : Sugar
(B) H_2O : Aniline
(C) H_2O : Toluene
Item - II (Separation method)
(P) Sublimation
(Q) Recrystallization
(R) Steam distillation
(S) Differential extraction

(A) (A) → (S); (B) → (R); (C) → (P)
(B) (A) → (Q); (B) → (R); (C) → (S)
(C) (A) → (R); (B) → (P); (C) → (S)
(D) (A) → (Q); (B) → (R); (C) → (P)

Answer: (B) (A) → (Q); (B) → (R); (C) → (S) · Key from source paper

Q142 JEE Main 2019 · 11 Jan · Shift 1 MCQ

An organic compound is estimated through Dumas method and was found to evolve 6 moles of CO_2, 4 moles of H_2O and 1 mole of nitrogen gas. The formula of the compound is:

(A) $C_{12}H_8$ N
(B) $C_{12}H_8$ N_2
(C) C_6H_8 N_2
(D) C_6H_8 N

Answer: (C) C_6H_8 N_2 · Key from source paper

Q143 JEE Main 2019 · 10 Jan · Shift 1 MCQ

If Dichloromethane (DCM) and water H_2O are used for differential extraction, which one of the following statements is correct?

(A) DCM and H_2O would stay as upper and lower layer respectively in the separating funnel (S.F.)
(B) DCM and H_2O will be miscible clearly
(C) DCM and H_2O would stay as lower and upper layer respectively in the S.F
(D) DCM and H_2O will make turbid/colloidal mixture

Answer: (C) DCM and H_2O would stay as lower and upper layer respectively in the S.F · Key from source paper

Q144 JEE Main 2019 · 9 Jan · Shift 2 MCQ

The correct match between Item I and Item II is:
Item I
(A) Benzaldehyde
(B) Alumina
(C) Acetonitrile
Item II
(P) Mobile phase
(Q) Adsorbent
(R) Adsorbate

(A) $(A) \rightarrow (P); (B) \rightarrow (R); (C) \rightarrow (Q)$
(B) $(A) \rightarrow (R); (B) \rightarrow (Q); (C) \rightarrow (P)$
(C) $(A) \rightarrow (Q); (B) \rightarrow (P); (C) \rightarrow (R)$
(D) $(A) \rightarrow (Q); (B) \rightarrow (R); (C) \rightarrow (P)$

Answer: (B) $(A) \rightarrow (R); (B) \rightarrow (Q); (C) \rightarrow (P)$ · Key from source paper

Q145 JEE Main 2018 · 15 Apr · Shift 1 MCQ

The correct match between items of List-I and List-II is :
List-I
A. Coloured impurity
B. Mixture of o-nitrophenol and p-nitrophenol
C. Crude naphtha
D. Mixture of glycerol and sugars
List-II
(p) Steam distillation
(q) Fractional distillation
(r) Charcoal treatment
(s) Distillation under reduced pressure

(A) (A)-(r),(B)-(s), (C)-(p),(D)-(q)
(B) (A)-(p),(B)-(s), (C)-(r),(D)-(q)
(C) (A)-(r), (B)-(p), (C)-(q), (D)-(s)
(D) (A)-(r),(B)-(p), (C)-(s),(D)-(q)

Answer: (C) (A)-(r), (B)-(p), (C)-(q), (D)-(s) · Key from source paper

Q146 JEE Main 2018 · 15 Apr · Shift 2 MCQ

Two compounds I and II are eluted by column chromato-graphy(adsorption of I > II). Which one of the following is a correct statement?

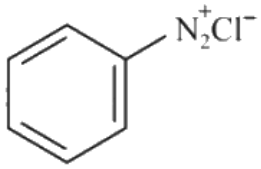
(A) II moves slower and has higher $\mathrm{R_f}$ value than I
(B) II moves faster and has higher $\mathrm{R_f}$ value than I
(C) I moves faster and has higher $\mathrm{R_f}$ value than II
(D) I moves slower and has higher $\mathrm{R_f}$ value than I

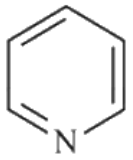
Answer: (B) II moves faster and has higher $\mathrm{R_f}$ value than I · Key from source paper

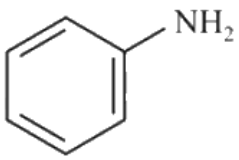
Q147 JEE Main 2018 · 8 Apr · Offline MCQ

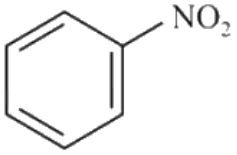
Which of the following compounds will be suitable for Kjeldahl's method for nitrogen estimation?

Q44. Which of the following compounds will be suitable for Kjeldahl's method for nitrogen estimation?

(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Key from source paper

Q148 JEE Main 2017 · 8 Apr · Online MCQ

Which of the following statements is not true about partition chromatography?

(A) Stationary phase is a finely divided solid adsorbent.
(B) Separation depends upon equilibration of solute between a mobile and a stationary phase.
(C) Mobile phase can be a gas.
(D) Paper chromatography is an example of partition chromatography.

Answer: (A) Stationary phase is a finely divided solid adsorbent. · Checked by our team

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Q149 JEE Main 2016 · 10 Apr · Online MCQ

Sodium extract is heated with concentrated HNO_3 before testing for halogens because :

(A) Ag_2S and $AgCN$ are soluble in acidic medium.
(B) Silver halides are totally insoluble in nitric acid.
(C) S^{2-} and CN^-, if present, are decomposed by conc. HNO_3 and hence do not interfere in the test.
(D) Ag reacts faster with halides in acidic medium

Answer: (C) S^{2-} and CN^-, if present, are decomposed by conc. HNO_3 and hence do not interfere in the test. · Key from source paper

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Q150 JEE Main 2016 · 3 Apr · Offline MCQ

The distillation technique most suited for separating glycerol from spent - lye in the soap industry is:

(A) Steam distillation
(B) Distillation under reduced pressure
(C) Simple distillation
(D) Fractional distillation

Answer: (B) Distillation under reduced pressure · Key from source paper

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Q151 JEE Main 2015 · 11 Apr · Online MCQ

Match the organic compounds in column - I with the Lassaigne's test result in column - II appropriately:
Column – I
A. Aniline
B. Benzene sulfonic acid
C. Thiourea
Column - II
i. Red colour with $FeCl_3$
ii. Violet color with sodium nitroprusside
iii. Blue color with and acidic solution of $FeSO_4$

(A) A - ii ; B - iii ; C - i
(B) A - iii ; B - ii ; C - i
(C) A - ii ; B - i ; C - iii
(D) A - iii ; B - i ; C - ii

Answer: (B) A - iii ; B - ii ; C - i · Key from source paper

Q152 JEE Main 2015 · 10 Apr · Online MCQ

1.4 g of an organic compound was digested according to Kjeldahl's method and the ammonia evolved was absorbed in 60 mL of M/10 H_2SO_4 solution. The excess sulphuric acid required 20 mL of M/10 NaOH solution for neutralization. The percentage of nitrogen in the compound is:

(A) 24
(B) 3
(C) 5
(D) 10

Answer: (D) 10 · Key from source paper

Q153 JEE Main 2015 · 4 Apr · Offline MCQ

In Carius method of estimation of halogens, $250\ mg$ of an organic compound gave $141\ mg\ AgBr$. What is the percentage of bromine in the compound (atomic mass of $Ag = 108$ and atomic number (sic) of $Br = 80$)?

(A) 60
(B) 24
(C) 36
(D) 48

Answer: (B) 24 · Key from source paper

Q154 JEE Main 2014 · 6 Apr · Offline MCQ

For the estimation of nitrogen, 1.4 g of an organic compound was digested by the Kjeldahl method and the evolved ammonia was absorbed in 60 ml of $\frac{M}{10}$ sulphuric acid. The unreacted acid required 20 ml of $\frac{M}{10}$ sodium hydroxide for complete neutralization. The percentage of nitrogen in the compound is

(A) 6%
(B) 10%
(C) 3%
(D) 5%

Answer: (B) 10% · Key from source paper

Q155 JEE Main 2013 · 22 Apr · Online MCQ

For which of the following compounds Kjeldahl method can be used to determine the percentage of Nitrogen?

(A) Nitrobenzene
(B) Pyridine
(C) Alanine
(D) Diazomethane

Answer: (C) Alanine · Key from source paper

Q156 JEE Main 2013 · 9 Apr · Online MCQ

Which of the following compounds is not expected to show Lassaignes' test for nitrogen ?

(A) Propanenitrile
(B) Hydroxylamine hydrochloride
(C) Nitromethane
(D) Ethanamine

Answer: (B) Hydroxylamine hydrochloride · Key from source paper

Q157 AIEEE 2012 · 19 May · Online MCQ

Beilstein test is used for the estimation of which one of the following elements?

(A) S
(B) Cl
(C) C and H
(D) N

Answer: (B) Cl · Key from source paper

Q158 AIEEE 2012 · 7 May · Online MCQ

Copper wire test for halogens is known as

(A) Duma's Test
(B) Beilstein's Test
(C) Liebig's Test
(D) Lassigne's Test

Answer: (B) Beilstein's Test · Key from source paper

Q159 AIEEE 2010 MCQ

29.5mg of an organic compound containing nitrogen was digested according to Kjeldahl's method and the evolved ammonia was absorbed in 20 mL of 0.1MHCl solution. The excess of the acid required 15 mL of 0.1MNaOH solution for complete neutralization. The percentage of nitrogen in the compound is

(A) 59.0
(B) 47.4
(C) 23.7
(D) 29.5

Answer: (C) 23.7 · Key from source paper

Q160 AIEEE 2004 MCQ

The compound formed in the positive test for nitrogen with the Lassaigne solution of an organic compound is

(A) $Fe_4[Fe(CN)_6]_3$
(B) $Na_4\ [Fe(CN)_5NOS]$
(C) $Fe(CN)_3$
(D) $Na_3\ [Fe(CN)_6]$

Answer: (A) $Fe_4[Fe(CN)_6]_3$ · Key from source paper

Q161 AIEEE 2004 MCQ

The ammonia evolved from the treatment of 0.30 g of an organic compound for the estimation of nitrogen was passed in 100 mL of 0.1M sulphuric acid. The excess of acid required 20 mL of 0.5M

sodium hydroxide solution hydroxide solutio for complete neutralization. The organic compound is

(A) acetamide
(B) thiourea
(C) urea
(D) benzamide

Answer: (C) urea · Key from source paper

EdLoop JEE