

PYQSide

JEE MAIN PRINCIPLES RELATED TO PRACTICAL CHEMISTRY — QUANTITATIVE ANALYSIS OF ORGANIC COMPOUNDS — PYQS

Max. Marks: 84

Questions: 21

Section A (MCQ)

- Q.1** 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 $X = \text{_____} \times 10^{-3}$ 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

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- Q.2** 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%

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- Q.3** 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%

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- Q.4** 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

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- Q.5** 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%

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- Q.6** 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

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- Q.7** 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

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- Q.8** 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%

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- Q.9** 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

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Section B (Numerical)

- Q.10** 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]

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- Q.11** 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]

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- Q.12** 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]

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- Q.13** 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) : $\text{C}_x\text{H}_y\text{Br}_z$]

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

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- Q.14** 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]

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- Q.15** 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]

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- Q.16** 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]

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- Q.17** 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]

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- Q.18** 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]

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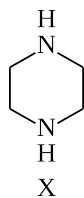
- Q.19** In Dumas' method for estimation of nitrogen 1 g of an organic compound gave 150 mL of nitrogen collected at 300 K temperature and 900 mm Hg pressure. The percentage composition of nitrogen in the compound is ____% (nearest integer) (Aqueous tension at 300 K = 15 mm Hg)

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

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- Q.20** During estimation of nitrogen by Dumas' method of compound X (0.42 g)



_____ 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]

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Q.21 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]

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ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4	5	6	7	8	9		
Ans.	1	2	2	3	4	4	2	1	2		

Section B (Numerical)

Ques.	10	11	12	13	14
Ans.	41 or 42	5	435	4	15
Ques.	15	16	17	18	19
Ans.	73	43	12	18	20
Ques.	20	21			
Ans.	109	80			