YAKEEN NEET 2.0

2026

Some Basic Concept of Chemistry

MPQ Solution - 10 | **Physical Chemistry**

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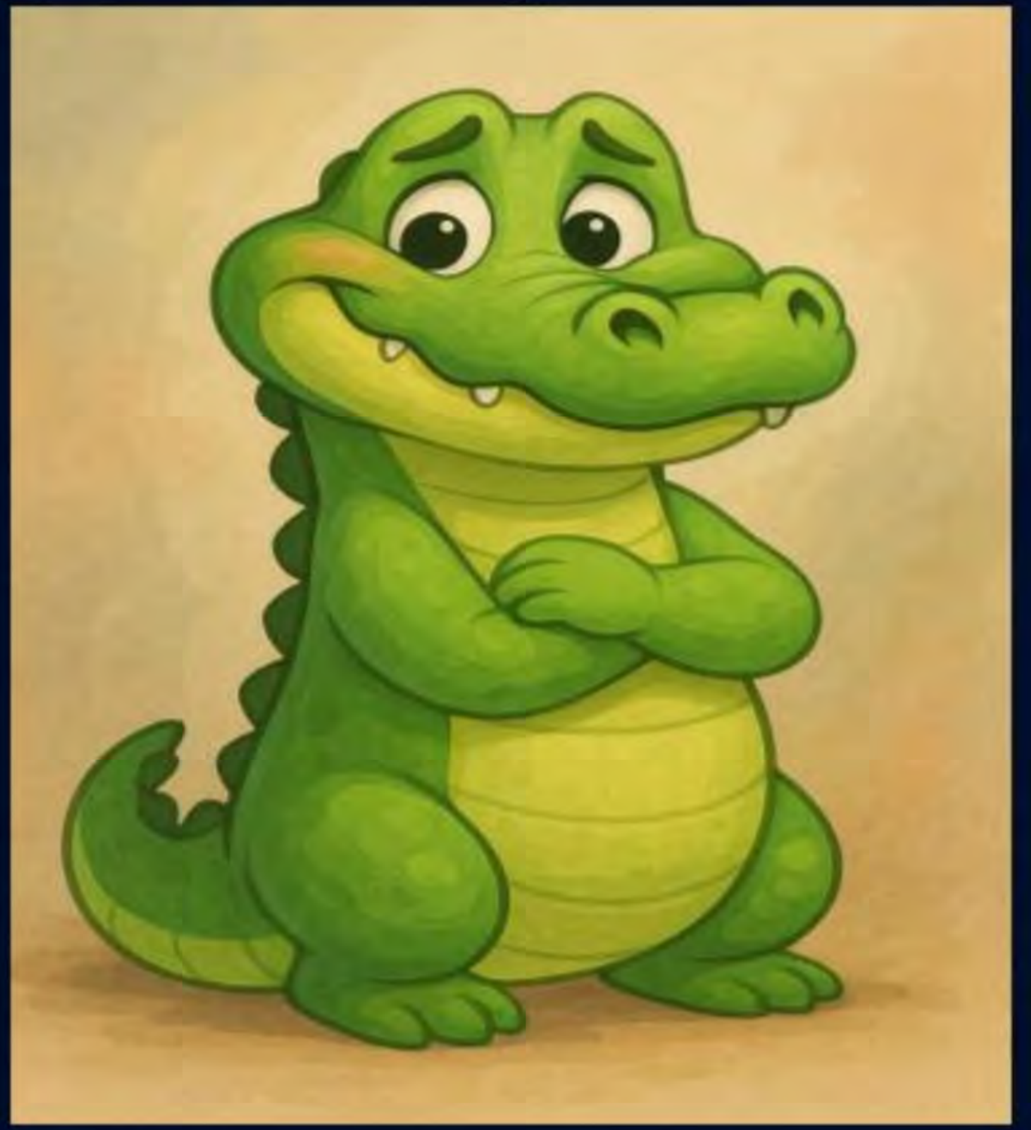
Magarmach Practice Questions (MPQ)



Question

$87.6 + 34 + 18x$

A 6.85 g sample of the hydrate $Sr(OH)_2.xH_2O$ is dried in an oven to give 3.13 g of anhydrous $Sr(OH)_2$. What is the value of x? (Atomic weights: Sr = 87.60, O = 16.0, H = 1.0)

A. 8

B. 12

C. 10

D. 6

$Sr(OH)_2 \cdot x H_2O \xrightarrow{\Delta} Sr(OH)_2 + x H_2O$

6.85 g = 3.13 g + a g

$a = 6.85 - 3.13$

$a = 3.73$ g

$(121.6 + 18x)$ has water $= 18x$

$6.85 = \frac{18x}{121.6 + 18x} \times 6.85 = 3.73$

$$123.3x = 453.568 + 67.14x$$

$$123.3x - 67.14x = 453.568$$

$$56.16x = 453.568$$

$$x = \frac{453.568}{56.16}$$

$$x \approx 8$$

Question (NCERT: PL-19 | NV, JEE Main April 13, 2023 (I))

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 % hydrogen is $\frac{56}{14} \times 10^{-1}$. (Nearest integer)

$$\% \text{ of } H = \frac{2}{18} \times \frac{\text{mass of } H_2O}{\text{mass of O.C}} \times 100 = \frac{2}{18} \times \frac{0.126}{1000} \times 4 \times 100$$

$$= \frac{56}{10} = 5.6 = 56 \times 10^{-1}$$

$$24 = \frac{12}{44} \times \frac{\text{mass of } CO_2}{\text{mass of O.C}} \times 100$$

$$\text{mass of O.C} = \frac{12}{44} \times 0.22 \times 100 = \frac{1}{4} = 0.25$$

Question (NCERT: PL-19 | NV, JEE Main June 28, 2022 (II), Same NV July 28, 2022 (I))

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 ____73____. (nearest integer)

$$\%\,C = \frac{12}{44} \times \frac{0.793}{0.492} \times 100$$

$$= \frac{79300}{5412}$$

$$= 14.65\%$$

$$\%\,H = \frac{2}{18} \times \frac{0.442}{0.493} \times 100 = \frac{44200}{4437} \approx 9.96$$

$$\%\,O = 100 - (14.65 + 9.96)$$

$$= 100 - (24.61)$$

$$= 73.39\%$$

Question (NCERT: PL-19 | NV, JEE Main June 27, 2022 (II))

116 g of a substance upon dissociation reaction, yields 7.5 g of hydrogen, 60g of oxygen and 48.5 g of carbon. Givne that the atomic masses of H, O and C are 1, 16 and 12 respectively. The data agrees with how many formulae of the following?

$\%\ of\ H = \frac{7.5}{116} \times 100 = \frac{750}{116} = 6.46\%$

$\%\ of\ C = \frac{48.5}{116} \times 100 = 41.8\%$

(A) CH_3COOH $\%\ of\ C = \frac{24}{60} \times 100 = \frac{600}{15} = \frac{120}{3} = 40\%$

$\%\ of\ H = \frac{4}{4+24+32} \times 100 = \frac{4}{60} \times 100 = \frac{4}{15} \times 100 = 6.66$

(B) $HCHO$ —— $= \frac{2}{30} \times 100 = 6.66$

(C) CH_3OOCH_3 —— $= \frac{6}{6+32+36} \times 100 = \frac{600}{74} = 8.10$

(D) CH_3CHO $\%\ of\ H = \frac{4}{4+24+16} \times 100 = \frac{400}{44} = 9.09$

CH_3OOCH_3

$\%\ of\ H = \frac{6}{24+6+32} \times 100$

$= \frac{600}{62} = 9.6\%$

Question (NCERT: PL-19 | NV, JEE Main Jan. 24, 2025 (II))

The hydrocarbon (X) with molar mass 80 g mol^{-1} and 90% carbon has _____ degree of unsaturation.

2

D.U.

↓

no. of π bonds + no. of rings

$C_{\frac{90}{12}}\ H_{\frac{10}{1}}$

$C_{\frac{7.5}{7.5}}\ H_{\frac{10}{7.5}}\ \frac{4}{3} = 1.33$

$C_{1\times3}\ H_{1.33\times3}$

C_3H_4

n = 3

X

$C_3H_8 \leftarrow C_nH_{2n+2}$

X

$C_3H_6 \leftarrow C_nH_{2n}$

$C_3H_4 \leftarrow C_nH_{2n-2}$

D.U.
0
1
2 ✓

M.F. = (E.F.)x

M.F. = $(C_3H_4)_2$

= C_6H_8

$x = \frac{8}{4} = 2$

Question (NCERT: PL-18, 19 | NV, JEE Main June 26, 2022 (I))

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)

18%

$$\%C = \frac{12}{44} \times \frac{0.2}{0.3} \times 100$$

$$= \frac{200}{11} = 18$$

18.18
11 | 200
11
90
88
20
11
90

Question (NCERT: PL-19 | JEE Main Feb. 25, 2021 (I))

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:

$$\%\,C = \frac{12}{44} \times \frac{2.64}{180} \times 100 = \frac{200}{5} = 40\%$$

$$\%\,H = \frac{2}{18} \times \frac{108}{180} \times 100 = \frac{100}{15} = \frac{20}{3} = 6.66\%$$

$$\%\,O = 100 - (40 + 6.66)$$

$$= 100 - 46.66 = 53.34\%$$

(A) 50.33

(B) 53.33 ✓

(C) 51.63

(D) 63.53

Question (JEE Main 2018)

The ratio of mass percent of C and H of an organic compound ($C_XH_YO_Z$) is 6 : 1. If one molecule of the above compound ($C_XH_YO_Z$) contains half as much oxygen as required to burn one molecule of compound C_XH_Y completely to CO_2 and H_2O. The empirical formula of compound $C_XH_YO_Z$ is :

		x	y	z
A	$C_3H_6O_3$	3	6	3
B	C_2H_4O	2	4	1
C	$C_3H_4O_2$	3	4	2
D ✓	$C_2H_4O_3$	2	4	3

$z = (x + \frac{y}{4})$

$3 \neq (3 + \frac{6}{4})$

$1 \neq (2 + \frac{4}{4})$

$2 \neq (3 + \frac{4}{4})$

$3 = (2 + \frac{4}{4})$

$$C_xH_y + \left(x + \frac{y}{4}\right)O_2$$

$C_xH_yO_2$

$$2 = \frac{1}{2}\left(x + \frac{y}{4}\right)$$

$$2 = \left(x + \frac{y}{4}\right)$$

Question (NCERT: PL-20 | NV, JEE Main April 07, 2025 (II))

Butane reacts with oxygen to produce carbon dioxide and water following the equation given below

$$C_4H_{10}(g) + \frac{13}{2}O_2(g) \rightarrow 4CO_2(g) + 5H_2O(l)$$

If 174.0 kg of butane is mixed with 320.0 kg of O_2, the volume of water formed in litres is _____. (Nearest integer) [Given : (a) Molar mass of C, H, O are 12, 1, 16 g mol^{-1} respectively, (b) Density of water = 1 g mL^{-1}]

$n_{Butane} = \frac{174000}{58} = 3000$ L.R Butane $= \frac{3000}{1}$ O_2 is L.R.

$n_{O_2} = \frac{320000}{32} = 10000$ L.R. $O_2 = \frac{10000}{6.5}$

$\frac{13}{2}$ g $\rightarrow$ 5 mole H_2O

10000 g $\rightarrow \frac{5}{13} \times 2 \times 10000$ mole

mass of $H_2O = \frac{100000}{13} \times 18$

Volume of $H_2O = \frac{100000 \times 18}{13 \times 1000}$ L

$= \frac{18000}{13} = 1384.6$ L

Question (NV, JEE Main Feb. 01, 2024 (II))

10 mL of gaseous hydrocarbon on combustion gives 40 mL of $CO_2(g)$ and 50 mL of water vapour. Total number of carbon and hydrogen atoms in the hydrocarbon is _____.

14

$$1\,C_xH_y(g) + \left(x+\frac{y}{4}\right)O_2(g) \longrightarrow x\,CO_2(g) + \frac{y}{2}H_2O(g)$$

10 ml $\longrightarrow$ 10x ml $\qquad$ $10\times\frac{y}{2}$ ml

$10x = 40$

$x = 4$

$\frac{10y}{2} = 50$

$5y = 50$

$y = 10$

C_4H_{10}

$4+10=14$

THANK YOU