YAKEEN NEET 2.0

2026

Some Basic Concept of Chemistry

MPQ Solution - 13 | **Physical Chemistry**

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Magarmach Practice Questions (MPQ)

QUESTION

The density of NaOH solution is 1.2 g cm^{-3}. The molality of this solution is _____ m. (Round off to the nearest integer)

[Use : Atomic masses : Na = 23.0 u, O = 16.0 u, H = 1.0 u. Density of H_2O = 1.0 gem^{-3})

[JEE MAINS 27 July. 2021 (Shift-I)]

$d_{NaOH\ sol^n} = 1.2\ g/ml$

$m = \frac{n_B \times 1000}{W_A(g)}$

$= \frac{\frac{5}{200} \times 1000}{40 \times 1000}$

$= 5\ m$

d of $H_2O = 1\ g/cm^3 \rightarrow$ 1 ml H_2O mass = 1 g.

1000 ml ~ = 1000 g.

1 ml sol^n mass = 1.2 g

1000 ml ~ = 1200 g

$W_B = 1200 - 1000$

$= 200\ g$

$M_B = 40\ g$

$W_A = 1000\ g$

QUESTION

$M_B = 46\ g$

An aqueous solution of ethanol (C_2H_5OH) has density 1.025 g/mL and it is 2 M. What is the molality of this solution?

(Molar mass of ethanol = 46 g)

$$M = \frac{md \times 1000}{1000 + mM_B}$$

1. 1.79
2. 2.143
3. 1.951
4. None of these

$$2 = \frac{1.025 \times m \times 1000}{1000 + 46m}$$

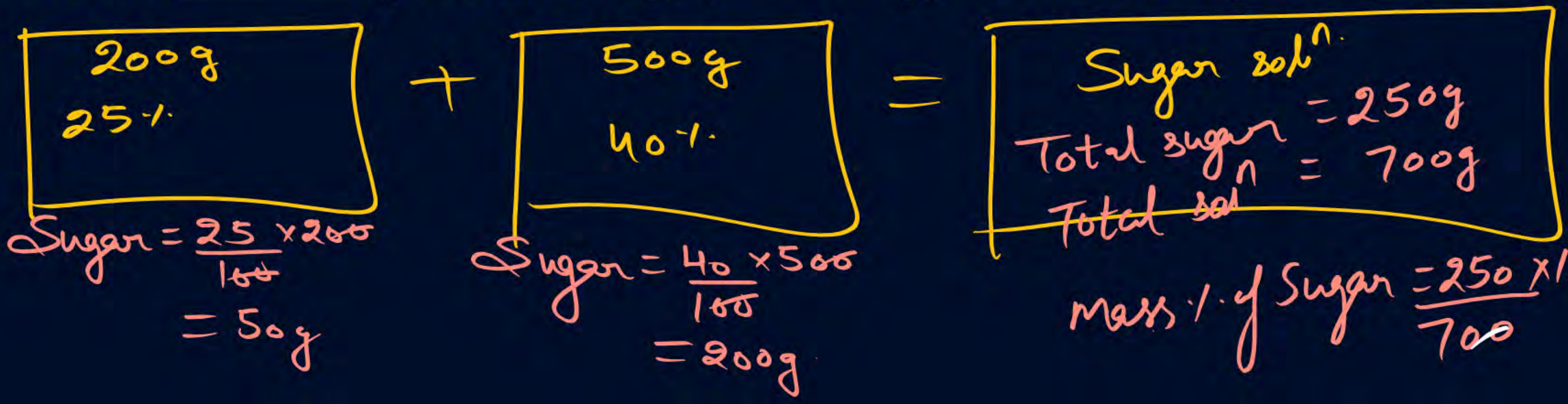
$$2000 + 92m = 1025m$$

$$933m = 2000$$

$$m = \frac{2000}{933}$$

QUESTION

A solution of sugar is obtained by mixing 200 g of its 25% solution and 500 g of its 40% solution (both by mass). The mass percentage of the resulting sugar solution is _____. (Nearest integer) [JEE MAINS 11 Apr. 2023 (Shift-I)]



QUESTION

The density of 3 M solution of NaCl is 1.0 g mL^{-1}. Molality of the solution is _____ $\times 10^{-2}$ m. (Nearest integer).

Given : Molar mass of Na and Cl is 23 and 35.5 $gmol^{-1}$ respectively.

[JEE MAINS 1 Feb. 2023 (Shift-I)]

$M = 3\,M \rightarrow$ 3 mole solute in 1000 ml soln

$d_{soln} = 1\,g/ml$

$$m = \frac{n_B \times 1000}{w_A(g)}$$

$w_B = 3 \times 58.5$

$= 175.5\,g$

$w = 1000 \times 1 = 1000 = w_A + w_B$

$1000 = w_A + 175.5$

$w_A = 824.5$

$$m = \frac{3 \times 1000}{824.5}$$

QUESTION

$63.5+96+90=$

If 80 g of copper sulphate $CuSO_4 \cdot 5H_2O$ is dissolved in deionised water to make 5 L solution, the concentration of the copper sulphate solution is ____ $x \times 10^{-3}$ mol L^{-1}. The value of x is _____.

[Atomic masses: Cu: 63.54 u, S: 32 u, O:16 u, H: 1 u]

[JEE MAINS 1 Sept. 2021 (Shift-II)]

$W = 80g$

$V(L) = 5L$

$$M = \frac{n_B}{V(L)}$$

$$M = \frac{80}{249.5 \times 5}$$

QUESTION

$39 + 35.5 = 74.5$

An aqueous KCl solution of density 1.20 g mL^{-1} has a molality of 3.30 mol kg^{-1}. The molarity of the solution in mol L^{-1} is _____. [Molar mass of KCl = 74.5]

[JEE MAINS 26 Aug. 2021 (Shift-I)]

$$M = \frac{3.3 \times 1.2 \times 1000}{1000 + 3.3 \times 74.5} \, M$$

Question (NCERT: PL-20 | NV, JEE Main April 08, 2025 (II))

20 mL of sodium iodide solution gave 4.74 g silver iodide when treated with excess of silver nitrate solution. The molarity of the sodium iodide solution is _____ M. (Nearest Integer value) (Given : Na = 23, I = 127, Ag = 108, N = 14, O = 16 g mol^{-1})

$$NaI_{(aq.)} + AgNO_{3(aq.)} \longrightarrow AgI_{(s)} + NaNO_{3(aq.)}$$

$$\frac{20}{1000} \times M \times 1 = \frac{4.74}{235}$$

$$M = \frac{4.74 \times 1000}{235 \times 20}$$

THANK YOU