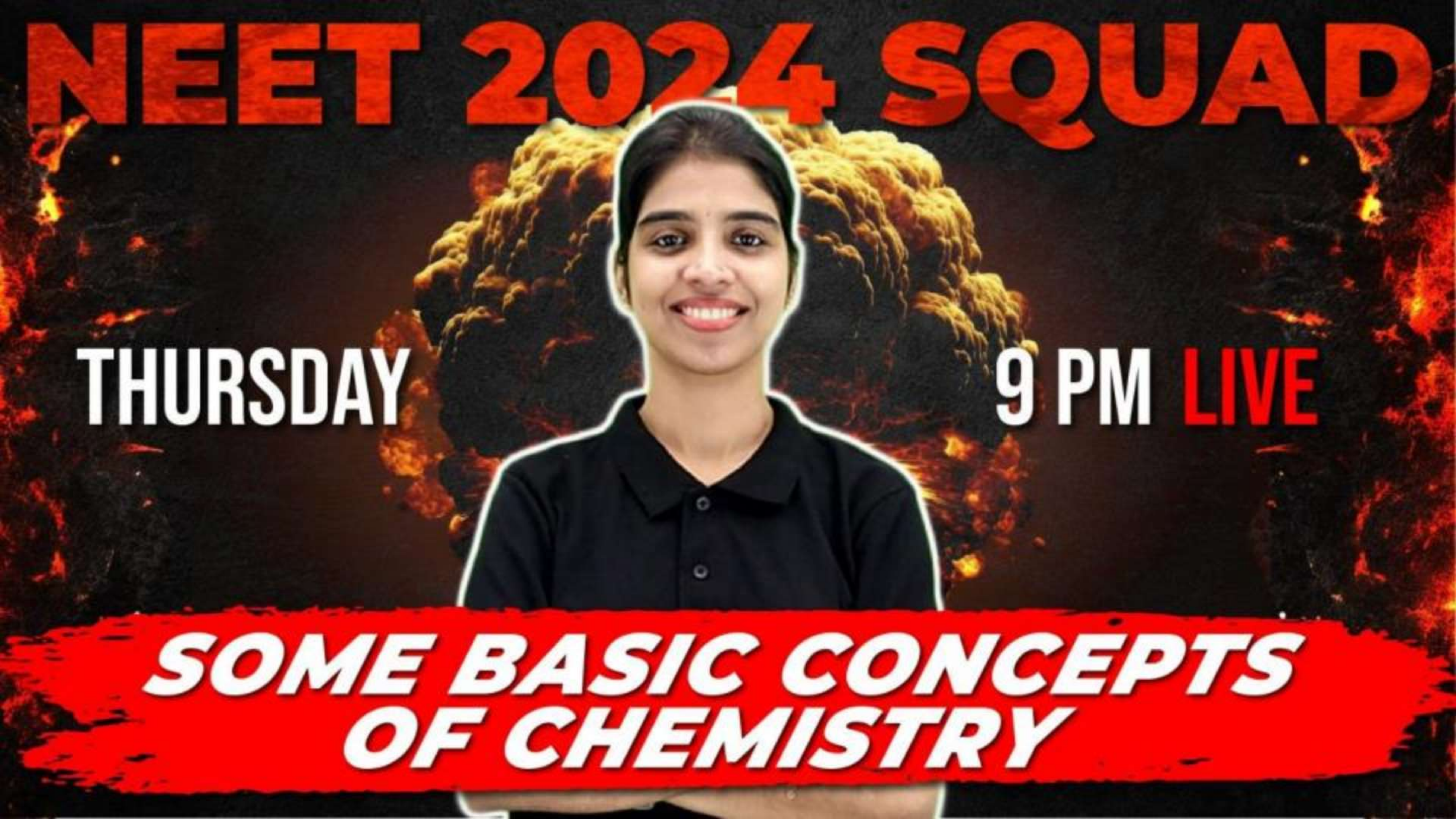
NEET 2024 SQUAD
THURSDAY
9 PM LIVE
SOME BASIC CONCEPTS
OF CHEMISTRY

Plus One

PRITHVI

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ALL SUBJECTS

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wait.

Jee → ഇപ്പൊ കേൾക്കാമോ?

1 min.

Vedha Batch.

Cu forms two oxides cuprous and cupric oxides which law can be proved by the weights of Cu and O

(1) Constant composition

(2) Multiple proportions

(3) Conservation of mass

(4) Definite proportions

An organic compound contains 78% (by wt.) carbon and remaining percentage of hydrogen. The right option for the empirical formula of this compound is : [Atomic wt. of C is 12, H is 1]

[NEET-2021]

(1) CH_4 (2) CH

(3) CH_2 (4) CH_3

	C	H
%	78%	22%
at. mass	12	1
	78/12 = 6.5	22/1 = 22
	6.5/6.5	22/6.5

1 : 3

CH_3

Molarity of 29% $\left(\frac{w}{w}\right)$ H_2SO_4 solution whose density is 1.22 g ml^{-1}, is [NCERT Pg. 23]

(1) 1.8 M
(2) 3.6 M
(3) 2.4 M
(4) 1.2 M

$$M = \frac{\%\text{ by mass} \times d \times 10}{\text{M.Mass of solute}}$$

$$= \frac{29 \times 1.22 \times 10}{98} = 3.6\,M$$

The density of 2 M aqueous solution of NaOH is 1.28 g/cm^3. The molality of the solution is [Given that molecular mass of NaOH = 40 g mol^{-1}]

1 mol → 40 g.

[NEET-2019 (Odisha)]

(1) 1.32 m (2) 1.20 m

(3) 1.56 m (4) 1.67 m ✓

2 moles of solute

2 moles of NaOH → 80 g.

molality(m) = $\frac{n_2}{W_1 (kg)}$

2 M aq. solution → 2 moles of solute in 1 L solution (1000 mL)

$d = \frac{m}{V} = 1.28 \, g/ml$

$m = d \times V = 1.28 \times 1000 = 1280 g$ (Total mass of solution)

Mass of solvent = Mass of Solution − Mass of solute

= 1280 − 80

= 1200 g

$m = \frac{n_2 \times 1000}{W_1 (g)}$

$= \frac{2 \times 1000}{1200} = 1.67 m$

The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is : [NEET-2019]

(1) 10 (2) 20

(3) 30 (4) 40

1 mol 3 mol 2 mol

$N_2 + 3H_2 \longrightarrow 2NH_3$

? 20 moles

$3 \text{ mol } H_2 \longrightarrow 2 \text{ mol } NH_3$

$\frac{3}{2} \text{ mol } H_2 \longleftarrow 1 \text{ mol } NH_3$

$30 = \frac{60}{2} \Leftarrow \frac{3}{2} \times 20 \longleftarrow 20 \text{ mol } NH_3$

X Y

$n = \frac{W}{M}$ ✓

$M = \frac{W}{n}$

XY_2	X_3Y_2
$n = 0.1$	$n = 0.05$
$W = 10g$	$W = 9g$

Suppose the elements X and Y combine to form two compounds XY_2 and X_3Y_2. When 0.1 mole of XY_2 weighs 10 g and 0.05 mole of X_3Y_2 weighs 9 g, the atomic weights of X and Y are

[NEET-Phase-2-2016]

(1) 40, 30 ✓

(2) 60, 40

(3) 20, 30

(4) 30, 20

$M = W/n = \frac{10}{0.1} = 100$

$M = W/n = \frac{9}{0.05} = 180$

$XY_2 \Rightarrow x + 2y = 100$ (M.Mass) — (1)

$X_3Y_2 \Rightarrow 3x + 2y = 180$ (M.Mass) — (2)

(2) − (1) $2x = 80$

$x = 80/2 = 40$ $y = 30$

A mixture of gases contains H_2 and O_2 gases in the ratio of 1 : 4 (w/w). What is the molar ratio of the two gases in the mixture? [AIPMT-2015]

(1) 2 : 1
(2) 1 : 4
(3) 4 : 1
(4) 16 : 1

$H_2 \rightarrow 1x$ g no. of moles of $H_2 = \frac{x}{2}$ $a/b = a:b$

$O_2 \rightarrow 4x$ g n ,, ,, ,, $O_2 = \frac{4x}{32}$

$\frac{x}{2} \div \frac{4x}{32} \Rightarrow \frac{x}{2} \times \frac{32}{4x} = \frac{32}{8} = \frac{4}{1}$

$= 4:1$

$$\text{no. of moles} = \frac{6.02 \times 10^{20}}{6.02 \times 10^{23}}$$

$$= 10^{-3}$$

6.02×10^{20} molecules of urea are present in 100 mL of its solution. The concentration of solution is [NEET-2013]

(1) 0.01 M

(2) 0.001 M

(3) 0.1 M

(4) 0.02 M

$$\text{Concentration} = \frac{\text{no. of moles}}{\text{volumes}}$$

$$= \frac{10^{-3} \times 1000}{100} = 10^{-3} \times 10$$

$$= 10^{-2} = 0.01$$

$n_{solute} = 1$ ✓

molar

Mole fraction of the solute in a 1.00 molal aqueous solution is [AIPMT (Prelims)-2011]

(1) 1.7700 (2) 0.1770

(3) 0.0177 ✓ (4) 0.0344

$n_{solvent} = \frac{W}{M} = \frac{1000}{18} = 55.5$

★ $\chi_{solute} = \frac{\text{no. of moles of solute}}{\text{Total no. of moles}} = \frac{1}{1+55.5} = \frac{1}{56.5} = 0.0177$

1 molal aq. solution :→ 1 mole of solute in 1 Kg (1000g) solvent

Which has the maximum number of molecules among the following? [AIPMT (Mains)-2011]

(1) 8 g H_2 ✓

(2) 64 g SO_2

(3) 44 g CO_2

(4) 48 g O_3 $\frac{48}{48} \times N_A = N_A$

1) 8g H_2 = no. of moles $\times N_A = \frac{8}{2} \times N_A = 4N_A$

2) 64g $SO_2 \Rightarrow \frac{64}{64} \times N_A = N_A$

3) 44g $CO_2 = \frac{44}{44} \times N_A = N_A$

10 g of hydrogen and 64 g of oxygen were filled in a steel vessel and exploded. Amount of water produced in this reaction will be

[AIPMT (Prelims)-2009]

(1) 3 mol (2) 4 mol

(3) 1 mol (4) 2 mol

$n = \frac{W}{M} = \frac{72}{18} = 4\ mol$

$H_2 + \frac{1}{2}O_2 \rightarrow H_2O$

2 mol 1 mol 2 mol

$2H_2 + O_2 \rightarrow 2H_2O$

4g 32g 36g

given 10g 64g ?

L.R is O_2.

$32g\ O_2 \rightarrow 36g\ H_2O$

$1g\ O_2 \rightarrow \frac{36}{32}g\ H_2O$

$64g\ O_2 \rightarrow \frac{36}{32} \times 64 = 72g$ H_2O

$_7N \rightarrow 2, 5$

valence e^-

$N_3 \rightarrow 14 \times 3 = 42$

. The total number of valence electrons in 4.2 g of N_3^- ion is (N_A is the Avogadro's number)

(1) 2.1 N_A

(2) 4.2 N_A

(3) 1.6 N_A

(4) 3.2 N_A

1 mol $N_3^- \rightarrow (5 \times 3) + 1 = 16 e^-s$

no. of N_3^- ion in 4.2g $\Rightarrow \frac{4.2}{42} \times N_A = 0.1 N_A$ ions.

no. of valence e^-s in 4.2g $\Rightarrow 0.1 \times N_A \times 16$

$= 1.6 N_A$

An organic compound containing C and H gave the following analysis C = 40%, H = 6.7%. Its empirical formula would be

(1) CH_4

(2) CH_2O

(3) $C_2H_4O_2$

(4) C_2H_4

The number of significant figures in 2.653×10^4 is

(1) 8

(2) 4

(3) 7

(4) 1

2.653×10^4

4

Empirical formula of a compound is CH_2O. The molecular formula of the compound cannot be

(1) CH_2O

(2) $C_6H_{12}O_6$

(3) $C_{12}H_{22}O_{11}$ ✓

(4) CH_3COOH

CH_2O

$M \cdot F = n \times E \cdot F$

$n \rightarrow 1, 2, 3, 4 \ldots$

CH_2O (E.F)

$C_2H_4O_2$.

6.025×10^{20} molecules of acetic acid are present in 500 ml of its solution. The concentration of solution is

(1) 0.002 M (2) 10.2 M

(3) 0.012 M (4) 0.001 M

In the reaction,

$$4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(l)$$

when 1 mole of ammonia and 1 mole of O_2 are made to react to completion

(1) All the oxygen will be consumed

(2) 1.0 mole of NO will be produced

(3) 1.0 mole of H_2O is produced

(4) All the ammonia will be consumed

Mole fraction of solute in aqueous solution of 30% NaOH is

(1) 0.16

(2) 0.05

(3) 0.25

(4) 0.95

B has two isotopes ^{10}B (19%), ^{11}B (81%). The atomic mass of B is

(1) 10.81 (2) 10^5

(3) 11 (4) 10.5

Which of the following is not related to Dalton's atomic theory? **[NCERT Pg. 16]**

(1) Matter consists of indivisible atoms

(2) All the atoms of a given element have identical chemical properties

(3) Matter can be classified into elements and compounds

(4) Compounds are formed when atoms of different elements combine in fixed ratio