YAKEEN NEET 2.0

2026

Some Basic Concept of Chemistry

MPQ Solution - 06 | **Physical Chemistry**

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Magarmach Practice Questions (MPQ)

Question

Statement-I: One atomic mass unit is defined as one twelfth of the mass of one carbon-12 atoms.

Statement-II: Carbon-12 isotopes is the most abundant isotope of carbon and has been chosen as standard.

A. Statement-I is true, Statement-II is true; Statement-II is correct explanation for Statement-I.

B. Statement-I is true, Statement-II is true; Statement-II is not a correct explanation for Statement-I.

C. Statement-I is true, Statement-II is false

D. Statement-I is false, Statement-II is true

Question (NEET 2014)

Equal masses of H_2 & O_2 and methane (CH_4) have been taken in a container of volume V at temperature 27°C in identical conditions. The ratio of the volumes of gases H_2 : O_2 : methane would be

$V_{H_2} : V_{O_2} : V_{CH_4}$

$\frac{x}{2} : \frac{x}{32} : \frac{x}{16}$

$\frac{16}{32} : \frac{1}{32} : \frac{2}{32}$

(A) 8 : 16 : 1

(B) 16 : 8 : 1

(C) 16 : 1 : 2 ✓

(D) 8 : 1 : 2

Question (NEET 1990)

The molecular weight of O_2 and SO_2 are 32 and 64 respectively. At 15°C and 150 mm Hg pressure, one litre of O_2 contains 'N' molecules. The number of molecules in two litres of SO_2 under the same conditions of temperature and pressure will be

(A) N/2

(B) N

(C) 2 N

(D) 4 N

$V_{O_2} = 1L$; Contains N molecules

$V_{SO_2} = 2L$ —— 2N ——

$2L \longrightarrow 2N$

T & P $\Rightarrow$ moles ratio = molecules ratio = V ratio

$V_{O_2} : V_{SO_2}$

$\frac{1}{x} : \frac{1}{x}$

Question (NEET 2024)

^4He

The highest number of helium atoms is in

(A) 4 mol of helium $4 \times N_A$

(B) 4 u of helium 1 atom.

(C) 4 g of helium $\frac{4}{4} \times N_A$

(D) 2.271098 L of helium at STP

$\frac{1}{10} \frac{227}{227} \times N_A$

Question (NEET 2020)

Which one of the followings has maximum number of atoms?

(A) 1 g of $Ag_{(s)}$ [Atomic mass of Ag = 108] $\frac{1}{108} \times N_A \times 1$

(B) 1 g of $Mg_{(s)}$ [Atomic mass of Mg = 24] $\frac{1}{24} \times N_A \times 1$

(C) 1 g of $O_{2(g)}$ [Atomic mass of O = 16] $\frac{1}{32} \times N_A \times 2$

(D) 1 g of $Li_{(s)}$ [Atomic mass of Li = 7] $\frac{1}{7} \times N_A \times 1$

Question (NEET 2018)

In which case is number of molecules of water maximum?

(A) 18 mL of water $\because d = 1\,g/ml \Rightarrow$ mass $H_2O = 18 \times 1 = 18\,g$ $\quad \frac{18}{18} = 1$ $\quad$ molecules $1 \times N_A$

(B) 0.18 g of water $\quad \frac{0.18}{18} = 0.01$ $\quad 0.01 \times N_A$

(C) 0.00224 L of water vapours at 1 atm and 273 K $\quad \frac{0.00224}{22.4} \rightarrow 10^{-3}$ $\quad \frac{0.00224}{22.4} \times N_A$ $\quad 10^{-3} \times N_A$

(D) 10^{-3} mol of water

Question (NEET 2016-II)

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

(A) 40, 30

(B) 60, 40

(C) 20, 30

(D) 30, 20

a b

$a + 2b = 100$

$40 + 2b = 100$

$2b = 60$

$b = 30$

$\frac{0.1}{1}(a + 2b) = 100$

$\frac{0.05}{1}(3a + 2b) = \frac{9}{0.05} = 180$

$a + 2b = 100$

$\pm 3a \pm 2b = \pm 180$

$+2a = +80$

$a = \frac{80}{2} = 40$

Question (NEET 2015)

The number of water molecules is maximum in

(A) 1.8 gram of water $\frac{1.8}{18} \times N_A$

(B) 18 gram of water $\frac{18}{18} \times N_A$

(C) 18 moles of water $18 \times N_A$

(D) 18 molecules of water.

Question (NEET 2015-Cancelled)

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?

$$\frac{n_{H_2}}{n_{O_2}} = \frac{1 \times 32}{2 \times 4} = \frac{4}{1}$$

(A) 16:1

(B) 2:1

(C) 1:4

(D) 4:1

Question (NEET 2011)

Which has the maximum number of molecules among the following?

(A) 44 g CO_2 $\frac{44}{44} \times N_A$

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

(C) 8 g H_2 $\frac{8}{2} \times N_A$

(D) 64 g SO_2 $\frac{64}{64} \times N_A$

Question (NEET 2010)

The number of atoms in 0.1 mol of a triatomic gas is ($N_A = 6.02 \times 10^{23}\ mol^{-1}$)

(A) 6.026×10^{22}

(B) 1.806×10^{23}

(C) 3.6×10^{23}

(D) 1.8×10^{22}

$0.1 \times N_A \times 3$

$0.1 \times 6.022 \times 10^{23} \times 3$

1.8066×10^{23}

Question (NEET 2004)

The maximum number of molecules is present in

(A) 15 L of H_2 gas at STP $\frac{15}{22.4} \times N_A$ $\frac{2 \times N_A}{3}$

(B) 5 L of N_2 gas at STP $\frac{5}{22.4} \times N_A$

(C) 0.5 g of H_2 gas $\frac{0.5}{2} \times N_A$ $\frac{1}{4}$

(D) 10 g of O_2 gas $\frac{10}{32} \times N_A = 0.3125 \times N_A$

Question (NEET 2002)

Which has maximum molecules?

(A) 7 g N_2 $\frac{7}{28} \times N_A$

(B) 2 g H_2 $\frac{2}{2} \times N_A$

(C) 16 g NO_2 $\frac{16}{46} \times N_A$

(D) 16 g O_2 $\frac{16}{32} \times N_A$

Question (NEET 2001)

Specific volume of cylindrical virus particle is 6.02×10^{-2} cc / g whose radius and length are 7 Å and 10 Å respectively. If $N_A = 6.02 \times 10^{23}$ find molecular weight of virus.

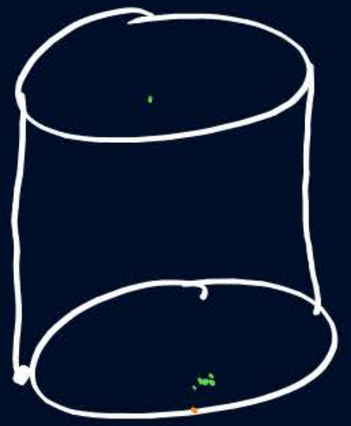
(A) 15.4 kg/mol

(B) 1.54×10^4 kg / mol

(C) 3.08×10^4 kg / mol

(D) 3.08×10^3 kg / mol

$1 Cm^3 = 1 C.C = 1 ml$



$$\text{Sp. Volume} = 6.02 \times 10^{-2} \text{ ml/g.}$$

$r = 7A^\circ = 7 \times 10^{-8} cm$ ↳ 1g of Virus has Volume $= 6.02 \times 10^{-2}$ ml

$d = 10A^\circ = 10 \times 10^{-8} cm$

1 molecule mass = ?

N_A molecules mass = ?

Vol. of Cylinder (Vol. of 1 Virus) $= \pi r^2 h = 3.14 \times (7 \times 10^{-8})^2 (10 \times 10^{-8})$ ml

$= 3.14 \times 49 \times 10^{-23}$ ml

$$\text{no. of molecules} = \frac{6.02 \times 10^{-2}}{3.14 \times 49 \times 10^{-23}} \times 10^{21}$$

$$= \frac{602}{15386} \times 10^{21}$$

$$= 0.0391 \times 10^{21}$$

0.0391×10^{21} molecules mass $= 1\,g$.

$$6.02 \times 10^{23} \text{ ——— } = \frac{1}{0.0391 \times 10^{21}} \times 6.02 \times 10^{23} = \frac{602}{0.0391} = 15396\,g$$

$$= 15.396\,kg$$

Question (NEET 1999)

The number of atoms in 4.25 g of NH_3 is approximately

(A) 4×10^{23}

(B) 2×10^{23}

(C) 1×10^{23}

(D) 6×10^{23}

$$\frac{4.25}{17} \times N_A \times 4$$

$$4$$

Question (NEET 1995)

The number of moles of oxygen in one litre of air containing 21% oxygen by volume, under standard conditions, is

$n_{O_2} = ?$ 1L of air $\Rightarrow V_{O_2} = \frac{21}{100} \times 1 = 0.21L$

(A) 0.0093 mol

(B) 2.10 mol

$n_{O_2} = \frac{0.21}{22.4} = \frac{21}{2240}$

(C) 0.186 mol

(D) 0.21 mol

Question (NEET 1994)

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

$\frac{4.2 \times N_A \times 16}{42} = 1.6 N_A$

$_7N$ $1s^2 2s^2 2p^5$

N has Val. $e^- = 5$

N_3^- ~~~ $= 5 \times 3 + 1 = 16$

(A) $2.1\ N_A$

(B) $4.2\ N_A$

(C) $1.6\ N_A$

(D) $3.2\ N_A$

Question (NEET 1990)

The number of gram molecules of oxygen in 6.02×10^{24} CO molecules is

(A) 10 g molecules

(B) 5 g molecules

(C) 1 g molecule

(D) 0.5 g molecules

$$\frac{6.02 \times 10^{24}}{6.02 \times 10^{23}} \; 10$$

Question (NEET 1989)

The number of oxygen atoms in 4.4 g of CO_2 is

A. 1.2×10^{23}

B. 6×10^{22}

C. 6×10^{23}

D. 12×10^{23}

$\frac{4.4}{44} \times N_A \times 2$

$\frac{1}{10}$

$\frac{2}{10} \times 6 \times 10^{23}$

THANK YOU