YAKEEN NEET 2.0

2026

Some Basic Concept of Chemistry

MPQ Solution - 14 | **Physical Chemistry**

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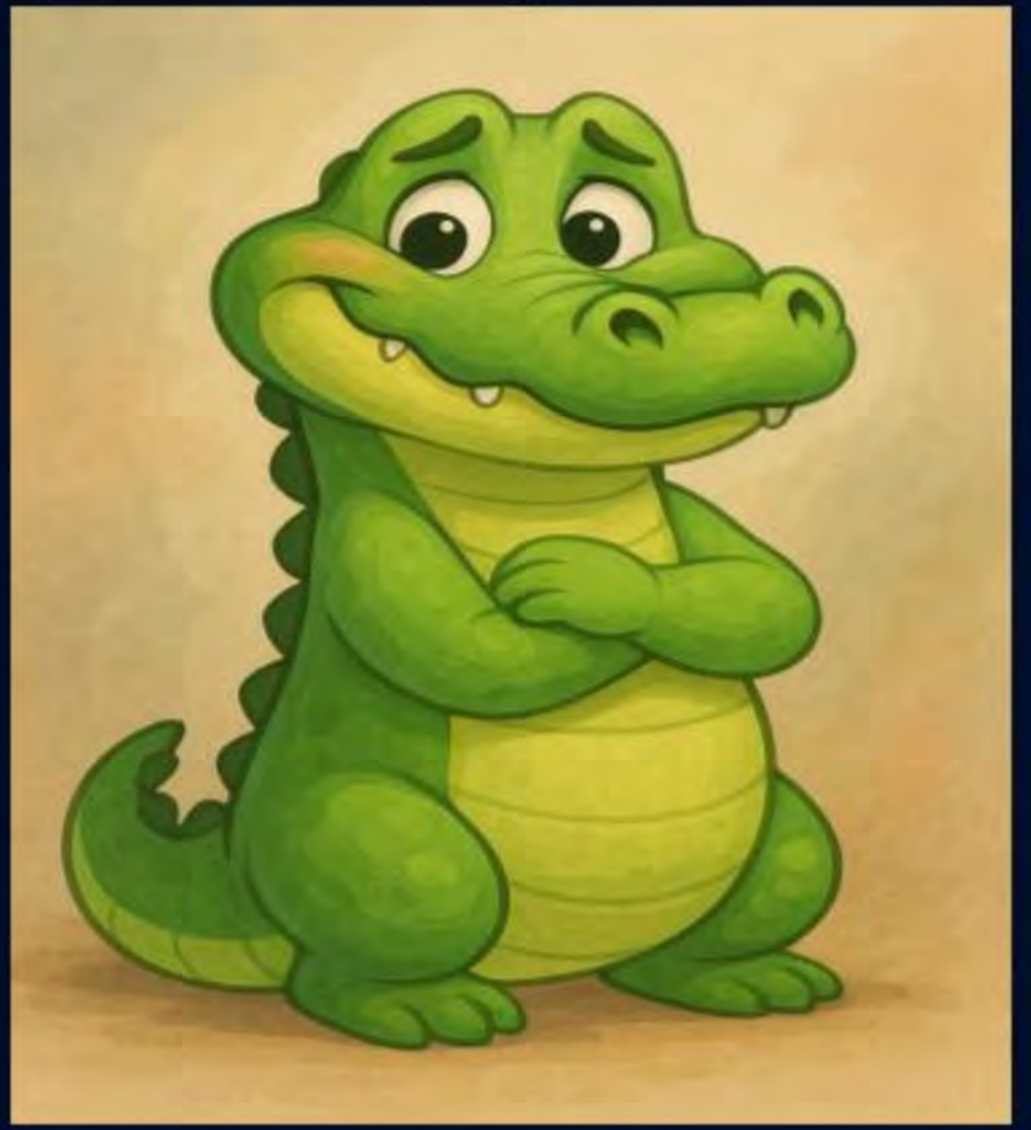
Magarmach Practice Questions (MPQ)



QUESTION (NCERT Exemplar)

A measured temperature on Fahrenheit scale is 200 °F. What will this reading be on Celsius scale?

(A) 40 °C ✗

(B) 94 °C

(C) 93.3 °C ✓

(D) 30 °C ✗

$$^\circ F = \frac{9}{5}{}^\circ C + 32$$

$$200 - 32 = \frac{9}{5}\,^\circ C$$

$$\frac{168 \times 5}{9} = {}^\circ C$$

$$\frac{\overset{22}{\cancel{168}}}{9}$$

$$\begin{array}{r} 500 \\ 300 \\ 40 \\ \hline 840 \\ 9 \end{array} = 93.3$$

QUESTION (NCERT Exemplar)

What will be the molarity of a solution, which contains 5.85 g of NaCl(s) per 500 mL?

(A) 4 mol L^{-1}

(B) 20 mol L^{-1}

(C) 0.2 mol L^{-1} ✓

(D) 2 mol L^{-1}

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

$$= \frac{5.85 \times 1000}{500 \times 58.5} = \frac{1}{5} = 0.2\ M$$

QUESTION (NCERT Exemplar)

If 500 mL of a 5M solution is diluted to 1500 mL, what will be the molarity of the solution obtained?

$M = \frac{n_B}{V_T}$

$M_1V_1 = M_2V_2$ 3

$5 \times 500 = M_2 \times 1500$

$M_2 = \frac{5}{3} = 1.66\ M$

(A) 1.5 M

(B) 1.66 M ✓

(C) 0.017 M

(D) 1.59 M

QUESTION (NCERT Exemplar)

The number of atoms present in one mole of an element is equal to Avogadro number. Which of the following element contains the greatest number of atoms?

$n \times N_A \times \text{atomicity}$

(A) 4g He $\frac{4}{4} \times N_A \times 1$

(B) 46g Na $\frac{46}{23} \times N_A \times 1$

(C) 0.40g Ca $\frac{0.4}{40} \times N_A \times 1$

(D) 12g He $\frac{12}{4} \times N_A \times 1$ ✓

QUESTION (NCERT Exemplar)

If the concentration of glucose ($C_6H_{12}O_6$) in blood is 0.9 g L^{-1}, what will be the molarity of glucose in blood?

$$M = \frac{0.9}{180 \times 1} = \frac{9}{1800} = \frac{1}{200} = 0.005M$$

(A) 5 M

(B) 50 M

(C) 0.005 M

(D) 0.5 M

QUESTION (NCERT Exemplar)

What will be the molality of the solution containing 18.25 g of HCl gas in 500 g of water?

$$m = \frac{18.25 \times 1000}{\frac{36.5}{2} \times 500} = 1\,m$$

(A) 0.1 m

(B) 1 M

(C) 0.5 m

(D) 1 m ✓

QUESTION (NCERT Exemplar)

$M = \frac{n}{V(L)}$ He Hg

One mole of any substance contains 6.022×10^{23} atoms/molecules. Number of molecules of H_2SO_4 present in 100 mL of 0.02M H_2SO_4 solution is _____.

$n \times N_A$

$\frac{0.02 \times 100}{1000} \times 6.022 \times 10^{23} = 12.044 \times 10^{20}$

(A) 12.044×10^{20} molecules

(B) 6.022×10^{23} molecules

(C) 1×10^{23} molecules

(D) 12.044×10^{23} molecules

QUESTION (NCERT Exemplar)

What is the mass percent of carbon in carbon dioxide?

CO_2

$\text{mass \% of C} = \frac{12}{44} \times 100 = \frac{300}{11} = 27\frac{3}{11}$

(A) 0.034 %

(B) 27.27 %

(C) 3.4 %

(D) 28.7 %

QUESTION (NCERT Exemplar)

$12+2+16=30$

The empirical formula and molecular mass of a compound are CH_2O and 180 g respectively. What will be the molecular formula of the compound?

(A) $C_9H_{18}O_9$

(B) CH_2O

(C) $C_6H_{12}O_6$

(D) $C_2H_4O_2$

$M.F. = (CH_2O)x$

$= (CH_2O)_6$

$x = \frac{180}{30} = 6$

QUESTION (NCERT Exemplar)

If the density of a solution is 3.12 g mL^{-1}, the mass of 1.5 mL solution in significant figures is _____.

(A) 4.7 g

(B) 4680×10^{-3} g

(C) 4.680 g

(D) 46.80 g

Mass = 1.5 × 3.12

= 4.68 g

= 4.7 g

QUESTION (NCERT Exemplar)

$2Na(s) + Cl_2(g) \rightarrow 2NaCl(s)$

Which of the following statements about a compound is incorrect?

(A) A molecule of a compound has atoms of different elements.

(B) A compound cannot be separated into its constituent elements by physical methods of separation.

(C) A compound retains the physical properties of its constituent elements.

CO2

(D) The ratio of atoms of different elements in a compound is fixed.

QUESTION (NCERT Exemplar)

Which of the following statements is correct about the reaction given below:

$$2Fe(s) + 3O_2(g) \longrightarrow 2Fe_2O_3(g)$$

A Total mass of iron and oxygen in reactants = total mass of iron and oxygen in product therefore it follows law of conservation of mass.

B Total mass of reactants = total mass of product; therefore, law of multiple proportions is followed.

C Amount of Fe_2O_3 can be increased by taking any one of the reactants (iron or oxygen) in excess.

D Amount of Fe_2O_3 produced will decrease if the amount of any one of the reactants (iron or oxygen) is taken in excess.

QUESTION (NCERT Exemplar)

Which of the following reactions is not correct according to the law of conservation of mass.

(A) $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$

(B) $C_3H_8(g) + O_2(g) \rightarrow CO_2(g) + H_2O(g)$

(C) $P_4(s) + 5O_2(g) \rightarrow P_4O_{10}(s)$

(D) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

QUESTION (NCERT Exemplar)

$C + O_2 \rightarrow CO$ (16 g) → 1
$C + O_2 \rightarrow CO_2$ (32 g) → 2
2 : 1

Which of the following statements indicates that law of multiple proportion is being followed.

A Sample of carbon dioxide taken from any source will always have carbon and oxygen in the ratio 1 : 2. ✗

B Carbon forms two oxides namely CO_2 and CO, where masses of oxygen which combine with fixed mass of carbon are in the simple ratio 2 : 1. ✓

C When magnesium burns in oxygen, the amount of magnesium taken for the reaction is equal to the amount of magnesium in magnesium oxide formed. ✗

D At constant temperature and pressure 200 mL of hydrogen will combine with 100 mL oxygen to produce 200 mL of water vapour.

$2H_2(g) + 1O_2(g) \rightarrow 2H_2O(g)$

MULTIPLE CHOICE QUESTIONS

QUESTION* (NCERT Exemplar)

One mole of oxygen gas at STP is equal to _____.

1 mole O_2 (g)
$1 \times 32 = 32$ g.

(A) 6.022×10^{23} molecules of oxygen

$1 \times N_A \times 2$

(B) 6.022×10^{23} atoms of oxygen

(C) 16 g of oxygen

(D) 32 g of oxygen

QUESTION* (NCERT Exemplar)

Sulphuric acid reacts with sodium hydroxide as follows:

$$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$$

When 1L of 0.1M Sulphuric acid solution is allowed to react with 1L of 0.1M sodium hydroxide solution, the amount of sodium sulphate formed and its molarity in the solution obtained is:

(A) 0.1 mol L^{-1}

(B) 7.10 g

(C) 0.025 mol L^{-1}

(D) 3.55 g

n 0.1×1 — 0.1×1 — 0.1/g = 0.05

L.R 0.1/1

$M = \frac{n_B}{V(L)} = \frac{0.05}{2} = 0.025\ M$

2 → 1

0.1 → $\frac{1}{2} \times 0.1 = \frac{0.1}{2} = 0.05$ moles Na_2SO_4

Mass = $\frac{0.05}{100} \times 142$

$= \frac{710}{100} = 7.1\ g$

QUESTION* (NCERT Exemplar)

Which of the following pairs have the same number of atoms?

$n \times N_A \times$ atomicity

(A) 16 g of O_2(g) and 4 g of H_2(g)

$\frac{16}{32} \times N_A \times 2$ $\quad$ $\frac{4}{2} \times N_A \times 2$

(B) 16 g of O_2 and 44 g of CO_2

N_A $\quad$ $\frac{44}{44} \times N_A \times 3$

(C) 28 g of N_2 and 32 g of O_2

$\frac{28}{28} \times N_A \times 2$ $\quad$ $\frac{32}{32} \times N_A \times 2$

(D) 12 g of C(s) and 23 g of Na(s)

$\frac{12}{12} \times N_A \times 1$ $\quad$ $\frac{23}{23} \times N_A \times 1$

QUESTION* (NCERT Exemplar)

Which of the following solutions have the same concentration?

A. 20 g of NaOH in 200 mL of solution

B. 0.5 mol of KCl in 200 mL of solution

C. 40 g of NaOH in 100 mL of solution

D. 20 g of KOH in 200 mL of solution

$$\frac{20 \times 1000}{40 \times 200} = 2.5 \text{ M}$$

$$\frac{0.5 \times 1000}{200} = 2.5 \text{ M}$$

$$\frac{40 \times 1000}{40 \times 100} = 10 \text{ M}$$

$$\frac{20 \times 1000}{40 \times 200} = 2.5 \text{ M}$$

QUESTION* (NCERT Exemplar)

O_2 $\frac{16}{32} \times N_A = \frac{N_A}{2}$

16 g of oxygen has same number of molecules as in

(A) 16 g of CO $\frac{16}{28} \times N_A$

(B) 28 g of N_2 $\frac{28}{28} \times N_A$

(C) 14 g of N_2 $\frac{14}{28} \times N_A$

(D) 1.0 g of H_2 $\frac{1}{2} \times N_A$

QUESTION* (NCERT Exemplar)

Which of the following terms are unitless?

A. Molality

B. Molarity

C. Mole fraction

D. Mass percent

QUESTION* (NCERT Exemplar)

One of the statements of Dalton's atomic theory is given below:
"Compounds are formed when atoms of different elements combine in a fixed ratio"
Which of the following laws is **not** related to this statement?

(A) Law of conservation of mass

(B) Law of definite proportions

(C) Law of multiple proportions

(D) Avogadro law

MATRIX MATCH TYPE QUESTIONS

QUESTION (NCERT Exemplar)

Match the following:

(i)	88 g of CO_2	(a)	0.25 mol
(ii)	6.022×10^{23} molecules of H_2O	(b)	2 mol
(iii)	5.6 litres of O_2 at STP	(c)	1 mol
(iv)	96 g of O_2	(d)	6.022×10^{23} molecules
(v)	1 mol of any gas	(e)	3 mol

QUESTION (NCERT Exemplar)

Match the following physical quantities with units

	Physical quantity		Unit
(i)	Molarity e	(a)	g mL^{-1}
(ii)	Mole fraction d	(b)	mol
(iii)	Mole b	(c)	Pascal
(iv)	Molality g	(d)	Unitless
(v)	Pressure c	(e)	mol L^{-1}
(vi)	Luminous intensity f	(f)	Candela
(vii)	Density a	(g)	mol kg^{-1}
(viii)	Mass i	(h)	Nm^{-1}
		(i)	kg

ASSERTION AND REASON TYPE

QUESTION (NCERT Exemplar)

ethene C_2H_4 → M.F.
CH_2 → E.F.

Assertion (A): The empirical mass of ethene is half of its molecular mass.
Reason (R): The empirical formula represents the simplest whole number ratio of various atoms present in a compound.

(A) Both A and R are true and R is the correct explanation of A.

(B) A is true but R is false.

(C) A is false but R is true.

(D) Both A and R are false.

QUESTION (NCERT Exemplar)

Assertion (A): One atomic mass unit is defined as one twelfth of the mass of one carbon-12 atom.

1 a.m.u. = mass of $\frac{1}{12}$ of 1 atom of C-12.

Reason (R): Carbon-12 isotope is the most abundant isotope of carbon and has been chosen as standard.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) Both A and R are false.

QUESTION (NCERT Exemplar)

Assertion (A): Significant figures for 0.200 is 3 where as for 200 it is 1.
Reason (R): Zero at the end or right of a number are significant provided they are not on the right side of the decimal point.

(A) Both A and R are true and R is correct explanation of A.

(B) Both A and R are true but R is not a correct explanation of A.

(C) A is true but R is false.

(D) Both A and R are false.

QUESTION (NCERT Exemplar)

Assertion (A): Combustion of 16 g of methane gives 18 g of water.

Reason (R): In the combustion of methane, water is one of the products.

(A) Both A and R are true but R is not the correct explanation of A.

(B) A is true but R is false.

(C) A is false but R is true.

(D) Both A and R are false.

$1CH_4 + 2O_2 \longrightarrow 1CO_2 + 2H_2O$

THANK YOU