NEET 2026

OBJECTIVE

NCERT PUNCH 4.0

MCQs Extracted from NCERT Line by Line

AIIMS PYQs along with NEET to level up

4600+ NTA LIKE MCQs

CHEMISTRY

UPDATED WITH HIGH ORDER TIME INTENSIVE MCQS
AS PER 2025 NEET PAPER

Pankaj Sijairya

NEET PAST YEAR WEIGHTAGE ANALYSIS

Chemistry-XI

Chapters Name	Year Wise Number of Questions															
	2025	2024 Re	2024	2023	2023 Manipur	2022	2022 Re	2021	2020	2020 Covid	2019	2018	2017	2016 II	2016 I	2015
Some Basic Concepts of Chemistry	2	1	3	1	1	1	1	1	1	1	1	2	0	1	0	0
Structure of Atom	2	2	2	2	2	2	2	1	1	1	2	2	1	2	1	1
Classification of Elements and Periodicity in Properties	2	1	2	1	3	1	2	1	1	0	1	0	1	0	1	2
Chemical Bonding and Molecular Structure	2	4	3	2	2	2	2	3	2	3	2	1	2	5	2	5
Thermodynamics	1	3	3	1	1	1	1	2	2	2	2	1	2	1	2	1
Equilibrium	3	3	3	1	2	2	2	1	3	2	3	3	3	3	2	3
Redox Reactions	1	1	1	1	1	2	1	1	1	1	2	1	0	0	1	0
The p-Block Elements	0	0	0	2	1	2	2	0	3	1	2	2	1	2	0	0
Organic Chemistry-Some Basic Principles and Techniques	3	4	4	2	2	2	3	2	2	1	0	3	3	1	0	8
Hydrocarbons	2	2	2	2	1	3	2	4	2	2	4	2	3	6	4	2

Chemistry-XII

Chapters Name	Year Wise Number of Questions															
	2025	2024 Re	2024	2023	2023 Manipur	2022	2022 Re	2021	2020	2020 Covid	2019	2018	2017	2016 II	2016 I	2015
Solutions	3	2	2	1	1	2	1	2	2	2	2	0	2	2	2	3
Electrochemistry	1	2	2	2	3	2	2	2	2	2	2	1	0	5	1	1
Chemical Kinetics	3	3	3	2	2	2	2	2	2	2	2	2	2	1	2	2
The p-Block Elements (Group 15 to 18)	2	3	2	2	0	2	2	2	2	4	3	4	3	1	5	1
The d and f-Block Elements	2	4	3	2	2	2	2	2	2	3	1	2	3	1	2	3
Coordination Compounds	3	3	3	2	2	2	2	2	1	1	1	3	3	2	1	2
Haloalkanes and Haloarenes	2	2	2	2	3	1	1	2	1	1	0	0	1	1	1	0
Alcohols, Phenols and Ethers	1	1	2	2	2	2	2	2	2	2	2	3	3	0	1	1
Aldehydes, Ketones and Carboxylic Acids	3	2	3	4	4	4	4	2	2	2	1	2	2	1	3	1
Amines	4	3	2	2	2	2	2	2	1	1	1	1	1	2	1	1
Biomolecules	2	1	1	1	1	1	1	1	2	2	1	2	0	2	3	0
Principles Related to Practical Chemistry	1	3	2	–	–	–	–	–	–	–	–	–	–	–	–	–

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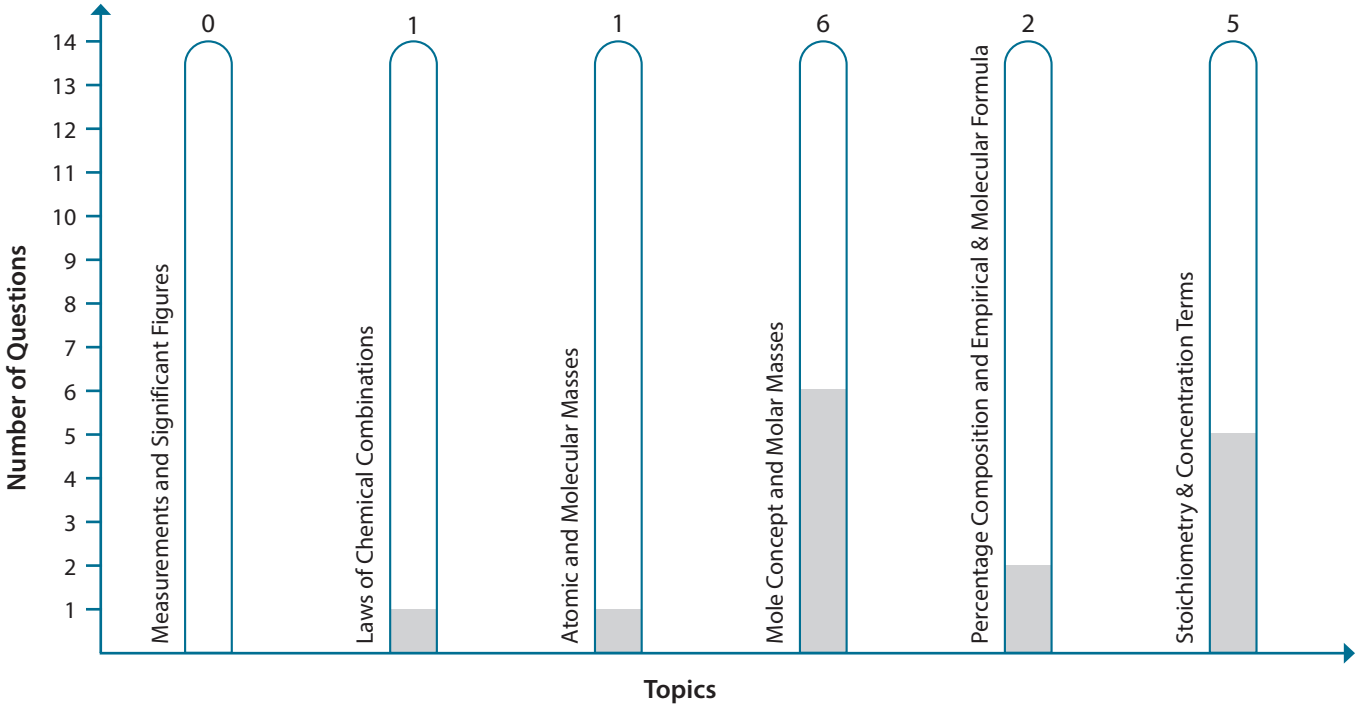
CHAPTER

1 Some Basic Concepts of Chemistry

Topicwise Number of Questions Analysis (2025-2016)



NCERT-Picks

General Introduction

Chemistry plays a central role in science and is often intertwined with other branches of science. Principles of chemistry are applicable in diverse areas, such as weather patterns, functioning of brain and operation of a computer, production in chemical industries etc. Chemistry provides methods for the isolation of lifesaving drugs from natural sources and makes possible synthesis of such drugs. Some of these drugs are cisplatin and taxol, which are effective in cancer therapy. The drug AZT (Azidothymidine) is used for helping AIDS patients. To be a good chemist and to accept new challenges, one needs to understand the basic concepts of chemistry, which begin with the concept of matter.

Matter & Its Classification

Anything which has mass and occupies space is called matter. Everything around us, for example: book, pen, pencil, water, air, all living beings, etc., is composed of matter.

States of Matter: Matter exist in three physical states viz. solid, liquid and gas. Because of different arrangement of particles, states of matter exhibit the following characteristics:

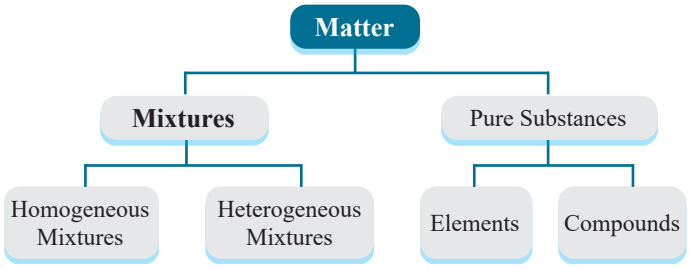
1. Solids have definite volume and definite shape.
2. Liquids have definite volume but do not have definite shape. They take the shape of the container in which they are placed.
3. Gases have neither definite volume nor definite shape. They completely occupy the space in the container in which they are placed.

These three states of matter are interconvertible by changing the conditions of temperature and pressure.

$$\text{Solid} \underset{\text{cool}}{\overset{\text{heat}}{\rightleftharpoons}} \text{liquid} \underset{\text{cool}}{\overset{\text{heat}}{\rightleftharpoons}} \text{Gas}$$

Usually a solid changes to a liquid, and the liquid on further heating changes to gas (or vapour). But when solid directly changes to the vapour state, the process is called **Sublimation**.

Classification of Matter: At the macroscopic level matter is classified as, mixture and pure substances. These are further classified as,



Classification of matter

In **a homogeneous mixture**, the components completely mix with each other. Sugar solution and air are the examples of homogeneous mixtures.

In contrast to this, **in a heterogeneous mixture**, the composition is not uniform throughout and sometimes different components are visible. For example, mixtures of salt and sugar, grains and pulses along with some dirt.

In **pure substances** constituent particles have fixed composition. Copper, silver, gold, water and glucose are some examples of pure substances. Pure substances can further be classified into **elements** and **compounds**. Particles of an **element** consist of **only one type of particles**. These particles may exist as **atoms or molecules**.

Sodium (Na), copper (Cu), silver (Ag), hydrogen (H), oxygen (O), etc. are some examples of elements. Whereas, Hydrogen (H_2), nitrogen (N_2) and oxygen (O_2) gases consist of molecules, in which two atoms combine to give their respective molecules.

When two or more atoms of different elements combine together in a definite ratio, the molecule of a **compound** is obtained. Examples of some compounds are water (H_2O), ammonia (NH_3), carbon dioxide (CO_2), sugar etc.

Measurement of Properties of Matter

The SI system has **seven** base units and they are listed in the given Table.

Base Physical Quantity	Symbol for Quantity	Name of SI Unit	Symbol for SI Unit
Length	l	metre	m
Mass	m	kilogram	kg
Time	t	second	s
Electric current	I	ampere	A
Thermodynamic temperature	T	kelvin	K
Amount of substance	n	mole	mol
Luminous intensity	I_v	candela	cd

The SI system allows the use of prefixes to indicate the multiples or submultiples of a unit. These prefixes are listed in following Table.

Multiple	Prefix	Symbol
10^{-15}	femto	f
10^{-12}	pico	p
10^{-9}	nano	n
10^{-6}	micro	m
10^{-3}	milli	m
10^{-2}	centi	c
10^{-1}	deci	d
10	deca	da
10^{2}	hecto	h
10^{3}	kilo	k
10^{6}	mega	M
10^{9}	giga	G
10^{12}	tera	T
10^{15}	peta	P

The SI unit of mass is kilogram. However, its fraction named as gram (1 kg = 1000 g), is used in laboratories due to the smaller amount of chemicals used in chemical reactions.

In SI system, volume has units of m^3. But again, in chemistry laboratories, smaller volumes are used. Hence, volume is often denoted in cm^3 or dm^3 units. A common unit, litre (L) which is not an SI unit, is used for measurement of volume of liquids.

1 L = 1000 mL , 1000 cm^3 = 1 dm^3

There are three common scales to measure temperature — °C (degree celsius), °F (degree fahrenheit) and K (kelvin). Here, K is the SI unit. The temperatures on two scales are related to each other by the following relationship:

°F = 9/ 5 (°C) + 32.

The kelvin scale is related to celsius scale as follows:

K = °C + 273.15

Uncertainty in Measurement

Significant Figures: The uncertainty in the experimental or the calculated values is indicated by mentioning the number of significant figures. Significant figures are meaningful digits which are known with certainty plus one which is estimated or uncertain.

Rules for determining the number of significant figures:

1. All non-zero numbers are significant. For example in 421 cm, there are three significant figures.
2. Zeros preceding to first non-zero digit are not significant. Such zero indicates the position of decimal point. For example in 0.04 has only one significant figure and 0.0052 has only two significant figures.
3. Zeros between two non-zero digits are significant. Thus, 5.005 has four significant figures.
4. Zeros at the end or right of a number are significant, provided they are on the right side of the decimal point. For example, 0.200 g has three significant figures. Terminal zeros are not significant if there is no decimal point. For example, 400 has only one significant figure, but 400. has three significant figures and 400.0 has four significant figures. Such numbers are better represented in scientific notation. We can express the number 400 as 4×10^2 for one significant figure, 4.0×10^2 for two significant figures and 4.00×10^2 for three significant figures.
5. Counting the numbers of object, For example, 2 balls or 20 eggs, have infinite significant figures. As these are exact numbers and can be represented by writing infinite number of zeros after placing a decimal i.e., 2 = 2.000000 or 20 = 20.000000

Laws of Chemical Combinations

Law of Conservation of Mass: In all physical and chemical changes, there is no net change in mass during the process. In other words it states that matter can neither be created nor Destroyed.

Law of Definite Proportions: Irrespective of the source, a given compound always contains same elements combined together in the same proportion by mass. This law is also known as Law of definite Composition.

Law of Multiple Proportions: When two elements combine to form two or more compounds then the masses of one of the elements which combine with a fixed mass of the other element, are in the ratio of small whole numbers. For example, water and hydrogen peroxide are two compounds which are obtained by the combination of hydrogen and oxygen but in both the compounds mass of hydrogen is fixed i.e. 2g whereas, mass of oxygen is 16g and 32g respectively. Means mass of oxygen bears a simple ratio i.e. 1:2.

Gay Lussac's Law of Gaseous Volumes: Gay Lussac in 1808 observed that when gases combine or are produced in a chemical reaction they do so in simple ratio by volume (at same T and P). This law was explained properly by the work of Avogadro in 1811.

Avogadro's Law: In 1811, Avogadro proposed that equal volumes of all gases at the same temperature (T) and pressure (P) should contain equal number of molecules. Avogadro made a distinction between atoms and molecules.

Dalton's Atomic Theory

In 1808, Dalton published 'A New System of Chemical Philosophy', in which he proposed the following :

1. Matter consists of indivisible atoms.
2. All atoms of a given element have identical properties, including identical mass. Atoms of different elements differ in mass.
3. Compounds are formed when atoms of different elements combine in a fixed ratio.
4. Chemical reactions involve reorganisation of atoms. These are neither created nor destroyed in a chemical reaction.

Note: Dalton's Atomic theory could explain law of conservation of mass, law of multiple proportion and law of constant proportion. However, it could not explain law of gaseous volumes

Atomic & Molecular Masses

Atomic mass is actually very-very small because atoms are very small. In the present system atomic mass is based on the carbon-12 isotope as the standard. Carbon-12 is assigned a mass of exactly 12 atomic mass unit (amu) and masses of other atoms are given relative to this standard.

One **atomic mass unit** is defined as a mass exactly equal to one-tweleth of mass of one carbon-12 atom.

And 1 amu = 1.66056×10^{-24} g

Mass of an atom of hydrogen = 1.6736×10^{-24} g

Thus, in terms of amu, the mass

$$\text{of hydrogen atom} = \frac{1.6736 \times 10^{-24}\,\text{g}}{1.66056 \times 10^{-24}\,\text{g}}$$

$$= 1.0078 \text{ amu} = 1.0080 \text{ amu}$$

Similarly, the mass of oxygen –16(^{16}O) atom would be 15.995 amu.

At present '**amu**' has been replaced by '**u**', which is known as unified mass.

Average atomic mass: It is the sum of the products of fractional abundances (f_i) of the isotopes and their corresponding mass number (A_i), i.e..

$A = \Sigma f_1 A_1 = A_1 \times f_1 + f_2 \times A_2 + ...$

Carbon has the following three isotopes with relative abundance and masses as shown against each of them.

Isotope	Relative Abundance (%)	Atomic Mass (amu)
^{12}C	98.892	12
^{13}C	1.108	13.00335
^{14}C	2×10^{-10}	14.00317

From the above data, the average atomic mass of carbon will come out to be:

$(0.98892)\ (12\text{ u}) + (0.01108)\ (13.00335\text{ u}) + (2 \times 10^{-12})\ (14.00317\text{ u}) = 12.011\text{ u}$

Molecular Mass: It is the sum of atomic masses of the elements present in a molecule. It is obtained by multiplying the atomic mass of each element by the number of its atoms and by adding them together. For example:

Molecular mass of methane,

$(CH_4) = (12.011\text{ u}) + 4\ (1.008\text{ u}) = 16.043\text{ u}$

relation between molecular mass and vapour density:

Molecular mass = 2 × vapour density

Molecular mass = Mass of 22.4 L of vapour of STP

$$\text{V.D} = \frac{\text{Density of a gas at certain temp. and pressure}}{\text{Density of hydrogen at same temp. and pressure}}$$

Mole Concept and Molar Mass

The mole, **(symbol mol)**, is the SI unit of amount of substance. One mole contains exactly $6.02214076 \times 10^{23}$ elementary entities. This number is the fixed numerical value of the Avogadro constant, N_A, when expressed in the unit mol^{-1} and is called the Avogadro number.

- 1 mole of atoms : Gram atomic mass (or 1g atom)
  : 6.022×10^{23} atoms.
- 1 mole of molecules : Gram molecular mass (or 1g molecule)
  : 6.022×10^{23} molecules
  : 22.4 L at STP
- 1 mole of ionic compound : Gram formula mass
  : 6.022×10^{23} formula units
- Molar mass of H_2O = 18.02 g/mol

Important Formulas

- $\text{Number of moles} = \dfrac{\text{Given Mass}}{\text{Atomic or Molar mass}}$
- $\text{Eq. Wt. of an ion/radical} = \dfrac{\text{Formula Weight}}{\text{total charge}}$
- $\text{Eq. Wt. of acids} = \dfrac{\text{Molar Mass}}{\text{Basicity}}$

MCQs

NCERT Topic-wise MCQs

Uncertainty in Measurement

1. The number of significant figures in value 5.041 is

1) 5 2) 2
3) 3 4) 4

2. Express the result of (0.582 + 324.65) to the appropriate number of significant figures:

1) 325.24 2) 325.23
3) 325.2 4) 325.232

3. Two students X and Y report the mass of the same substance as 7.0 g and 7.00 g respectively, which of the following statement is correct?

1) Both are equally accurate
2) X is more accurate than Y
3) Y is more accurate than X
4) Both are inaccurate scientifically

4. The number of significant figures in value of π are:

1) 1 2) 2
3) 3 4) ∞

5. The correctly reported answer of the addition of 29.4406, 3.2 and 2.25 will have significant figures:

1) 3 2) 4
3) 2 4) 5

6. The correctly reported answer of the area of rectangle which is 12.34 cm long and 1.23 cm wide is:

1) 15.2 m^2 2) 15.2 cm^2
3) 15.1 cm^2 4) 15.17 cm^2

7. If an object has a mass of 0.2876 g, then find the mass of nine such objects:

1) 2.5884 g 2) 2.5886 g
3) 2.588 g 4) 2.5 g

Laws of Chemical Combinations

8. *x* L of N_2 at S.T.P. contains 3×10^{22} molecules. The number of molecules in x/2 L of ozone at S.T.P. will be:

1) 3×10^{22} 2) 1.5×10^{22}
3) 1.5×10^{21} 4) 1.5×10^{11}

9. Which of the following data illustrates the law of conservation of mass?

1) 56 g of C reacts with 32 g of Oxygen to produce 44 g of CO_2
2) 1.70 g of $AgNO_3$ reacts with 100 mL of 0.1M HCl to produce 1.435 g of AgCl and 0.63 g of HNO_3
3) 12 g of C is heated in vacuum and on cooling, there is no change in mass
4) 36 g of S reacts with 16 g of O_2 to produce 48 g of SO_2

10. Two elements X and Y combine in gaseous state to form XY in the ratio 1:35.5 by mass. The mass of Y that will be required to react with 2 g of X is:

1) 7.1 g 2) 3.55 g
3) 71 g 4) 35.5 g

11. 4.4 g of an oxide of nitrogen gives 2.24 L of nitrogen and 60 g of another oxide of nitrogen gives 22.4 L of nitrogen at S.T.P. The data illustrates:

1) Law of conservation of mass
2) Law of constant proportions
3) Law of multiple proportions
4) Law of reciprocal proportions

12. If law of conservation of mass was to hold true, then 20.8 g of $BaCl_2$ on reaction with 9.8 g of H_2SO_4 will produce 7.3 g of HCl and $BaSO_4$ equal to:

1) 11.65 g 2) 23.3 g
3) 25.5 g 4) 30.6 g

13. The law of conservation of mass holds good for all of the following except.

1) All chemical reactions
2) Nuclear reaction
3) Endothermic reactions
4) Exothermic reactions

14. Hydrogen and oxygen combine to form H_2O_2 and H_2O containing 5.93% and 11.2% hydrogen respectively, the data illustrates:

1) Law of conservation of mass
2) Law of Constant proportions
3) Law of reciprocal proportions
4) Law of multiple proportions

15. Two elements X (of mass 16) and Y (of mass 14) combine to form compounds A, B and C. The ratio of different masses of Y which combine with a fixed mass of X in A, B and C is 1 : 3 : 5, if 32 parts by mass of X combines with 84 parts by mass of Y in B, then in C, 16 parts by mass of X will combine with;

1) 14 parts by mass of Y 2) 42 parts by mass of Y
3) 70 parts by mass of Y 4) 84 parts by mass of Y

Atomic and Molecular Masses

16. Boron has two isotopes B^{10} and B^{11} whose relative abundances are 20% and 80% respectively. Atomic weight of Boron is

1) 10 2) 11
3) 10.5 4) 10.8

17. Insulin contains 3.4% sulphur by mass. What will be the minimum molecular weight of insulin?

1) 94.117 u 2) 1884 u
3) 941 u 4) 976 u

18. The molecular mass of glucose ($C_6H_{12}O_6$)

1) 160.8 u 2) 180.162 u
3) 216.4 u 4) 134.821 u

Mole Concept and Molar Masses

19. 1 g-atom of nitrogen represents:

1) 6.02×10^{23} N_2 molecules
2) 22.4 L of N_2 at S.T.P
3) 11.2 L of N_2 at S.T.P
4) 28 g of nitrogen

20. Which is correct for 10 g of $CaCO_3$?

1) It contains 1 g atom of carbon
2) It contains 0.3 g atoms of oxygen
3) It contains 12 g of calcium
4) It refers to 0.1 g equivalent of $CaCO_3$

21. The number of oxygen atoms present in 14.6 g of magnesium bicarbonate is:

1) $6\ N_A$ 2) $0.6\ N_A$
3) N_A 4) $\frac{N_A}{2}$

22. Which of the following has the highest mass?

1) 20 g of sulphur
2) 4 mol of carbon dioxide
3) 12×10^{24} atoms of hydrogen
4) 11.2 L of helium at N.T.P.

23. If we assume 1/24 th part of mass of carbon instead of 1/12 th part of it as 1 amu., mass of 1 mole of a substance will

1) Remain unchanged 2) get doubled
3) Get halved 4) can't be predicted

24. Which among the given gases contain the equal number of molecules as that of 16 grams of oxygen?

1) 16 gm of SO_2 2) 32 grams of SO_2
3) 12 gm of O_3 4) All

25. One atom of an element weighs 1.8×10^{-22} g, its atomic mass is:

1) 29.9 u 2) 18 u
3) 108.36 u 4) 154 u

26. If H_2SO_4 ionises as $H_2SO_4 + 2H_2O \rightarrow 2H_3O^+ + SO_4^{2-}$. Then total number of ions produced by 0.1 mol H_2SO_4 will be:

1) 9.03×10^{21} 2) 3.01×10^{22}
3) 6.02×10^{22} 4) 1.8×10^{23}

27. Which of the following will not have a mass of 10 g?

1) 0.1 mol $CaCO_3$.
2) 1.51×10^{23} Ca^{2+} ions
3) 0.16 mol of CO_3^{2-} ions
4) 7.525×10^{22} Br atom

28. 2 g of oxygen contain number of atoms equal to that contained by:

1) 2 g of calcium 2) 4 g sulphur
3) 9 g nitrogen 4) 4 g sodium.

29. A person adds 1.71 gram of sugar ($C_{12}H_{22}O_{11}$) in order to sweeten his tea. The number of carbon atoms added are: (mol mass of sugar = 342).

1) 3.6×10^{22} 2) 7.2×10^{21}
3) 0.05 4) 6.6×10^{22}

30. The number of atoms present in 0.1 mole of P_4 (at. mass = 31) are:

1) 2.4×10^{24} atoms
2) Same as in 0.05 mol of S_8
3) 6.02×10^{22} atoms
4) Same as in 3.1g of phosphorus

31. Which one contains maximum number of molecules?

1) 2.5 g molecule of N_2
2) 4 g atom of nitrogen
3) 3.01×10^{24} atoms of nitrogen
4) 82 g of dinitrogen

32. Out of 1.0 g dioxygen, 1.0 g (atomic) oxygen and 1.0 g ozone, the maximum number of oxygen atoms are contained in:

1) 1.0 g of atomic oxygen
2) 1.0 g of ozone
3) 1.0 g of oxygen gas
4) All contain same number of atoms

33. What is the total number of atoms present in 25.0 mg of camphor, $C_{10}H_{16}O$?

1) 9.89×10^{19} 2) 6.02×10^{20}
3) 9.89×10^{20} 4) 2.67×10^{21}

High Order Time Intensive MCQs

1. Light travels with a speed of 3×10^8 m/sec. The distance travelled by light in 1 Femto sec is:

1) 0.03 mm 2) 0.003 mm
3) 3 mm 4) 0.0003 mm

2. The molecular formula of a commercial resin used for exchanging ions in water softening is $C_8H_7SO_3^-Na^+$ (mol. wt 206). What would be the maximum uptake of Ca^{2+} ions by the resin when expressed in mole per gram resin?

1) $\frac{1}{103}$ 2) $\frac{1}{206}$
3) $\frac{2}{309}$ 4) $\frac{1}{412}$

3. If 10^{21} molecules are removed from 200 mg CO_2, then the number of moles of CO_2 left are:

1) 2.88×10^{-3} 2) 1.66×10^{-3}
3) 1.66×10^{-2} 4) 4.54×10^{-3}

4. If 1 ml of water contains 20 drops, then the number of molecules in a drop of water is:

1) 6×10^{23} 2) 1.376×10^{26}
3) 1.673×10^{21} 4) 4.34×10^{20}

5. If *x* g of A (atomic mass 50) contains n atoms, how many atoms are there in 20*x* g of elements B: (at wt. 100)

1) n 2) 10n
3) 20n 4) n/10

6. Diborane (B_2H_6) can be prepared by the following reaction-

$$3NaBH_4 + 4BF_3 \longrightarrow 3NaBF_4 + 2B_2H_6$$

If the reaction has a 70% yield, how many moles of $NaBH_4$ should be used with excess BF_3 in order to obtain 0.200 mol of B_2H_6?

1) 0.21 moles 2) 0.429 moles
3) 0.300 mol 4) 0.175 moles

7. An ore contains 1.24% of mineral argentate, Ag_2S by mass. How many grams of this ore would have to be processed in order to obtain 1g of pure solid silver?

1) 92.6 g 2) 88.1 g
3) 101.11 g 4) 107.25 g

8. An aqueous solution of ethanol has density 1.025 g/mL and molarity 8 M. Calculate molality of this solution:

1) 20.27 m 2) 17.12 m
3) 12.18 m 4) 1.117 m

9. The molar ratio of Cr^{2+} to Cr^{3+} in a mixture of $CrSO_4$ and $Cr_2(SO_4)_3$ having equal number of sulphate ions in both sulphates is

1) 1 : 3 2) 3 : 2
3) 2 : 3 4) 3 : 4

10. $A + 2B + 3C \rightleftharpoons AB_2C_3$

Reaction of 6 g of A, 6×10^{23} atoms of B & 0.036 mole of C yields 4.8 g of compound AB_2C_3. If the atomic masses of A & C are 60 & 80 amu respectively, the atomic mass of B is:

1) 60 amu 2) 50 amu
3) 90 amu 4) 120 amu

11. A 100 g of a sample of haemoglobin on analysis was found to contain 0.34% Fe by mass. If each haemoglobin molecule has four Fe^{2+} ions, the molecular mass of haemoglobin is- (Fe = 56 amu)

1) 77099.9 g 2) 12735 g
3) 65882 g 4) 96359.9 g

12. What volume of 5 M Na_2SO_4 must be added to 250 mL of 1 M $BaCl_2$ to produce 10 g of $BaSO_4$?

1) 8.58 mL 2) 6.4 mL
3) 18 mL 4) 22 mL

13. A compound is composed of O and Mn in equal weight ratio. Find the empirical formula of the compound.

1) Mn_3O_4 2) MnO_2
3) Mn_2O_3 4) Mn_2O_7

14. If isotopic distribution of C-12 and C-14 is 98% and 2% respectively, then the number of C-14 atoms in 12 g of carbon is:

1) 1.032×10^{22} 2) 3.01×10^{22}
3) 5.88×10^{23} 4) 6.02×10^{23}

15. Sulphuric acid reacts with sodium hydroxide as follows:

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

When 1 L of 0.1 M sulphuric acid solution is allowed to react with 1 L of 0.1 M sodium hydroxide solution, the amount of sodium sulphate formed is:

1) 0.15 g 2) 7.10 g
3) 0.025 g 4) 3.55 g

16. X gm of Ag was dissolved in HNO_3 and the solution was treated with excess of NaCl. When 2.87 g of AgCl was precipitated, the value of x is

$Ag + 2HNO_3 \rightarrow AgNO_3 + NO_2 + H_2O$

$AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$

1) 1.08 g 2) 2.16 g
3) 2.70 g 4) 1.62 g

17. The % loss in weight after heating a pure sample of potassium chlorate (M. wt. 122.5) will be-

$$2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$$

1) 12.25 2) 24.50
3) 39.18 4) 49.00

50. How many molecules of HCl gas will be produced by reacting 112 L of H_2 (0 °C, 1 atm) with 213 g of Cl_2?

1) 3.61×10^{24} 2) 6.13×10^{23}
3) 6.13×10^{24} 4) 1.63×10^{24}

51. 20 mL of 0.4 M $AgNO_3$ (molar mass = 170 g) is reacted with 15 mL of 0.6 M $BaCl_2$ (molar mass = 208.4 g). The mass of AgCl (molar mass = 143.5 g) produced is

1) 11.48 g 2) 18.14 g
3) 14.18 g 4) 1.148 g

52. 85 g $CaCO_3$ (limestone sample), on heating produces exactly the same amount of CO_2 which converts 30 g of MgO to $MgCO_3$. The percentage purity of limestone sample is

1) 80% 2) 82.4%
3) 88.24% 4) 84.8%

53. Mole fraction of acetic acid in an aqueous sample is 0.1. The molality of the solution is

1) 7.16 mol kg^{-1} 2) 1.67 mol kg^{-1}
3) 6.17 mol kg^{-1} 4) 5.25 mol kg^{-1}

54. Molarity of H_2SO_4 (density 1.8 g/mL) is 18 M. The molality of this H_2SO_4 is:

1) 36 2) 200
3) 500 4) 18

55. 1.5 moles of each of XY_2 and XY_3 if weigh 96 g and 120 g respectively. The atomic masses of X and Y respectively are

1) 4, 8 2) 8, 16
3) 32, 16 4) 32, 64

Match the Columns MCQs

1. Match the following:

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

1) (a)-(i) (b)-(iv) (c)-(iii) (d)-(ii) (e)-(v)
2) (a)-(ii) (b)-(iii) (c)-(i) (d)-(v) (e)-(iv)
3) (a)-(v) (b)-(ii) (c)-(iii) (d)-(iv) (e)-(i)
4) (a)-(iii) (b)-(v) (c)-(ii) (d)-(i) (e)-(iv)

2. Match the following physical quantities with units

Physical quantity		Unit	
(a)	Molarity	(i)	mol kg^{-1}
(b)	Molality	(ii)	mol L^{-1}
(c)	Mol fraction	(iii)	Unit less
(d)	Mole	(iv)	Mol

1) (a)-(i) (b)-(ii) (c)-(iii) (d)-(iv)
2) (a)-(ii) (b)-(i) (c)-(iv) (d)-(iii)
3) (a)-(i) (b)-(ii) (c)-(iv) (d)-(iii)
4) (a)-(ii) (b)-(i) (c)-(iii) (d)-(iv)

3. Match the following:

Column-I		Column-II	
(a)	Element	(i)	20 carat gold
(b)	Compound	(ii)	Iodized common salt
(c)	Homogeneous mixture	(iii)	Silica
(d)	Heterogeneous mixture	(iv)	Radium

1) (a)-(i) (b)-(ii) (c)-(iii) (d)-(iv)
2) (a)-(iv) (b)-(ii) (c)-(iii) (d)-(i)
3) (a)-(iv) (b)-(iii) (c)-(i) (d)-(ii)
4) (a)-(ii) (b)-(i) (c)-(iii) (d)-(iv)

4. Match the following

Column-I		Column-II	
(a)	mega	(i)	10^9
(b)	peta	(ii)	10^{-12}
(c)	pico	(iii)	10^{15}
(d)	giga	(iv)	10^6

1) (a)-(i) (b)-(iii) (c)-(ii) (d)-(iv)
2) (a)-(iv) (b)-(ii) (c)-(iii) (d)-(i)
3) (a)-(iv) (b)-(iii) (c)-(ii) (d)-(i)
4) (a)-(iii) (b)-(i) (c)-(ii) (d)-(iv)

5. Match the following

Column-I (Symbol)		Column-II (Unit)	
(a)	Newton	(i)	Kg m^2 sec^{-2}
(b)	Joule	(ii)	Kg m sec^{-2}
(c)	Acceleration	(iii)	m sec^{-2}
(d)	Mass	(iv)	kg

1) (a)-(i) (b)-(ii) (c)-(iii) (d)-(iv)
2) (a)-(iii) (b)-(i) (c)-(ii) (d)-(iv)
3) (a)-(ii) (b)-(i) (c)-(iii) (d)-(iv)
4) (a)-(ii) (b)-(iii) (c)-(i) (d)-(iv)

Correct & Incorrect MCQs

1. Identify the incorrect statement from the following

1) Glucose is not a pure substance.
2) Water, ammonia, sugar, CO_2 are compounds.
3) H_2 and O_2 are gases whereas the compound formed by their combination i.e., water is a liquid, used as fire extinguisher.
4) Sodium, copper, silver, hydrogen are elements.

2. Identify the incorrect statement from the following.

1) The multiple of prefix femto is 10^{-15}
2) The multiple of prefix pico is 10^{-12}
3) The multiple of prefix nano is 10^{-18}
4) The multiple of prefix micro is 10^{-6}

3. Which statement regarding mass and weight is not correct ?

1) Mass of a substance is the amount of matter present in it.
2) Weight is the force exerted by gravity on an object.
3) The SI unit of mass is kilogram.
4) Mass of a substance may vary from one place to another while weight of a substance is constant.

4. The incorrect statement regarding significant figures is:

1) There are three significant figures in 285 cm.
2) There are two significant figures in 0.25 mL.
3) There are three significant figures in 0.03
4) There are four significant figures in 2.005.

5. Select the incorrect statement regarding laws of chemical combination:

1) According to law of conservation of mass, matter can neither be created nor be destroyed
2) According to law of definite proportions, a given compound always contains exactly the same proportion of elements by weight.
3) According to law of multiple proportions, if two elements can combine to form more than one compound, the masses of one element that combine with a fixed mass of the other element, are in the ratio of small whole numbers.
4) According to Gay Lussac's law, equal volumes of all gases at the same temperature and pressure should contain equal number of molecules

6. Choose the correct statement:

1) Molecular mass of methane is 16.043 u.
2) Molecular mass of water is 24.0 u.
3) Molecular mass of glucose is 324.68 u.
4) Molecular mass of ammonia is 36.0 u.

7. Which statement regarding moles is not correct?

1) The mole is the SI unit of amount of substance.
2) One mole of a substance contains exactly 12.044×10^{23} elementary entities.
3) 1 mol of hydrogen atoms contain 6.022×10^{23} atoms.
4) The mass of one mole of a substance in grams is called its molar mass.

8. Which amongst the following statements is not correct about the given reaction?

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

1) One mole of $CH_4(g)$ reacts with two moles of $O_2(g)$ to give one mole of $CO_2(g)$ and two moles of $H_2O(g)$.
2) One molecule of $CH_4(g)$ reacts with 2 molecules of $O_2(g)$ to give one molecule of $CO_2(g)$ and 2 molecules of $H_2O(g)$.
3) 22.7 L of CH_4 (g) reacts with 45.4 L of O_2 (g) to give 22.7 L of CO_2 (g) and 45.4 L of $H_2O(g)$
4) 16 g of CH_4 (g) reacts with 32 g of O_2 (g) to give 44 g of CO_2 (g) and 18 g of H_2O (g).

9. Choose the incorrect statement about molarity:

1) Molarity is defined as the number of moles of the solute present in 1 litre of the solution.
2) Molarity is denoted by symbol M.
3) 1 M NaOH means 1 mol of NaOH present in 1 litre of the solution.
4) Molarity is independent on temperature.

10. Choose the correct statement/s:

A. 0.22 g of CO_2 contains 0.005 moles

B. 320 mg of SO_2 contains 0.005 moles

C. 560 mg of SO_2 contains 0.005 moles

D. 0.085 g of NH_3 contains 0.005 moles

1) A, B and C
2) Only C
3) A, B and D
4) B, C and D

Statement Based MCQs

Directions: These questions consist of two statements each, printed as Statement-I and Statement-II. While answering these questions, you are required to choose any one of the following four responses.

1) **Both Statement-I and Statement-II are correct.**
2) **Both Statement-I and Statement-II are incorrect.**
3) **Statement-I is correct & Statement-II is incorrect.**
4) **Statement-I is incorrect & Statement-II is correct.**

1. **Statement-I:** The mathematical approach to obtain the amount of the products or reactants is called stoichiometry.

   Statement-II: The stoichiometric calculations are derived from chemical equations.

2. **Statement-I:** A certain element X, forms three binary compounds with Chlorine containing 59.68%, 68.95% and 74.75% Chlorine respectively. These data illustrate the law of multiple proportions.

   Statement-II: According to law of multiple proportions, the relative amounts of an element combining with some fixed amount of a second element in a series of compounds are the ratios of small whole numbers.

3. **Statement-I:** 32 g of O_2 and 48 g of O_3 have same number of atoms.

   Statement-II: Number of moles in 32 g of O_2 and 48 g of O_3 are different.

4. **Statement-I:** Equal moles of different substances contain same number of constituent particles.

   Statement-II: Equal weights of different substances contain the same number of constituent particles.

5. **Statement-I:** Molality, mole fraction and mass fraction change with temperature.

   Statement-II: Molarity and Normality do not change with temperature.

6. **Statement-I:** Air is a homogeneous mixture.

   Statement II: The components of air completely mix with each other and its composition is uniform throughout.

7. **Statement-I:** Mass of a substance is constant where as its weight may vary from one place to another.

   Statement-II: Weight changes due to change in earth's gravity.

8. **Statement-I:** Dalton's atomic theory could explain all the laws of chemical combination including laws of gaseous volumes.

   Statement-II: In all physical and chemical changes, the total mass of the reactants is never equal to the total mass of the products.

9. **Statement-I:** Molality of a solution depends upon temperature.

   Statement-II: Molarity of a solution depends upon temperature.

10. **Statement-I:** One mole is the amount of a substance that contains as many particles or entities as there are atoms in exactly 12 g of the 12C isotope.

    Statement-II: One mole of different substances contain different number of entities.

Assertion & Reason MCQs

Directions: These questions consist of two statements each, printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses.

1) **Both Assertion and Reason are True and the Reason is a correct explanation of the Assertion.**
2) **Both Assertion and Reason are True but Reason is not a correct explanation of the Assertion.**
3) **Assertion is True but the Reason is False.**
4) **Assertion is False but Reason is True.**

1. **Assertion:** 1 mole of any gas occupies 22.4 lit at NTP.

   Reason: Volume of gas depends on temperature, pressure and nature of gas.

2. **Assertion:** The no. of Oxygen atoms present in 16 g of oxygen and 16 g of O_3 is same.

   Reason: Both these species represents 1 g atom of oxygen.

3. **Assertion:** The number of significant figures in 1502 cm is two.

   Reason: All non-zero digits are significant and zeroes lie between any two non-zeroes will be significant.

4. **Assertion:** The ratio by volume of NH_3 : HCl : NH_4Cl is 1 : 1 : 1 in the reaction

   $NH_3(g) + HCl(g) \rightarrow NH_4Cl(s)$

   Reason: Gay Lussac's law deals with gaseous reactants and products only.

5. **Assertion:** 64 g of SO_2 and 80g of SO_3 will occupy same volume at NTP.

   Reason: 1 mole of any gas occupies 22.4 L at NTP.

6. **Assertion:** The empirical mass of ethene is half of its molecular mass.

   Reason: The empirical formula represents the simplest whole number ratio of various atoms present in a compound.

7. **Assertion:** One atomic mass unit is defined as one tweleth of the mass of one carbon-12 atom.
   Reason: Carbon-12 isotope is the most abundant isotope of carbon and has been chosen as standard.
8. **Assertion:** Significant figures for 0.200 is 3 whereas for 200 it is 1.
   Reason: Zero at the end or right of a number are significant provided they are not on the right side of the decimal point.
9. **Assertion:** Combustion of 16 g of methane gives 18 g of water.
   Reason: In the combustion of methane, water is one of the products.
10. **Assertion:** 1 amu represents a mass equal to $1{\cdot}66 \times 10^{-27}$ kg.
    Reason: 1 amu represents the actual mass of one atom of carbon–12.

Multi Correct MCQs

1. Which of the following have same number of significant figures?
   A. 0.00253 B. 1.0003
   C. 15.0 D. 163
   Choose the correct answer from the options given below
   1) (A), (B) and (C) only 2) (C) and (D) only
   3) (A), (C) and (D) only 4) (B) and (C) only
2. The incorrect postulates of the Dalton's atomic theory are:
   A. Atoms of different elements differ in mass.
   B. Matter consists of divisible atoms.
   C. Compounds are formed when atoms of different element combine in a fixed ratio.
   D. All the atoms of given element have different properties including mass.
   E. Chemical reactions involve reorganisation of atoms.
   Choose the correct answer from the options given below:
   1) (B), (D), (E) only 2) (A), (B), (D) only
   3) (C), (D), (E) only 4) (B), (D) only
3. 116 g of a substance upon dissociation reaction yields 7.5 g of hydrogen, 60g of oxygen and 48.5 g of carbon. Given that the atomic masses of H, O and C are 1,16 and 12 g/mol respectively. The data agrees with which of the following formulae?
   A. CH_3COOH B. HCHO
   C. CH_3OOCH_3 D. CH_3CHO
   1) (A) and (B) 2) (B), (C) and (D)
   3) (C) and (D) 4) (B) and (C)
4. Which of the following methods of expressing the concentration of a solution are not temperature dependent?
   A. Molarity B. Mole Fraction
   C. Molality D. Weight percent
   1) (A), (B) and (C) 2) (B), (C) and (D)
   3) (A) and (C) 4) (A) and (D)
5. 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
   1) Only (A) 2) Both (B) and (C)
   3) Both (A) and (D) 4) Only (D)

NCERT Exemplar MCQs

1. Two students performed the same experiment separately and each one of them recorded two readings of mass which are given below. Correct reading of mass is 3.0 g. On the basis of given data, mark the correct option out of the following statements:

Students	Readings	
	(i)	(ii)
A	3.01	2.99
B	3.05	2.95

   1) Results of both the students are neither accurate nor precise
   2) Results of student A are both precise and accurate
   3) Results of student B are neither precise nor accurate
   4) Results of student B are both precise and accurate
2. What will be the molarity of a solution, which contains 5.85 g of NaCl (s) per 500 mL?
   1) 4 mol L^{-1} 2) 20 mol L^{-1}
   3) 0.2 mol L^{-1} 4) 2 mol L^{-1}
3. If 500 mL of a 5 M solution is diluted to 1500 mL, what will be the molarity of the solution obtained?
   1) 1.5 M 2) 1.66 M
   3) 0.017 M 4) 1.59 M
4. 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?
   1) 4 g He 2) 46 g Na
   3) 0.40 g Ca 4) 12 g He

5. 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?
   1) 5 M 2) 50 M 3) 0.005 M 4) 0.5 M

6. What will be the molality of the solution containing 18.25 g of HCl gas in 500 g of water?
   1) 0.1 m 2) 0.05 m 3) 0.5 m 4) 1 m

7. One mole of any substance contains 6.022×10^{23} atoms/molecules. Number of molecules of H_2SO_4 present in 100 mL of 0.02 M H_2SO_4 solution is:
   1) 12.044×10^{20} molecules 2) 6.022×10^{23} molecules
   3) 1×10^{23} molecules 4) 12.044×10^{23} molecules

8. What is the mass per cent of carbon in carbon dioxide?
   1) 0.034% 2) 27.27% 3) 3.4% 4) 28.7%

9. 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?
   1) $C_9H_{18}O_9$ 2) CH_2O 3) $C_6H_{12}O_6$ 4) $C_2H_4O_2$

10. If the density of a solution is 3.12 g mL^{-1}, the mass of 1.5 mL solution in significant figures is:
   1) 4.7 g 2) 4680×10^{-3} g
   3) 4 .680 g 4) 46.80 g

11. Which of the following statements about a compound is incorrect?
   1) A molecule of a compound has atoms of different elements
   2) A compound cannot be separated into its constituent elements by physical methods of separation
   3) A compound retains the physical properties of its constituent elements
   4) The ratio of atoms of different elements in a compound is fixed

12. Which of the following statements is correct about the reaction given below?

$$4Fe(s) + 3O_2(g) \rightarrow 2Fe_2O_3(g)$$

   1) Total mass of iron and oxygen in reactants = total mass of iron and oxygen in product therefore it follows law of conservation of mass
   2) Total mass of reactants = total mass of product, therefore, law of multiple proportions is followed
   3) Amount of Fe_2O_3 can be increased by taking any one of the reactants (iron or oxygen) in excess
   4) Amount of Fe_2O_3 produced will decrease if the amount of any one of the reactants (iron or oxygen) is taken in excess

13. Which of the following statements indicates that law of multiple proportion is being followed?
   1) Sample of carbon dioxide taken from any source will always have carbon and oxygen in the ratio 1 : 2
   2) 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
   3) When magnesium burns in oxygen, the amount of magnesium taken for the reaction is equal to the amount of magnesium in magnesium oxide formed
   4) At constant temperature and pressure, 200 mL of hydrogen will combine with 100 mL oxygen to produce 200 mL of water vapour

Kattar NEET

Scan Me for Detailed Explanations

1. 15 gm $Ba(MnO_4)_2$ sample containing inert impurity is completely reacting with 100 ml of '11.2 V' H_2O_2, then what will be the purity of $Ba(MnO_4)_2$ in the sample?
   1) 5% 2) 10% 3) 50% 4) none

2. SO_2Cl_2, sulphuryl chloride reacts with water to give a mixture of H_2SO_4 and HCl. What volume of 0.2 M $Ba(OH)_2$ is needed to completely neutralize 50 ml of 0.2 M SO_2Cl_2 solution?
   1) 100 ml 2) 200 ml 3) 300 ml 4) 400 ml

3. Two acids H_2SO_4 and H_3PO_4 are neutralised separately by the same amount of a base, producing sulphate and dihydrogen phosphates respectively. The ratio of mass of H_2SO_4 and H_3PO_4 reacted with base respectively is
   1) 1 : 1 2) 2 : 1
   3) 1 : 2 4) Data insufficient

4. A clay sample contains 50% silica and 15% water. Now, the sample is heated until it loses 10 gm water. If the partially dried clay now contains 52% silica, what should be the percentage of water in it? All the percentages are given by mass. Assume that only moisture is lost from clay, on heating.
   1) 5.56% 2) 11.6% 3) 5.0% 4) 15.6%

5. A gaseous oxide contains 30.4% of nitrogen, one molecule of which contains one nitrogen atom. The vapour density of the oxide relative to dioxygen is
   1) 0.94 2) 1.44 3) 1.50 4) 3.0

6. Dieldrin, an insecticide, contains C, H, Cl and O. Combustion of 29.72 mg of Dieldrin gave 41.21 mg CO_2 and 5.63 mg of H_2O. In a separate analysis Dieldrin was converted into 67.16 mg AgCl. What is the empirical formula of Dieldrin?
   1) $C_6H_4Cl_3O$ 2) C_8H_8ClO
   3) $C_{12}H_8Cl_6O$ 4) $C_6H_4Cl_3O_2$

7. Suppose two elements X and Y combine to form two compounds XY_2 and X_2Y_3. 0.05 mole of XY_2 weighs 5 g while 3.011×10^{23} molecules of X_2Y_3 weigh 85 g. The atomic masses of X and Y are respectively
   1) 20, 30 2) 30, 40 3) 40, 30 4) 80, 60

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

1) Sample of carbon dioxide taken from any source will always have carbon and oxygen in the ratio 1:2
2) 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
3) When magnesium burns in oxygen, the amount of magnesium taken for the reaction is equal to the amount of magnesium in magnesium oxide formed
4) At constant temperature and pressure, 200 mL of hydrogen will combine with 100 mL oxygen to produce 200 mL of water vapour

9. Match the following:

List-I		List-II	
I.	4.5 m solution of $CaCO_3$ of density 1.45 gm/ml	P.	Mole fraction of solute is 0.2
II.	3 M 100 ml H_2SO_4 mixed with 1 M 300 ml H_2SO_4 solution	Q.	Mass of the solute is 360 g
III.	14.5 m solution of $Ca(NO_3)_2$	R.	Molarity = 4.5
IV.	In 2 litre solution of 4 M NaOH, 40 g NaOH is added	S.	Molarity = 1.5

1) I-P; II-S; III- R; IV-Q, R
2) I-R; II-S; III- P; IV-Q, R
3) I-R; II-P; III- S; IV-Q, R
4) I-R; II-Q; III- P; IV-S

10. Match the following:

List-I (Atomic Masses)				List-II (% Composition of Lighter Isotope)	
	Isotope-I	Isotope-II	Avg.		
I.	(a+ 4)	(a – 1)	a	P.	66.67% by moles
II.	a	5a	2a	Q.	50% by moles
III.	(a+ 3)	(a + 1)	(a +2)	R.	% by mass independent of 'a'
IV.	(a + 2)	(a – 1)	a	S.	80% by moles

1) I-R; II-S; III-Q; IV-P
2) I-S; II-Q; III-R; IV-P
3) I-S; II-R; III-P; IV-Q
4) I-S; II-R; III-Q; IV-P

11. Match the following:

Column-I		Column-II	
I.	1.7 g of NH_3	P.	0.4 N_0 atom
II.	3.2 g oxygen	Q.	2.24 L at NTP
III.	2.6 g C_2H_2	R.	N_0 no. of electrons
IV.	6.4 g of SO_2	S.	0.2 N_0 atoms
		T.	0.1 N_0 molecule

1) I-P,Q,R,T; II-Q,S,T; III-P,Q,T; IV-Q, T
2) I-Q,S,T; II-P,Q,R,T; III-P,Q,T; IV-R, T
3) I-S,Q,R,T; II-P,Q,T; III-Q,S,T; IV-Q, S
4) I-P,Q,S,T; II-Q,S,T; III-Q, T IV-P,Q,T;

12. A compound contains 4% oxygen, $\frac{14}{3}$% nitrogen, 4% sulphur. Then empirical formula of compound contains _____ number of nitrogen atoms.

1) 6 2) 8
3) 3 4) Can not be determined

13. 56 gm of N_2 and 9 gm of H_2 are made to react completely to produce a mixture of NH_3 and N_2H_4. The ratio of moles of NH_3 and N_2H_4 is:

1) 1 : 1 2) 3 : 2
3) 2 : 3 4) None of these

14. Iodobenzene is prepared from aniline ($C_6H_5NH_2$) in a two-step process as shown here.

$$C_6H_5NH_2 + HNO_2 + HC1 \rightarrow C_6H_5N^+_{2Cl}{}^- + 2H_2O$$

$$C_6H_5N^+_{2\,Cl}{}^- + KI \rightarrow C_6H_5I + N_2 + KCl$$

In an actual preparation, 9.30 g of aniline was converted to 16.32 g of iodobenzene. The percentage yield of iodobenzene is (I = 127)

1) 8% 2) 50% 3) 75% 4) 80%

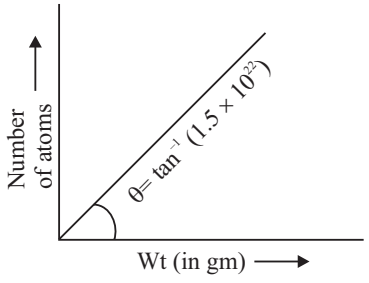
15. A protein isolated from a bovine preparation, was subjected to amino acid analysis. The amino acid present in the smallest amount was lysine, $C_6H_{14}N_2O_2$ and the amount of lysine was found to be 365 mg per 100 g protein. What is the minimum molecular mass (in g/mol) of the protein?

1) 40,000,000 2) 40,000
3) 40 4) 4,00,000

16. Elements X and Y can combine to form two different compounds. If 1.6 g of X reacts with exactly 1.6 g of Y the compound produced has formula XY_2. However under different conditions, 2.4 g of X will react with 1.6 g of Y to form a second compound, whose empirical formula is ____.

1) X_3Y_4 2) XY 3) XY_3 4) X_2Y

17. A graph is plotted for an element by putting its mass on X-axis and the corresponding number of atoms on Y-axis. What is the atomic mass of the element for which the graph is plotted? ($N_A = 6.0 \times 10^{23}$)



1) 80 2) 40 3) 0.025 4) 20

18. A drug, marijuana, owes its activity to tetrahydrocannabinol, which contains 70 percent as many carbon atoms as hydrogen atoms and 15 times as many hydrogen atoms as oxygen atoms. The number of moles in a gram of terahydrocannabinol is 0.00318. Determine its molecular formula.

1) CH_3O_2 2) $C_{21}H_{30}O_2$ 3) $C_{15}H_{30}O_2$ 4) $C_{70}H_{15}O$

19. From the following reactions,

$2CoF_2 + F_2 \rightarrow 2CoF_3$

$(CH_2)_n + 4n\ CoF_3 \rightarrow (CF_2)_n + 2n\ HF + 4n\ CoF_2$

Calculate how much F_2 will be consumed to produce 1 kg of $(CF_2)_n$. (F = 19)?

1) 1.52 kg 2) 2.04 kg
3) 0.76 kg 4) 4.56 kg

20. A person needs on average of 2.0 mg of riboflavin (vitamin B_2) per day. How many gm of butter should be taken by the person per day if it is the only source of riboflavin? (Butter contains 5.5 microgram riboflavin per gm.)

1) 363.6 gm 2) 2.75 mg
3) 11 gm 4) 19.8 gm

21. What volume (in ml) of 0.2 M H_2SO_4 solution should be mixed with the 40 ml of 0.1 M NaOH solution such that the resulting solution has the concentration of H_2SO_4 as $\frac{6}{55}$ M.

1) 70 2) 45
3) 30 4) 58

NEET & AIIMS Past Year MCQs

1. 1.0 g of H_2 has same number of molecules as in: **(2024 Re)**

1) 14 g of N_2 2) 18 g of H_2O
3) 16 g of CO 4) 28 g of N_2

2. The highest number of helium atoms is in **(2024)**

1) 4 g of helium
2) 2.271098 L of helium at STP
3) 4 mol of helium
4) 4 u of helium

3. A compound X contains 32% of A, 20% of B and remaining percentage of C. Then, the empirical formula of X is:

(Given atomic masses of A = 64; B = 40; C = 32u) **(2024)**

1) AB_2C_2 2) ABC_4
3) A_2BC_2 4) ABC_3

4. 1 gram of sodium hydroxide was treated with 25 mL of 0.75 M HCl solution, the mass of sodium hydroxide left unreacted is equal to **(2024)**

1) Zero mg 2) 200 mg
3) 750 mg 4) 250 mg

5. The right option for the mass of CO_2 produced by heating 20 g of 20% pure limestone is (Atomic mass of Ca = 40)

$\left[CaCO_3 \xrightarrow{1200\,K} CaO + CO_2\right]$ **(2023)**

1) 1.32 g 2) 1.12 g
3) 1.76 g 4) 2.64 g

6. What mass of 95% pure $CaCO_3$ will be required to neutralise 50 mL of 0.5 M HCl solution according to the following reaction? **(2022)**

$CaCO_{3(s)} + 2HCl_{(aq)} \rightarrow CaCl_{2(aq)} + CO_{2(g)} + 2H_2O_{(l)}$

[Calculate upto second place of decimal point]

1) 9.50 g 2) 1.25 g
3) 1.32 g 4) 3.66 g

7. 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] **(2021)**

1) CH_2 2) CH_3
3) CH_4 4) CH

8. If a compound consist of 4% H, 24% Carbon, Cl=72% with molar mass = 99 g: **(AIIMS 2016)**

Find molecular formula of compound.

1) C_2H_5Cl 2) $C_2H_2Cl_2$
3) $C_2H_4Cl_2$ 4) C_4H_2Cl

9. The weight of a metal of equivalent weight 12, which will give 0.475 g of its chloride, is: **(AIIMS 1994)**

1) 0.18 g 2) 0.12 g
3) 0.24 g 4) 0.16 g

Answer Key

NCERT Topic-wise MCQs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	4	2	3	4	1	2	3	2	2	3	3	2	2	4	3	4	3
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
	2	3	2	2	2	1	2	3	4	3	2	1	2	4	4	4	2
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
	4	3	3	1	3	3	4	1	1	4	2	2	3	4	4	4	1
	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
	2	1	1	2	4	3	4	4	1	1	4	3	1	4	1	3	1
	69	70	71	72	73	74	75										
	3	2	1	1	1	2	3										
High Order Time Intensive MCQs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	4	4	1	3	2	2	1	3	2	2	3	1	4	1	2	2	3
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
	2	1	2	4	2	2	1	1	3	1	1	4	2	3	2	3	2
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
	2	1	3	2	3	2	3	4	1	2	4	1	4	4	4	1	4
	52	53	54	55													
	3	3	3	3													
Match the Columns MCQs	1	2	3	4	5												
	2	4	3	3	3												
Correct & Incorrect MCQs	1	2	3	4	5	6	7	8	9	10							
	1	3	4	3	4	1	2	4	4	3							
Statement Based MCQs	1	2	3	4	5	6	7	8	9	10							
	1	1	2	3	2	1	1	2	4	3							
Assertion & Reason MCQs	1	2	3	4	5	6	7	8	9	10							
	3	1	4	4	1	1	2	2	4	3							
Multi Correct MCQs	1	2	3	4	5												
	3	4	1	2	3												
NCERT Exemplar MCQs	1	2	3	4	5	6	7	8	9	10	11	12	13				
	2	3	2	4	3	4	1	2	3	1	3	1	2				
Kattar NEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	3	1	3	2	2	3	3	2	2	4	1	2	3	4	2	1	2
	18	19	20	21													
	2	1	1	1													
NEET & AIIMS Past Year MCQs	1	2	3	4	5	6	7	8	9								
	1	3	4	4	3	3	2	3	2								

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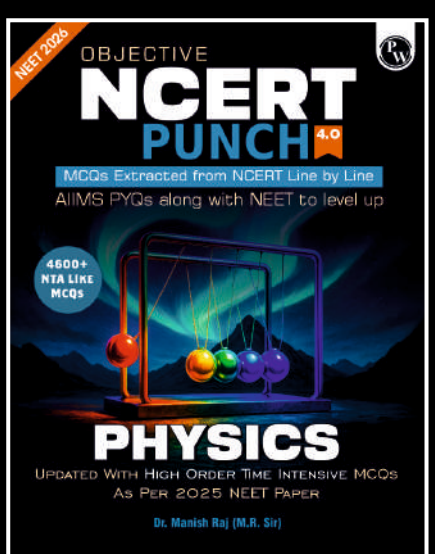

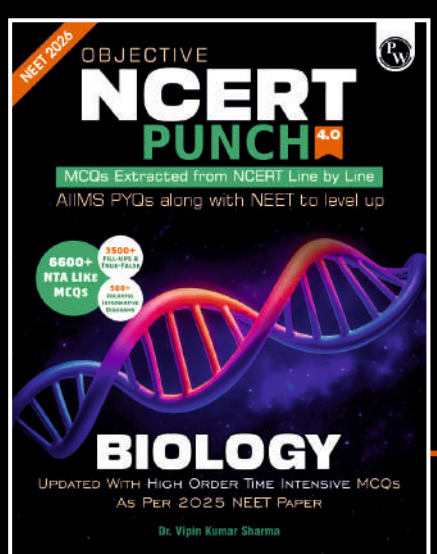

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