WEIRD CHEMIST

Some Basic Concepts of Chemistry – NEET PYQs (1988-2025)

"These are not just assignments. These are questions that once decided someone's rank. Solve them seriously... they might decide yours."

Topic–1 : Mole Concept

1. **One mole of carbon atom weighs 12 g, the number of atoms in it is equal to (Mass of carbon-12 is 1.9926×10^{-23} g)** NEET (Oct) 2020
   (a) 1.2×10^{23}
   (b) 6.022×10^{22}
   (c) 12×10^{22}
   (d) 6.022×10^{23}
2. **If Avogadro number N_A is changed from 6.022×10^{23} mol^{-1} to 6.022×10^{20} mol^{-1} this would change** CBSE–AIPMT 2015
   (a) the definition of mass in units of grams
   (b) the mass of one mole of carbon
   (c) the ratio of chemical species to each other in a balanced equation
   (d) the ratio of elements to each other in a compound
3. **The number of gram molecules of oxygen in 6.02×10^{24} molecules is** CBSE–AIPMT 1995
   (a) 1
   (b) 5
   (c) 10
   (d) 100
4. **Which one of the followings has maximum number of atoms?** NEET (Sep) 2020
   (a) 1 g of Mg
   (b) 1 g of O_2
   (c) 1 g of Li
   (d) 1 g of Ag
5. **Which has maximum number of molecules?** CBSE–AIPMT 1981
   (a) 10 g O_2
   (b) 11.2 L N_2 at STP
   (c) 1 g H_2
   (d) 22 g CO_2
6. **In which case is the number of molecules of water maximum?** NEET 2018
   (a) 0.00224 L of water vapours at 1 atm and 273 K
   (b) 0.18 g of water
   (c) 18 mL of water
   (d) 10^{-3} mol of water
7. **The maximum number of molecules are present in** CBSE–AIPMT 2004

(a) 15 L of H_2 at STP
(b) 5 L of N_2 at STP
(c) 0.5 g of H_2
(d) 10 g of O_2

8. **The number of atoms in 0.1 mole of a triatomic gas is** CBSE–AIPMT 2010
(a) 6.026×10^{22}
(b) 1.806×10^{23}
(c) 3.600×10^{23}
(d) 1.800×10^{22}

9. **The number of atoms in 4.25 g of NH_3 is approximately** CBSE–AIPMT 1999
(a) 4×10^{23}
(b) 2×10^{23}
(c) 1×10^{23}
(d) 6×10^{23}

10. **The number of oxygen atoms in 4.4 g of CO_2 is** CBSE–AIPMT 1994
(a) 6.02×10^{22}
(b) 1.204×10^{23}
(c) 3.01×10^{22}
(d) 2.408×10^{23}

11. **1 cc N_2O at NTP contains** CBSE–AIPMT 1992
(a) 2.7×10^{19} molecules
(b) 6.02×10^{20} molecules
(c) 1.2×10^{19} molecules
(d) 3.0×10^{19} molecules

12. **The number of moles of oxygen in 1 L of air containing 21% oxygen by volume, under standard conditions, is** CBSE–AIPMT 1996
(a) 0.21
(b) 0.0093
(c) 0.0047
(d) 0.0021

13. **Volume occupied by one molecule of water (density = 1 g cm^{-3}) is** CBSE–AIPMT 2008
(a) $9.0 \times 10^{-23}\,cm^3$
(b) $6.023 \times 10^{-23}\,cm^3$
(c) $3.0 \times 10^{-23}\,cm^3$
(d) $5.5 \times 10^{-23}\,cm^3$

14. **Suppose the elements X and Y combine to form two compounds XY_2 and X_2Y_3. When 0.1 mole of XY_2 weighs 10 g and 0.05 mole of X_2Y_3 weighs 9 g, the atomic weights of X and Y are** NEET 2019
(a) 20, 30
(b) 30, 20
(c) 40, 20
(d) 20, 40

15. **Ratio of C_p and C_v of a gas 'X' is 1.4. The number of atoms of the gas 'X' present in 11.2 L of it at NTP will be** CBSE–AIPMT 1993

(a) 6.02×10^{23}
(b) 3.01×10^{23}
(c) 1.204×10^{23}
(d) 9.03×10^{23}

Topic–2 : Concentration Terms

1. **6.02×10^{20} molecules of urea are present in 100 mL of its solution. The concentration of solution is** NEET 2013
   (a) 0.02 M
   (b) 0.01 M
   (c) 0.001 M
   (d) 0.1 M
2. **How many grams of concentrated nitric acid solution should be used to prepare 250 mL of 2.0 M HNO_3? The concentrated acid is 70% HNO_3.** NEET 2013
   (a) 45.0 g
   (b) 90.0 g
   (c) 70.0 g
   (d) 54.0 g
3. **What is the mass of precipitate formed when 50 mL of 16.9% solution of $AgNO_3$ is mixed with 50 mL of 5.8% NaCl solution?** CBSE–AIPMT 2015
   (a) 28 g
   (b) 3.5 g
   (c) 7 g
   (d) 14 g

Topic–3 : Stoichiometry

1. **The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is** CBSE–AIPMT 2012
   (a) 20
   (b) 30
   (c) 40
   (d) 10
2. **What is the weight of oxygen required for the complete combustion of 2.8 kg of ethylene?** CBSE–AIPMT 1989
   (a) 2.8 kg
   (b) 6.4 kg
   (c) 9.6 kg
   (d) 96 kg
3. **Assuming fully decomposed, the volume of CO_2 released at STP on heating 9.85 g of $BaCO_3$ will be** CBSE–AIPMT 2000
   (a) 1.12 L
   (b) 0.84 L

(c) 2.24 L
(d) 4.96 L

4. **In the reaction $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$, when 1 mole of ammonia and 1 mole of O_2 are made to react to completion, then** CBSE–AIPMT 1998
   (a) 1.0 mole of H_2O is produced
   (b) 1.0 mole of NO will be produced
   (c) all the oxygen will be consumed
   (d) all the ammonia will be consumed
5. **When 22.4 L of H_2 is mixed with 11.2 L of Cl_2, each at STP, the moles of HCl formed is equal to** CBSE–AIPMT 2014
   (a) 1 mole
   (b) 2 moles
   (c) 0.5 mole
   (d) 1.5 moles
6. **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** CBSE–AIPMT 2009
   (a) 2 moles
   (b) 3 moles
   (c) 4 moles
   (d) 1 mole
7. **1.0 g of magnesium is burnt with 0.56 g of oxygen in a closed vessel. Which reactant is left in excess and how much?** CBSE–AIPMT 2014
   (a) Mg, 0.16 g
   (b) O_2, 0.16 g
   (c) Mg, 0.44 g
   (d) O_2, 0.28 g
8. **How many moles of lead (II) chloride will be formed from a reaction between 6.5 g of PbO and 3.2 g of HCl?** CBSE–AIPMT 2008
   (a) 0.044
   (b) 0.333
   (c) 0.011
   (d) 0.029
9. **What volume of oxygen gas measured at 0°C and 1 atm, is needed to burn completely 1 L of propane gas measured under the same conditions?** CBSE–AIPMT 2008
   (a) 7 L
   (b) 6 L
   (c) 5 L
   (d) 10 L
10. **Liquid benzene (C_6H_6) burns in oxygen according to the equation $2C_6H_6 + 15O_2 \rightarrow 12CO_2 + 6H_2O$. How many litres of O_2 at STP are needed to complete the combustion of 39 g of liquid benzene?** CBSE–AIPMT 1996
    (a) 74 L
    (b) 11.2 L
    (c) 22.4 L

(d) 84 L

11. **In Haber process 30 L of dihydrogen and 30 L of dinitrogen were taken for reaction which yielded only 50% of the expected product. What will be the composition of gaseous mixture under the aforesaid condition in the end?** CBSE–AIPMT 2003
    (a) 20 L ammonia, 10 L nitrogen, 30 L hydrogen
    (b) 20 L ammonia, 25 L nitrogen, 15 L hydrogen
    (c) 20 L ammonia, 20 L nitrogen, 20 L hydrogen
    (d) 10 L ammonia, 25 L nitrogen, 15 L hydrogen
12. **20.0 g of a magnesium carbonate sample decomposes on heating to give carbon dioxide and 8.0 g magnesium oxide. What will be the percentage purity of magnesium carbonate in the sample?** CBSE–AIPMT 2011
    (a) 75
    (b) 96
    (c) 60
    (d) 84

Topic–4 : Miscellaneous Topics

1. **An organic compound containing C, H and N gave the following results on analysis: C = 40%, H = 13.33%, N = 46.67%. Its empirical formula would be** CBSE–AIPMT 2002
    (a) C_2H_7N
    (b) CH_5N
    (c) CH_4N
    (d) $C_2H_7N_2$
2. **An organic compound contains C = 40%, O = 53.34% and H = 6.60%. The empirical formula of the compound is** CBSE–AIPMT 2001
    (a) CH_2O
    (b) C_2H_4O
    (c) $C_3H_6O_2$
    (d) CHO
3. **An organic compound contains carbon, hydrogen and oxygen. Its elemental analysis gave C, 38.71% and H, 9.67%. The empirical formula of the compound would be** NEET 2019
    (a) C_2H_6O
    (b) CH_3O
    (c) CH_2O
    (d) C_3H_6O
4. **An organic compound contains 78% (by wt.) carbon and remaining percentage of hydrogen. The right option for the empirical formula of this compound is** NEET 2021
    (a) CH
    (b) CH_2
    (c) CH_3
    (d) CH_4
5. **The molecular weight of O_2 and SO_2 are 32 and 64 respectively. At 15°C and 150**

mmHg pressure, 1 L of O_2 contains N molecules. The number of molecules in 2 L of SO_2 under the same conditions will be CBSE–AIPMT 1990

(a) $N/2$
(b) N
(c) $2N$
(d) $4N$

6. **An element X has the following isotopic composition: ^{200}X: 90%, ^{199}X: 8.0%, ^{202}X: 2.0%. The weighted average atomic mass of the naturally occurring element X is closest to** NEET 2018

(a) 199.8
(b) 200.0
(c) 200.1
(d) 200.4

7. **Boron has two stable isotopes, ^{10}B (19%) and ^{11}B (81%). Calculate average atomic weight of boron in the periodic table** CBSE–AIPMT 1990

(a) 10.8
(b) 10.2
(c) 11.2
(d) 10.0

8. **The percentage weight of Zn in white vitriol [$ZnSO_4 \cdot 7H_2O$] is approximately equal to** CBSE–AIPMT 1983

(a) 22.7
(b) 28.4
(c) 36.4
(d) 43.2

9. **Percentage of Se in peroxidase anhydrase enzyme is 0.5% by weight (atomic weight = 78.4), then minimum molecular weight of peroxidase anhydrase enzyme is** CBSE–AIPMT 1986

(a) 15680
(b) 7840
(c) 784
(d) 1568

10. **Haemoglobin contains 0.33% of iron by weight. The molecular weight of haemoglobin is approximately 67200 g. The number of iron atoms present in one molecule of haemoglobin are** CBSE–AIPMT 1985

(a) 1
(b) 2
(c) 4
(d) 6

11. **The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are** NEET (Sep) 2020

(a) 104, 71 and 71
(b) 71, 71 and 104
(c) 175, 104 and 71
(d) 71, 104 and 71

12. **Which of the following is isoelectronic?** CBSE–AIPMT 2002

(a) CO_2, NO_2
(b) NO_2^-, CO_2
(c) CN^-, CO
(d) SO_2, CO_2

13. **The number of significant figures for the three numbers 161 cm, 0.161 cm, 0.0161 cm are** CBSE–AIPMT 1998
(a) 3, 4 and 5 respectively
(b) 3, 4 and 4 respectively
(c) 3, 3 and 4 respectively
(d) 3, 3 and 3 respectively

14. **In the final answer of the expression $\frac{(29.2-20.2)(1.79\times10^5)}{1.37}$, the number of significant figures is** CBSE–AIPMT 1994
(a) 1
(b) 2
(c) 3
(d) 4

15. **0.24 g of a volatile gas, upon vaporisation, gives 45 mL vapour at NTP. What will be the vapour density of the substance?** CBSE–AIPMT 1996
(a) 95.93
(b) 59.93
(c) 95.39
(d) 5.993

16. **A metal oxide has the formula Z_2O_3. It can be reduced by hydrogen to give free metal and water. 0.1596 g of the metal oxide requires 6 mg of hydrogen for complete reduction. The atomic weight of the metal is** CBSE–AIPMT 1987
(a) 27
(b) 56
(c) 52
(d) 24

Topic–5: NEET 2025-2022

1. **Dalton's Atomic theory could not explain which of the following?** NEET 2025
(a) Law of multiple proportion
(b) Law of gaseous volume
(c) Law of conservation of mass
(d) Law of constant proportion

2. **Among the following, choose the ones with equal number of atoms.** NEET 2025
A. 212 g of Na_2CO_3 (Molar mass = 106 g)
B. 248 g of Na_2O (Molar mass = 62 g)
C. 240 g of NaOH (Molar mass = 40 g)
D. 12 g of H_2 (Molar mass = 2 g)
E. 220 g of CO_2 (Molar mass = 44 g)
Choose the correct answer from the options given below:

(a) B, C and D only
(b) B, D and E only
(c) A, B and C only
(d) A, B and D only

3. **The amount of glucose required to prepare 250 mL of M/20 aqueous solution is : (Molar mass of glucose : 180 g mol^{-1})** NEET 2024 Re
(a) 2.25 g
(b) 4.5 g
(c) 0.44 g
(d) 1.125 g

4. **1.0 g of H_2 has same number of molecules as in:** NEET 2024 Re
(a) 14 g of N_2
(b) 18 g of H_2O
(c) 16 g of CO
(d) 28 g of N_2

5. **On complete combustion, 0.3 g of an organic compound gave 0.2 g of CO_2 and 0.1 g of H_2O. The percentage composition of carbon and hydrogen in the compound, respectively is:** NEET 2024 Re
(a) 4.07% and 15.02%
(b) 18.18% and 3.70%
(c) 15.02% and 4.07%
(d) 3.70% and 18.18%

6. **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** NEET 2024
(a) 750 mg
(b) 250 mg
(c) Zero mg
(d) 200 mg

7. **The highest number of helium atoms is in** NEET 2024
(a) 4 mol of helium
(b) 4 u of helium
(c) 4 g of helium
(d) 2.271098 L of helium at STP

8. **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 = 32 u)** NEET 2024
(a) A_2BC_2
(b) ABC_3
(c) AB_2C_2
(d) ABC_4

9. **The right option for the mass of CO_2 produced by heating 20 g of 20% pure limestone is** NEET 2023
(a) 1.76 g
(b) 2.64 g

(c) 1.32 g
(d) 1.12 g

10. **The density of 1 M solution of a compound 'X' is 1.25 g mL^{-1}. The correct option for the molality of solution is (Molar mass of compound X = 85 g)** NEET 2023
(a) 0.705 m
(b) 1.208 m
(c) 1.165 m
(d) 0.858 m

11. **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? [Calculate upto second place of decimal point]**

$$CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + 2H_2O(l)$$

NEET 2022

(a) 1.25 g
(b) 1.32 g
(c) 3.65 g
(d) 9.50 g

Chapter Analysis : Some Basic Concepts of Chemistry (NEET 1988–2025)

A total of **57 questions** have been asked from this chapter in NEET:

- **46 questions** from **1988–2022**
- **11 questions** from **2023–2025**

This shows that the chapter remains **highly relevant and scoring**.

Topic-wise Weightage

Topic	No. of Questions
Mole Concept	18
Stoichiometry	16
Miscellaneous Topics	18
Concentration Terms	5
Total	**57**

Key Insight: Almost **60% questions** come from **Mole Concept + Stoichiometry**.

NEET Strategy

- **Mole Concept** is a guaranteed question area every year
- **Stoichiometry** requires practice but gives sure marks
- Other topics are concept-based and predictable

Conclusion: This chapter is a **high-return, low-risk** scoring unit in NEET.