



CHEMISTRY

NCERT - NCERT CHEMISTRY(ENGLISH)

ATOMS AND MOLECULES

Solved Examples

1. (a) Calculate the relative molecular mass of water (H_2O). (b) Calculate the molecular mass of HNO_3 .

.



Watch Video Solution

2. Calculate the formula unit mass of $CaCl_2$.



Watch Video Solution

3. Calculate the number of moles for the following:

(i) 52 g of He (finding mole from mass)

(ii) $12.044 \times 10_{23}$ number of He atoms (finding mole from number of particles).



Watch Video Solution

4. Calculate the mass of the following:

(i) 0.5 mole of N_2 gas (mass from mole of molecule)

(ii) 0.5 mole of N atoms (mass from mole of atom)

(iii) $3.011 \times 10_{23}$ number of N atoms (mass from number)

(iv) $6.022 \times 10_{23}$ number of N_2 molecules (mass from number)



[Watch Video Solution](#)

5. Calculate the number of particles in each of the following:

(i) 46 g of Na atoms (number from mass)

(ii) 8gO_2 molecules (number of molecules from mass)

(iii) 0.1 mole of carbon atoms (number from given moles)



[Watch Video Solution](#)

Exercise

1. In a reaction, 5.3 g of sodium carbonate reacted with 6 g of acetic acid. The products were 2.2 g of carbon dioxide, 0.9 g water and 8.2 g of sodium

acetate. Show that these observations are in agreement with the law of conservation of mass.

sodium carbonate + acetic acid \rightarrow sodium acetate + carbon dioxide + water



[Watch Video Solution](#)

2. Hydrogen and oxygen combine in the ratio of 1:8 by mass to form water. What mass of oxygen gas would be required to react completely with 3 g of hydrogen gas?



[Watch Video Solution](#)

3. Which postulate of Dalton's atomic theory is the result of the law of conservation of mass?

 [Watch Video Solution](#)

4. Which postulate of Dalton's atomic theory can explain the law of definite proportions?

 [Watch Video Solution](#)

5. Define the atomic mass unit.

 [Watch Video Solution](#)

6. Why is it not possible to see an atom with naked eyes?



[Watch Video Solution](#)

7. Write down the formulae of

(i) sodium oxide

(ii) aluminium chloride

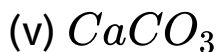
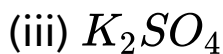
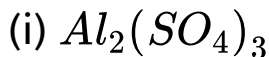
(iii) sodium sulphide

(iv) magnesium hydroxide



[Watch Video Solution](#)

8. Write down the names of compounds represented by the following formulae:



[Watch Video Solution](#)

9. What is meant by the term chemical formula?



[Watch Video Solution](#)

10. How many atoms are present in a

(i) H_2S molecule and

(ii) PO_4^{3-} ion?



Watch Video Solution

11. Calculate the molecular masses of

$H_2, O_2, Cl_2, CO_2, CH_4, C_2H_6, C_2H_4, NH_3, CH_3OH$

.



Watch Video Solution

12. Calculate the formula unit masses of ZnO , Na_2O , K_2CO_3 , given atomic masses of $\text{Zn} = 65 \text{ u}$, $\text{Na} = 23 \text{ u}$, $\text{K} = 39 \text{ u}$, $\text{C} = 12 \text{ u}$, and $\text{O} = 16 \text{ u}$.

 [Watch Video Solution](#)

13. If one mole of carbon atoms weighs 12 grams, what is the mass (in grams) of 1 atom of carbon?

 [Watch Video Solution](#)

14. Which has more number of atoms, 100 grams of sodium or 100 grams of iron (given, atomic mass of Na = 23 u, Fe = 56 u)?

 [Watch Video Solution](#)

15. A 0.24 g sample of compound of oxygen and boron was found by analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound by weight.

 [Watch Video Solution](#)

16. When 3.0 g of carbon is burnt in 8.00 g oxygen, 11.00 g of carbon dioxide is produced. What mass of carbon dioxide will be formed when 3.00 g of carbon is burnt in 50.00 g of oxygen? Which law of chemical combination will govern your answer?



Watch Video Solution

17. What are polyatomic ions? Give examples.



Watch Video Solution

18. Write the chemical formulae of the following.

(a) Magnesium chloride

(b) Calcium oxide

(c) Copper nitrate

(d) Aluminium chloride

(e) Calcium carbonate.



Watch Video Solution

19. Give the names of the elements present in the following compounds.

(a) Quick lime

(b) Hydrogen bromide

(c) Baking powder

(d) Potassium sulphate.

 [Watch Video Solution](#)

20. Calculate the molar mass of the following substances.

(a) Ethyne, C_2H_2

(b) Sulphur molecule, S_8

(c) Phosphorus molecule, P_4 (Atomic mass of phosphorus = 31)

(d) Hydrochloric acid, HCl

(e) Nitric acid, HNO_3



Watch Video Solution

21. What is the mass of—

(a) 1 mole of nitrogen atoms?

(b) 4 moles of aluminium atoms (Atomic mass of aluminium = 27)?

(c) 10 moles of sodium sulphite (Na_2SO_3)?



Watch Video Solution

22. Convert into mole.

(a) 12 g of oxygen gas

(b) 20 g of water

(c) 22 g of carbon dioxide.



Watch Video Solution

23. What is the mass of:

(a) 0.2 mole of oxygen atoms?

(b) 0.5 mole of water molecules?



Watch Video Solution

24. Calculate the number of molecules of sulphur

(S_8) present in 16 g of solid sulphur.



[Watch Video Solution](#)

25. Calculate the number of aluminium ions present in 0.051 g of aluminium oxide.

(Hint: The mass of an ion is the same as that of an atom of the same element. Atomic mass of Al = 27 u)



[Watch Video Solution](#)