

Some Basic Concepts of chemistry

Set 1

Q1. The SI unit of amount of substance is:

- a) Mole
- b) Gram
- c) Kilogram
- d) Litre

Answer: a) Mole

Q2. 1 mole of a substance contains:

- a) 6.022×10^{23} atoms
- b) 6.022×10^{23} particles
- c) 6.022×10^{23} electrons only
- d) 1 gram atom

Answer: b) 6.022×10^{23} particles

Q3. Avogadro's number is:

- a) 3.011×10^{23}
- b) 6.022×10^{23}
- c) 6.022×10^{22}
- d) 1.66×10^{-23}

Answer: b) 6.022×10^{23}

Q4. 1 amu is equal to:

- a) 1.66×10^{-27} g
- b) 1.66×10^{-24} g
- c) 1.66×10^{-23} g
- d) 1.66×10^{-26} g

Answer: b) 1.66×10^{-24} g

Q5. Which of the following has no unit?

- a) Atomic mass

- b) Relative atomic mass
- c) Molar mass
- d) Molecular mass

Answer: b) Relative atomic mass

Q6. SI unit of molar mass is:

- a) g/mol
- b) kg/mol
- c) kg
- d) g

Answer: b) kg/mol

Q7. SI unit of molarity is:

- a) mol/L
- b) mol/kg
- c) mol/m³
- d) g/L

Answer: c) mol/m³

Q8. 1 mole of oxygen atoms weighs:

- a) 16 g
- b) 8 g
- c) 32 g
- d) 1 g

Answer: a) 16 g

Q9. 1 mole of O₂ molecules weighs:

- a) 16 g
- b) 32 g
- c) 48 g
- d) 64 g

Answer: b) 32 g

Q10. Molar volume of an ideal gas at STP is:

- a) 22.4 L
- b) 24.4 L
- c) 22.7 L
- d) 1 L

Answer: a) 22.4 L

Q11. Empirical formula of glucose is:

- a) $C_6H_{12}O_6$
- b) CHO
- c) CH_2O
- d) $C_2H_4O_2$

Answer: c) CH_2O

Q12. The law of conservation of mass was proposed by:

- a) Dalton
- b) Lavoisier
- c) Avogadro
- d) Gay Lussac

Answer: b) Lavoisier

Q13. Law of definite proportions was proposed by:

- a) Proust
- b) Dalton
- c) Avogadro
- d) Gay Lussac

Answer: a) Proust

Q14. The law of multiple proportions was proposed by:

- a) Proust
- b) Dalton
- c) Lavoisier
- d) Gay Lussac

Answer: b) Dalton

Q15. Which is NOT a postulate of Dalton's atomic theory?

- a) All atoms of an element are identical
- b) Atoms can be created or destroyed
- c) Atoms combine in simple whole numbers
- d) Atoms of different elements are different

Answer: b) Atoms can be created or destroyed

Q16. Law of gaseous volumes was given by:

- a) Avogadro
- b) Gay Lussac
- c) Dalton
- d) Lavoisier

Answer: b) Gay Lussac

Q17. Avogadro's hypothesis relates:

- a) Volume and temperature
- b) Volume and pressure
- c) Volume and number of molecules
- d) Mass and volume

Answer: c) Volume and number of molecules

Q18. Equivalent mass = ?

- a) Atomic mass/Valency
- b) Molar mass/Valency
- c) Valency/Atomic mass
- d) Valency/Molar mass

Answer: b) Molar mass/Valency

Q19. Molarity changes with:

- a) Temperature
- b) Pressure
- c) Both temperature and pressure
- d) Does not change

Answer: a) Temperature

Q20. Molality depends on:

- a) Temperature
- b) Pressure
- c) Mass of solvent
- d) Volume of solvent

Answer: c) Mass of solvent

Q21. Molar mass of Na_2CO_3 is:

- a) 84 g/mol
- b) 106 g/mol
- c) 100 g/mol
- d) 96 g/mol

Answer: b) 106 g/mol

Q22. Number of moles in 9 g of H_2O is:

- a) 0.25 mol
- b) 0.5 mol
- c) 1 mol
- d) 2 mol

Answer: b) 0.5 mol

Q23. Number of molecules in 18 g of H_2O is:

- a) 6.022×10^{23}
- b) 1.204×10^{24}
- c) 3.011×10^{23}
- d) 12.044×10^{23}

Answer: a) 6.022×10^{23}

Q24. Molar mass of CaCO_3 is:

- a) 50 g/mol
- b) 100 g/mol
- c) 60 g/mol

d) 40 g/mol

Answer: b) 100 g/mol

Q25. Number of atoms in 46 g of Na is:

a) 6.022×10^{23}

b) 1.204×10^{24}

c) 3.011×10^{23}

d) 12.044×10^{23}

Answer: a) 6.022×10^{23}

Q26. Number of moles in 44 g of CO_2 is:

a) 1 mol

b) 2 mol

c) 0.5 mol

d) 1.5 mol

Answer: a) 1 mol

Q27. Number of molecules in 11 g of CO_2 is:

a) 1.5×10^{23}

b) 2.5×10^{23}

c) 3.011×10^{23}

d) 6.022×10^{23}

Answer: c) 3.011×10^{23}

Q28. Molar mass of C_2H_6 is:

a) 28 g/mol

b) 30 g/mol

c) 32 g/mol

d) 34 g/mol

Answer: b) 30 g/mol

Q29. Number of moles in 24 g of carbon (C) is:

a) 1 mol

b) 2 mol

c) 3 mol

d) 4 mol

Answer: b) 2 mol

Q30. Volume occupied by 2 moles of an ideal gas at STP is:

a) 22.4 L

b) 11.2 L

c) 44.8 L

d) 33.6 L

Answer: c) 44.8 L

Q31. Mass of 0.5 mol of H_2SO_4 is:

a) 24 g

b) 49 g

c) 98 g

d) 36 g

Answer: b) 49 g

Q32. Number of H atoms in 2 g of H_2 gas:

a) 6.022×10^{23}

b) 3.011×10^{23}

c) 12.044×10^{23}

d) 1.204×10^{24}

Answer: a) 6.022×10^{23}

Q33. Molar mass of HNO_3 is:

a) 62 g/mol

b) 61 g/mol

c) 60 g/mol

d) 63 g/mol

Answer: a) 62 g/mol

Q34. Number of atoms in 1 mole of H_2 gas is:

a) 6.022×10^{23}

b) 12.044×10^{23}

c) 3.011×10^{23}

d) 24×10^{23}

Answer: b) 12.044×10^{23}

Q35. Number of molecules in 1 mole of N_2 gas is:

a) 6.022×10^{23}

b) 12.044×10^{23}

c) 3.011×10^{23}

d) 1.66×10^{-24}

Answer: a) 6.022×10^{23}

Q36. Molar mass of CH_4 is:

a) 14 g/mol

b) 16 g/mol

c) 18 g/mol

d) 20 g/mol

Answer: b) 16 g/mol

Q37. Mass of 5 moles of oxygen atoms is:

a) 16 g

b) 32 g

c) 80 g

d) 160 g

Answer: c) 80 g

Q38. Number of moles in 22 g of CO_2 is:

a) 0.25 mol

b) 0.5 mol

c) 1 mol

d) 2 mol

Answer: b) 0.5 mol

Q39. Number of atoms in 12 g of C-12 is:

- a) 6.022×10^{23}
- b) 3.011×10^{23}
- c) 1.66×10^{-24}
- d) 12×10^{23}

Answer: a) 6.022×10^{23}

Q40. Mass of 0.25 mol of NaCl is:

- a) 14.6 g
- b) 29.25 g
- c) 58.5 g
- d) 116 g

Answer: a) 14.6 g

Q41. Equivalent mass of H_2SO_4 is:

- a) 98 g
- b) 49 g
- c) 24.5 g
- d) 36 g

Answer: b) 49 g

Q42. Molecular formula of a compound is double its empirical formula. If empirical formula mass = 30, then molecular mass = ?

- a) 30
- b) 60
- c) 15
- d) 120

Answer: b) 60

Q43. Number of molecules in 5.6 L of O_2 at STP is:

- a) 6.022×10^{23}
- b) 1.204×10^{23}

c) 3.011×10^{23}

d) 2.24×10^{23}

Answer: c) 3.011×10^{23}

Q44. The limiting reagent in the reaction:

$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$, if 4 mol H_2 and 3 mol O_2 taken, is:

a) H_2

b) O_2

c) H_2O

d) Both

Answer: a) H_2

Q45. The percentage of oxygen in H_2O is:

a) 11.1%

b) 88.9%

c) 33.3%

d) 50%

Answer: b) 88.9%

Q46. The percentage of nitrogen in NH_3 is:

a) 82.4%

b) 17.6%

c) 14%

d) 50%

Answer: a) 82.4%

Q47. If 1 L of H_2 and 1 L of Cl_2 react, volume of HCl formed (at STP) is:

a) 1 L

b) 2 L

c) 0.5 L

d) 4 L

Answer: b) 2 L

Q48. A sample of NaOH contains 40 g. Number of equivalents present = ? (Eq. wt = 40 g/equiv)

- a) 0.5 eq
- b) 1 eq
- c) 2 eq
- d) 4 eq

Answer: b) 1 eq

Q49. If 5 g of CaCO_3 is decomposed, volume of CO_2 at STP released is:

(Molar mass = 100 g/mol)

- a) 22.4 L
- b) 2.24 L
- c) 1.12 L
- d) 11.2 L

Answer: c) 1.12 L

Q50. One mole of N_2 contains how many nitrogen atoms?

- a) 6.022×10^{23}
- b) 12.044×10^{23}
- c) 3.011×10^{23}
- d) 24×10^{23}

Answer: b) 12.044×10^{23}