

**BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 11**

# Some Basic Concepts of Chemistry

Chemistry · Chapter 1 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE	TOTAL MARKS	DURATION	MARKING	TARGET
_____	<b>30</b>	<b>60 min</b>	<b>As per board</b>	<b>≥ 24/30</b>

**GENERAL INSTRUCTIONS**

- All questions are compulsory.
- Section A: 4 one-mark questions. Section B: 3 two-mark questions. Section C: 3 three-mark questions. Section D: 2 case-study / long-answer questions.
- Show all working in numerical questions; marks are awarded for method as well as the final answer.
- Use atomic masses: H = 1, C = 12, N = 14, O = 16, Na = 23, S = 32, Cl = 35.5; Avogadro number =  $6.022 \times 10^{23}$ .
- Report final answers to an appropriate number of significant figures.

**Section A — Very Short Answer (1 mark each, 4 Qs)**
**4 MARKS · 8 MIN**

- Q1.** Define one mole. [PYQ 2020 School Annual] **[1 mark]**
- Q2.** State the law of constant proportions. [PYQ 2019 School Annual] **[1 mark]**
- Q3.** Why is the atomic mass of chlorine 35.45 u and not a whole number? [PYQ 2021 CBSE SQP] **[1 mark]**
- Q4.** Which concentration term, molarity or molality, is independent of temperature, and why? [PYQ 2023 School Annual] **[1 mark]**

**Section B — Short Answer I (2 marks each, 3 Qs)**
**6 MARKS · 12 MIN**

- Q5.** Calculate the number of moles and the number of molecules in 22 g of carbon dioxide (CO<sub>2</sub>). [PYQ 2020 School Annual] **[2 marks]**
- Q6.** Distinguish between molarity and molality, giving the defining formula of each. [PYQ 2022 CBSE SQP] **[2 marks]**
- Q7.** State Avogadro's law and explain how it accounts for Gay-Lussac's law of gaseous volumes. [PYQ 2021 School Annual] **[2 marks]**

**Section C — Short Answer II (3 marks each, 3 Qs)**
**9 MARKS · 20 MIN**

- Q8.** A 4.0 g sample of NaOH is dissolved in water to make 250 mL of solution. Calculate the molarity of the solution. (Molar mass NaOH = 40 g/mol.) [PYQ 2023 School Annual] **[3 marks]**
- Q9.** A compound contains 40.0% carbon, 6.7% hydrogen and 53.3% oxygen by mass. Determine its empirical formula. (Atomic masses: C=12, H=1, O=16.) [PYQ 2022 CBSE SQP] **[3 marks]**
- Q10.** State the law of conservation of mass and the law of multiple proportions, giving one illustration each. [PYQ 2019 School Annual] **[3 marks]**

**Section D — Case Study / Long Answer (Qs as marked, 2 Qs)**
**11 MARKS · 20 MIN**

- Q11.** Ammonia is manufactured industrially by the Haber process:  $N_2 + 3 H_2 \rightarrow 2 NH_3$ . In a trial run, 28 g of nitrogen gas is mixed with 10 g of hydrogen gas. (a) Calculate the moles of each reactant. (b) Identify the limiting reagent, with reasoning. (c) Calculate the maximum mass of ammonia that can be formed. (d) Calculate the mass of the excess reagent left unreacted. (Atomic masses: N=14, H=1.) [PYQ 2024 School Annual] **[6 marks]**
- Q12.** Glucose is the simplest sugar used by the body for energy. A sample is found to contain 40.0% C, 6.7% H and 53.3% O by mass, and its molar mass is determined to be 180 g/mol. (a) Determine the empirical formula. (b) Calculate the empirical formula mass. (c) Determine the molecular formula. (d) State the difference between an empirical and a molecular formula. (Atomic masses: C=12, H=1, O=16.) [PYQ 2022 CBSE SQP] **[5 marks]**

**Marking scheme & model answers** — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers · readyforboards.com · +91 70330 05444