



Sharp Test Series — Sample Paper

Chapter Test

QUESTION PAPER CODE
SMPLTHY-2026-000113

Total Questions 14	Subjects Chemistry	Maximum Marks 30	Time 1 Hour 30 Minutes
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Instructions

1. All questions are compulsory unless the section heading says otherwise.
2. Figures to the right indicate full marks.
3. Draw neat, labelled diagrams wherever necessary.
4. In numerical questions, write the formula, the working and the answer with units.
5. Write all your answers in the separate answer booklet.

SECTION A — Multiple Choice Questions

[5]

Attempt **all** questions. Each question carries 1 mark.

- Q.1** The number of atoms (z) per unit cell of a BODY-CENTRED cubic (bcc) lattice is [1]
(A) 1 (B) 4
(C) 2 (D) 6
- Q.2** The coordination number of each atom in a SIMPLE cubic structure is [1]
(A) 4 (B) 12
(C) 6 (D) 8
- Q.3** Sodium chloride is an example of [1]
(A) a molecular solid (B) an ionic solid
(C) a covalent solid (D) a metallic solid
- Q.4** The MOST efficient packing of identical spheres is achieved in the [1]
(A) simple cubic structure
(B) body-centred cubic structure
(C) ccp (fcc) and hcp close-packed structures
(D) diamond cubic structure
- Q.5** Diamond and quartz (SiO_2) are examples of [1]
(A) covalent (network) solids
(B) molecular solids
(C) ionic solids, held together by electrostatic attraction between ions
(D) amorphous solids

SECTION B — Short Answer Questions

[8]

Attempt **all** questions. Each question carries 2 marks.

- Q.6** What is an impurity defect? Explain it with the example of SrCl_2 added to NaCl . [2]
- Q.7** Explain Frenkel defect with a suitable example. [2]
- Q.8** Give any two differences between Schottky defect and Frenkel defect. [2]
- Q.9** Distinguish between crystalline and amorphous solids on any two points. [2]

SECTION C — Short Answer Questions

[9]

Attempt **all** questions. Each question carries 3 marks.

- Q.10** What are unit cell parameters? Using them, state the axial lengths and axial angles of the cubic, tetragonal and orthorhombic crystal systems. [3]
- Q.11** Aluminium crystallises in a face-centred cubic lattice. Its molar mass is 27 g mol^{-1} and its density is 2.7 g cm^{-3} . Calculate (a) the number of unit cells present in 1 g of aluminium and (b) the edge length of its unit cell. ($N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$) [3]
- Q.12** Molecular solids are of three types. Name them, state the force that holds the molecules together in each, and give one example of each. [3]

SECTION D — Long Answer Questions

[8]

Attempt **all** questions. Each question carries 4 marks.

- Q.13** What is the origin of magnetism in solids? Classify solids on the basis of their magnetic properties and explain each type with one example. [4]
- Q.14** Explain (a) Schottky defect and (b) metal-excess defect due to anionic vacancies. Mention the effect of each on the properties of the crystal. [4]