

Class 12 Chemistry Chapter 1 The Solid State MCQs

1. What are the most key factors of solid-state reactions?

- a) Size of the particles
- b) Mechanical properties of solids
- c) Thermodynamic and kinetic factors
- d) Environmental factors

Answer: d

Explanation: Thermodynamic considerations decide whether or not a reaction should occur in the solid state by assessing the change in free energy involved, while kinetic factors govern the rate at which the reaction happens.

2. Which approach can be employed to produce a high degree of homogeneity in the creation of ZnFe_2O_4 spinel?

- a) Distillation method
- b) Vaporization method
- c) Coprecipitation method
- d) Crystallization method

Answer: c

Explanation: The reactants are mixed together manually or mechanically in a conventional solid state reaction, and the ensuing reaction rate is largely determined by the degree of homogeneity accomplished during mixing and the intimacy of contact between the grains. With the Coprecipitation method, a high degree of homogeneity can be achieved while maintaining a tiny particle size, speeding up the reaction pace.

3. In the zone melting approach, which of the following principles was used?

- a) Impurities concentrate in the liquid phase than in gaseous phase
- b) Impurities concentrate in the solid than in liquid phase
- c) Impurities concentrate in the gaseous phase than in the solid phase
- d) Impurities concentrate in the liquid phase than in the solid phase

Answer: d

Explanation: The zone melting approach is based on the idea that impurities tend to concentrate in liquid rather than solid phases. As a result, the moving molten zone sweeps' impurities out of the

crystal. Purification and crystal formation of high melting metals like tungsten have been accomplished using this technology.

4. Which solid structure has a definite and sharp melting point?

- a) All types of solids
- b) No type of solid
- c) Amorphous solids
- d) Crystalline solids

Answer: d

Explanation: The structure of crystalline solids is completely organized and collapses at a specified temperature. Amorphous substances melt at a variety of temperatures rather than at a single temperature.

5. _____ is a crystalline's basic repetitive structural unit.

- a) Monomer
- b) Molecule
- c) Unit cell
- d) Atom

Answer: c

Explanation: A crystalline solid is made up of numerous tiny crystals, each of which is referred to as a unit cell. It's a distinct term. A polymer's basic unit is a monomer, and atoms create molecules, which can then be arranged to form solids, liquids, or gasses.

6. Sulfur exists in two polymorphic forms _____ and _____

- a) rhombic and monoclinic
- b) rhombic and triclinic
- c) hexagonal and triclinic
- d) hexagonal and monoclinic

Answer: a

Explanation: Sulfur has two polymorphic structures: rhombic and monoclinic. When a single substance crystallizes in two or more forms depending on the conditions, it is called a polymorphous structure.

7. What is the total number of Bravais lattices in the crystal structures?

- a) 3
- b) 6

- c) 14
- d) 24

Answer: c

Explanation: The Bravais lattice of a structure is formed by the combination of the crystal system and the lattice type; there are fourteen possible Bravais lattices. They can be calculated by combining several allowable crystal systems and space lattices, such as monoclinic, C-centered monoclinic, and primitive triclinic, which are three of the fourteen conceivable Bravais lattices.

8. When X-rays are diffracted by a series of planes, the resultant intensity is sometimes zero; these are created by absent reflections; what is the number of absent reflections divided?

- a) 2
- b) 10
- c) 50
- d) 100

Answer: a

Explanation: These missing reflections are classified into two groups: those that are missing due to a quirk in the structure, and those that are missing due to the structure's symmetry or kind of lattice. Systematic absences are what they're called.

9. Which of the following claims about crystal lattice diffraction patterns is correct?

- a) Diffraction patterns possess a center of symmetry
- b) Diffraction patterns don't have a center of symmetry
- c) Diffraction patterns are linear space
- d) Diffraction patterns contain α -rays

Answer: a

Explanation: In reciprocal space, diffraction patterns have a symmetry center. This lofty claim implies that miller indices positive hkl and negative hkl reflections are comparable, provided that anomalous dispersion is not present.

10. What are the crystallization's initial materials?

- a) Liquid, aqueous solution, emulsion
- b) Gas, aqueous solution, foam
- c) Aqueous solution, melt, glass or gel
- d) Solid, gas, melt, solid aerosol

Answer: c

Explanation: Aqueous solutions, whether in the form of a melt, glass, or gel, are typically homogeneous, single-phase, and amorphous. This could make crystalline product formation much easier, as long-range ion diffusion may not be required, and the product would form at a lower temperature.

