CBSE Class 12 physics
Important Questions
Chapter 1
Solid State

1 Marks Questions

1. What are fluids? Give examples.

Ans. Substances which flow are fluids e.g. liquids and gases.

2. Solids are rigid why?

Ans. Rigidity in solids is due to fixed positions of the constituent particles and their oscillations about their mean positions

3. How are solids classified?

Ans. Solids may be classified into two categories – crystalline and amorphous.

4. Why do crystalline solids are anisotropic nature and amorphous solid are isotropic in nature.

Ans. Anisotropy in crystals is due to different arrangement of particles along different directions. Isotropic in amorphous solid is due to its long range order in them and arrangement is irregular along all the directions.

5. Define the term: Crystal lattice

Ans. A regular three dimensional arrangement of points in space is called crystal lattice.

6. What is a unit cell?

Ans. The smallest portion of a crystal lattice which, when, repeated in different directions, generates the entire lattice, is called its unit cell.

7. What are the axial angles and edge length in a cubic crystal system?

Ans. Axial angles, $\alpha = \beta = \gamma = 90^0$ and edge lengths a = b = c.

8. Give one example of each – Tetragonal and hexagonal crystal system.

Ans. Tetragonal crystal system – white tin, SnO_2 .

Hexagonal crystal system – Graphite, ZnO.

9. What is square close packing?

Ans. The close packing of spheres – atoms or ions, in which each sphere is in contact with four of is neighbors, whose centres, if joined, form a square, is called square close packing.

10. What is the coordination number in:-

(a) Square close packing

(b) Hexagonal close packing.

Ans. (a) in square close packing, the coordination no. is 4.

(b) In hexagonal close packing, the coordination no. is 12.

11. Define – (a) void (b) coordination Number

Ans. (a) void – the empty space left between close packed spheres are voids.

(b) Coordination number – the number of spheres or atoms surrounding a single sphere or atom in a crystal is called coordination number.

12. What is the packing efficiency in

Ans. (a) hcp packing efficiency is 74%.

(b) bcc packing efficiency is 68%.

(c) packing efficiency in simple cubic structure is 52.4%.

13. What is the meaning of term 'defect' with reference to crystal

Ans. The defects are irregularities in the arrangement of constituent particles in a crystal.

14. Name the types of point defect.

Ans. point defects are of three types – stoichiometric defect, impurity defect & non – stoichiometric defect.

15. What are F centres?

Ans. F – centre is the position of an anion in an ionic crystal which is occupied by a trapped electron

16. Why do the heating of NaCl in an atmosphere of sodium vapour impact yellow colour ?

Ans. In an atmosphere of sodium vapour the Cl^- diffuses to the surface of the crystal and combine with Na atom to form NaCl. During this process Na atom loses an electron –cl for Na^+. As a result the crystal has an excess of sodium which import yellow colour to the crystal.

17. Give an example which shows both frenkel and Schottky defect.

Ans. AgBr.

18. Define the term – doping.

Ans. Doping – The process of introduction of impurity atoms into an insulator to make it a semiconductor is called doping.

19. What is the meaning of 13 – 15 compounds?

Ans. A semiconductor formed by combination of 13 groups & 15 groups elements is 13 – 15 compound.

20. Name an element which can be added to silicon to give a –

(i) p – type semiconductor

(ii) n – type semiconductor.

Ans. (i) For p – type semiconductor Borom can be added.

(ii) For n – type semiconductor, Phosphorous can be added.

21. What is the difference between ferromagnetic and paramagnetic substances?

Ans. A ferromagnetic substance has permanent magnetic behaviour whereas a paramagnetic substance acts as a magnet only in the presence of an external magnetic field.