

Chapter 1 The Solid State

Assignment 2

Class 12

Prerna Edu

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DPP

DAILY PRACTICE PROBLEMS

CLASS : XIIth

DATE :

SUBJECT : CHEMISTRY

DPP No. : 2

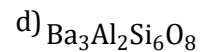
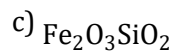
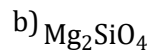
Topic :- THE SOLID STATE

- The radius ratio of CsCl is 0.93. The expected lattice structure is
 - Tetrahedral
 - Square planar
 - Octahedral
 - Body centred cubic
- Which one of the following defects in the crystals lowers its density?
 - Frenkel defect
 - Schottky defect
 - F-centres
 - Interstitial defect
- The yellow colour of ZnO and conducting nature produced in heating is due to:
 - Metal excess defects due to interstitial cation
 - Extra positive ions present in an interstitial site
 - Trapped electrons
 - All of the above
- A metal has bcc structure and the edge length of its unit cell is 3.04 Å. The volume of the unit cell in cm³ will be
 - $1.6 \times 10^{-21} \text{ cm}^3$
 - $2.81 \times 10^{-23} \text{ cm}^3$
 - $6.02 \times 10^{-23} \text{ cm}^3$
 - $6.6 \times 10^{-24} \text{ cm}^3$
- The edge length of a face centred cubic cell of an ionic substance is 508 pm. If the radius of the cation is 110 pm, the radius of the anions is
 - 288 pm
 - 398 pm
 - 618 pm
 - 144 pm
- An ionic compound is expected to have tetrahedral structure if r_+/r_- lies in the range of
 - 0.414 to 0.732
 - 0.225 to 0.414
 - 0.155 to 0.225
 - 0.732 to 1
- The interparticle forces in solid hydrogen are :
 - Hydrogen bonds
 - Covalent bonds
 - Co-ordinate bonds
 - Van der Waals' forces
- If Z is the number of atoms in the unit cell that represents the closest packing sequence $-ABC\ ABC-$, the number of tetrahedral voids in the unit cell is equal to :

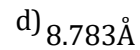
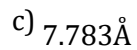
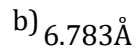
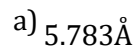
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- a) Z b) $2Z$ c) $\frac{Z}{2}$ d) $\frac{Z}{4}$
9. Quartz is an example of :
a) Chain silicate b) Infinite sheet silicate c) Framework silicate d) Cyclic silicate
10. For AX ionic crystal to exist in bcc structure, the ratio of radii $\left(\frac{r_{\text{cation}}}{r_{\text{anions}}}\right)$ should be
a) Between 0.41 and 0.73 b) Greater than 0.73
c) Less than 0.41 d) Equal to 1.0
11. Which crystal is expected to be soft and have low melting point?
a) Covalent b) Metallic c) Molecular d) Ionic
12. The elements commonly used for making transistors are
a) C and Si b) Ga and In c) P and As d) Si and Ge
13. Silver (atomic weight = 108 g mol^{-1}) has a density of 10.5 g cm^{-3} . The number of silver atoms on a surface of area 10^{-12} m^2 can be expressed in scientific notation as $y \times 10^x$. The value of x is
a) 3 b) 5 c) 7 d) 9
14. The first order reflection ($n = 1$) from a crystal of the X-ray from a copper anode tube ($\lambda = 1.54 \text{ \AA}$) occurs at an angle of 45° . What is the distance between the set of plane causing the diffraction?
a) 0.1089 nm b) 0.1089 m c) 0.905 \AA d) $1.089 \times 10^{-9} \text{ m}$
15. What is the number of tetrahedral voids per atom in a crystal?
a) 1 b) 2 c) 6 d) 8
16. Iodine is a
a) Electrovalent solid b) Atomic solid c) Molecular solid d) Covalent solid
17. In CsCl type structure the coordination number of Cs^+ and Cl^- are
a) 6, 6 b) 6, 8 c) 8, 8 d) 8, 6
18. Structure of a mixed oxide is cubic close-packed (c.c.p). The cubic unit cell of mixed oxide is composed of oxide ions. One fourth of the tetrahedral voids are occupied by divalent metal A and the octahedral voids are occupied by a monovalent metal B . The formula of the oxide is :
a) ABO_2 b) A_2BO_2 c) $A_2B_3O_4$ d) AB_2O_2
19. The example of orthosilicate is :

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20. A compound CuCl has face centred cubic structure. Its density is 3.4 g cm^{-3} . The length of unit cell is :



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