

AIPMT 2009

1. Lithium metal crystallises in a body centred cubic crystal. If edge length of unit cell of lithium is 351 pm, the atomic radius of the lithium will be :-
 (1) 300.5 pm (2) 240.8 pm
 (3) 151.8 pm (4) 75.5 pm
2. Copper crystallises in a face-centred cubic lattice with a unit cell length of 361 pm. What is the radius of copper atom in pm ?
 (1) 108 (2) 128
 (3) 157 (4) 181

AIPMT 2010

3. AB crystallizes in a body centred cubic lattice with edge length 'a' equal to 387 pm. The distance between two oppositely charged ions in the lattice is :-
 (1) 300 pm (2) 335 pm
 (3) 250 pm (4) 200 pm

AIPMT Mains. 2011

4. A solid compound XY has NaCl structure. If the radius of the cation is 100 pm the radius of the anion (Y⁻) will be :-
 (1) 165.7 pm (2) 275.1 pm
 (3) 322.5 pm (4) 241.5 pm

AIPMT Pre. 2012

5. The number of octahedral void(s) per atom present in a cubic-close-packed structure is:
 (1) 2 (2) 4 (3) 1 (4) 3
6. A metal crystallizes with a face-centered cubic lattice. The edge of the unit cell is 408 pm. The diameter of the metal atom is:
 (1) 144 pm (2) 204 pm
 (3) 288 pm (4) 408 pm

AIPMT Mains 2012

7. Structure of a mixed oxide is cubic close-packed (CCP). 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:
 (1) A₂B₃O₄ (2) AB₂O₂
 (3) ABO₂ (4) A₂BO₂

NEET-UG 2013

8. The number of carbon atoms present per unit cell of diamond is :-
 (1) 1 (2) 4
 (3) 8 (4) 6
9. A metal has a FCC lattice. The edge length of the unit cell is 404 pm. The density of the metal is 2.72g cm⁻³. The molar mass of the metal is :-
 (1) 20g mol⁻¹ (2) 40g mol⁻¹
 (3) 30g mol⁻¹ (4) 27g mol⁻¹

AIPMT 2014

10. If a is the length of the side of a cube, the distance between the body centered atom and one corner atom in the cube will be :
 (1) $\frac{2}{\sqrt{3}}a$ (2) $\frac{4}{\sqrt{3}}a$ (3) $\frac{\sqrt{3}}{4}a$ (4) $\frac{\sqrt{3}}{2}a$

AIPMT 2015

11. A given metal crystallizes out with a cubic structure having edge length of 361 pm. If there are four metal atoms in one unit cell, what is the radius of one atom?
 (1) 127 pm (2) 80 pm
 (3) 108 pm (4) 40 pm

Re-AIPMT 2015

12. The vacant space in BCC lattice unit cell is :
 (1) 23% (2) 32%
 (3) 26% (4) 48%

13. The correct statement regarding defects in crystalline solids is :-
- Frenkel defect is a dislocation defect
 - Frenkel defect is found in halides of alkaline metals
 - Schottky defects have no effect on the density of crystalline solids
 - Frenkel defects decrease the density of crystalline solids

NEET-I 2016

14. Lithium has a BCC structure. Its density is 530 kg m^{-3} and its atomic mass is 6.94 g mol^{-1} . Calculate the edge length of a unit cell of Lithium metal. ($N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$)
- 154 pm
 - 352 pm
 - 527 pm
 - 264 pm
15. The ionic radii of A^+ and B^- ions are $0.98 \times 10^{-10} \text{ m}$ and $1.81 \times 10^{-10} \text{ m}$. The coordination number of each ion in AB is :-
- 6
 - 4
 - 8
 - 2

NEET-II 2016

16. In calcium fluoride, having the fluorite structure, the coordination numbers for calcium ion (Ca^{2+}) and fluoride ion (F^-) are
- 8 and 4
 - 4 and 8
 - 4 and 2
 - 6 and 6

NEET(UG) 2017

17. Which is the **incorrect** statement ?
- Density decreases in case of crystals with Schottky's defect
 - NaCl(s) is insulator, silicon is semiconductor, silver is conductor, quartz is piezo electric crystal
 - Frenkel defect is favoured in those ionic compounds in which sizes of cation and anions are almost equal
 - $\text{FeO}_{0.98}$ has non stoichiometric metal deficiency defect

NEET-II 2018

18. Iron exhibits bcc structure at room temperature. Above 900°C , it transforms to fcc structure. The ratio of density of iron at room temperature to that at 900°C (assuming molar mass and atomic radii of iron remains constant with temperature) is
- $\frac{\sqrt{3}}{\sqrt{2}}$
 - $\frac{4\sqrt{3}}{3\sqrt{2}}$
 - $\frac{3\sqrt{3}}{4\sqrt{2}}$
 - $\frac{1}{2}$

NEET-(UG) 2019

19. A compound is formed by cation C and anion A. The anions form hexagonal close packed (hcp) lattice and the cations occupy 75% of octahedral voids. The formula of the compound is :-
- C_2A_3
 - C_3A_2
 - C_3A_4
 - C_4A_3

NEET-(UG) 2019 (Odisha)

20. Formula of nickel oxide with metal deficiency defect in its crystal is $\text{Ni}_{0.98}\text{O}$. The crystal contains Ni^{2+} and Ni^{3+} ions. The fraction of nickel existing as Ni^{2+} ions in the crystal is
- 0.96
 - 0.04
 - 0.50
 - 0.31

NEET (UG) 2020

21. An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is:
- $\frac{4}{\sqrt{2}} \times 288 \text{ pm}$
 - $\frac{\sqrt{3}}{4} \times 288 \text{ pm}$
 - $\frac{\sqrt{2}}{4} \times 288 \text{ pm}$
 - $\frac{4}{\sqrt{3}} \times 288 \text{ pm}$

NEET (UG) 2020 (COVID-19)

- 22.** Which one of the following compounds shows both, Frenkel as well as Schottky defects ?

(1) AgBr

(2) AgI

(3) NaCl

(4) ZnS

- 24.** The correct option for the number of body centred unit cells in all 14 types of Bravais lattice unit cells is :

(1) 7

(2) 5

(3) 2

(4) 3

NEET (UG) 2021

- 23.** Right option for the number of tetrahedral and octahedral voids in hexagonal primitive unit cell are:

(1) 8, 4

(2) 6, 12

(3) 2, 1

(4) 12,6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	2	2	4	3	3	2	3	4	4	1	2	1	2	1
Que.	16	17	18	19	20	21	22	23	24						
Ans.	1	3	3	3	1	2	1	4	4						