BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

Date: 09/11/2021

Subject: Chemistry

Topic : Solid State

Class: Standard XII

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1. Which among the following will show anisotropy?

   A. Quartz glass

   B. $NaBr$

   C. Starch

   D. Rubber

2. Lithium metal crystallises in a body-centred cubic crystal. If the length of the side of the unit cell of lithium is $351\ \text{pm}$, the atomic radius of lithium will be:

   A. $151.8\ \text{pm}$

   B. $300.5\ \text{pm}$

   C. $75.5\ \text{pm}$

   D. $240.8\ \text{pm}$

3. Element 'B ' forms ccpstructure and 'A ' occupies half of the octahedral voids, while oxygen atoms occupy all the tetrahedral voids. The structure of bimetallic oxide is:

   A. A_4BO_4

   B. AB_2O_4

   C. A_2B_2O

   D. A_4B_2O

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4. Which primitve unit cell has unequal edge lengths $(a \neq b \neq c)$ and all axial angles are unequal and different from 90°?

   A. Hexagonal

   B. Monoclinic

   C. Tetragonal

   D. Triclinic

5. Fraction of total volume occupied by atoms in simple cubic cell is:

   A. $\frac{\pi}{2}$

   B. $\frac{\sqrt{3}\pi}{8}$

   C. $\frac{\sqrt{2}\pi}{6}$

   D. $\frac{\pi}{6}$

6. In a solid AB having the $NaCl$ structure, 'A' atoms occupy the corners of the cubic unit cell. If all the face centred atoms along one of the axes are removed, the resultant stoichiometry of the solid is:

   A. AB_2

   B. A_2B

   C. A_4B_3

   D. A_3B_4

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7. How many space lattices (bravais lattices) are obtainable from the different crystal systems?

   A. 4

   B. 7

   C. 14

   D. 8

8. If we mix a pentavelent impurity in a crystal lattice of Germanium, what type of semiconductor formation will occur?

   A. n-type semiconductor

   B. p-type semiconductor

   C. Both (A) and (B)

   D. None of these

9. A solid element exists in simple cubic crystal. If its atomic radius is $1.0\ \overset{o}{A}$ and the ratio of packing fraction to density is $0.1\ cm^3/g,$ then the atomic mass of the element is $(N_A \approx 6 \times 10^{23})$

   A. 8π

   B. 16π

   C. 6π

   D. 4π

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10. Which of the following statements is incorrect regarding the defects in solids?

A. $AgBr$ crystal show both Schottky and Frenkel defect

B. Solids containing F-centers are paramagnetic

C. Doping in crystal introduces dislocation defect

D. Metal excess defect can occur with extra cation present in the interstitial voids

11. Which of the following substances does not posses a net magnetic dipole moment in magnetic field?

A. Paramagnetic

B. Ferromagnetic

C. Ferrimagnetic

D. Antiferromagnetic

12. The ionic radii of Rb^+ and I^- are 1.46 and 2.16 $\overset{o}{\text{A}}$. The coordination number for the cation is :

A. 2

B. 4

C. 6

D. 8

13. Given below are two statements labelled as Assertion (A) and Reason (R).
Assertion (A): The total number of atoms present in a simple cubic unit cell is one.
Reason (B): Simple cubic unit cell has atoms at its corners, each of which is shared between eight adjacent unit cells.

    A. Both A and R are true and R is the correct explanation of A

    B. Both A and R are true but R is not the correct explanation of A

    C. A is true but R is false

    D. A is false but R is true

14. Given below are two statements labelled as Assertion (A) and Reason (R).
Assertion (A): The packing effieciency is maximum for fcc structure.
Reason (B): The coordination number is 12 in the fcc structure.

    A. Both A and R are true and R is the correct explanation of A

    B. Both A and R are true but R is not the correct explanation of A

    C. A is true but R is false

    D. A is false but R is true

15. Given below are two statements labelled as Assertion (A) and Reason (R).
Assertion (A): Total number of octahedral voids present in the unit cell of cubic close packing including the one that is present at the body center, is four.
Reason (B): Besides the body center there is one octahedral void present at the center of each of the six faces of the unit cell and each of which is shared between two adjacent unit cells.

    A. Both A and R are true and R is the correct explanation of A

    B. Both A and R are true but R is not the correct explanation of A

    C. A is true but R is false

    D. A is false but R is true

16.

Column - I (Type of solid)	Column - II (Properties)
(i) Ionic solids	(A) Giant molecules
(ii) Network solids	(B) Volatile liquids or soft solid at room temperature
(iii) Metallic solids	(C) No free ion to move in solid state
(iv) Hydrogen bonded molecular solid	(D) Positive ion surrounded by sea of electrons

Which of the following is the best matched option?

A. i-A, ii- D, iii- C, iv-B

B. i-C, ii- A, iii- D, iv-B

C. i-D, ii- D, iii- A, iv-B

D. i-C, ii- B, iii- D, iv-A

17. Which of the following analogies is correct?
Graphite : Hexagonal :: Titanium dioxide :

A. Triclinic

B. Tetragonal

C. Hexagonal

D. Cubic

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18. The crystalline solids have definite orderly arrangement of their constituent particles in three dimensions known as lattice. The smallest repeating part in the lattice is known as unit cell. The unit cell are described as simple cubic face centred and body centred unit cell.
For the stable ionic crystalline structures, there is definite radius ratio limit for a cation to fit perfectly in the lattice of anions called radius ratio rule. This also defines the coordination number of an ion.
(i) The number of atoms per unit cell in simple cubic (s), body centred (b) and face centred (f) unit cell decreases as:

A. $f > b > s$

B. $s > b > f$

C. $b > f > s$

D. $f > b = s$

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(ii) In a cubic lattice ABC, A atom present at all corners except one at corner which is occupied by B atoms. C atoms are present at face centres. The formula of the compound is:

A. $A_7B_{24}C$

B. ABC_3

C. A_8BC_7

D. A_7BC_{24}

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(iii) Gold crystallises in a face centred unit cell. Its edge length is $0.410\ \text{nm}$. The radius of gold atom is:

A. $0.205\ \text{nm}$

B. $0.290\ \text{nm}$

C. $0.145\ \text{nm}$

D. $0.578\ \text{nm}$