1.

TiO_2 is a well-known example of:

1. Triclinic system
2. Tetragonal system
3. Monoclinic system
4. None of these

2.

The fraction of total volume occupied by the atoms present in a simple cube is:

1. $\pi/6$
2. $\pi/3\sqrt{2}$
3. $\pi/4\sqrt{2}$
4. $\pi/4$

3.

Xenon crystallizes in face center cubic lattice and the edge of the unit cell is 620 pm, then the radius of the Xenon atom is-

1. 219.20 pm
2. 438.5 pm
3. 265.5 pm
4. 536.94 pm

4.

An ionic compound has a unit cell consisting of A ions at the corners of a cube and B
ions on the centers of the faces of the cube. The empirical formula for this compound
would be

1. AB
2. A_2B
3. AB_3
4. A_3B

5.

AB crystallizers 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. 250 pm
2. 200 pm
3. 300 pm
4. 335 pm

6.

In a face centred cubic lattice, atom A occupies the corner positions and atom B occupies the face centre positions. If one atom of B is missing from one of the face centred points, the formula of the compound is

1.AB_2

2.A_2B_3

3.A_2B_5

4.A_2B

7.

Lithium metal crystallizes in a body centered cubic crystal. If the length of the side of the unit cell of lithium is 351 pm, the atomic radius of the lithium will be

1. 240.8 pm
2. 151.8 pm
3. 75.5 pm
4. 300.5 pm

8.

The unit cell dimensions of a cubic lattice (edges a, b, c and the angles between them, $\alpha,\ \beta,\ \gamma$) are

1. a=b=c, $\alpha = \beta = \gamma = 90^\circ$
2. a=b≠c, $\alpha = \beta = \gamma = 90^\circ$
3. a=b=c, $\alpha = \gamma = 90^\circ,\ \beta \neq 90^\circ$
4. a≠b≠c, $\alpha = \beta = 90^\circ,\ \gamma \neq 90^\circ$

9.

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:

1. C_4A_3
2. C_2A_3
3. C_3A_2
4. C_3A_4

10.

Which of the following is not a characteristic of a crystalline solid?

1. Definite and characteristic heat of fusion
2. Isotropic nature
3. A regular periodically repeated pattern of arrangement of constituent particles in the entire crystal
4. A true solid

11.

Which of the following is an amorphous solid?

1. Graphite (C)
2. Quartz glass (SiO_2)
3. Chrome alum
4. Silicon carbide (SiC)

12.

Which of the following statement is not true about amorphous solids?

1. On heating they may become crystalline at a certain temperature
2. They may become crystalline on keeping for a long time
3. Amorphous solids can be moulded by heating
4. They are anisotropic in nature

13.

Which of the following is a network solid?

1. SO_2 (solid)
2. I_2
3. Diamond
4. H_2O (ice)

14.

The total number of tetrahedral voids in the face centred unit cell is ..... .

1. 6
2. 8
3. 10
4. 12

15.

In which pair is most efficient packing is present?

1. hcp and bcc
2. hcp and ccp
3. bcc and ccp
4. bcc and simple cubic cell

16.

Which of the following statement is not true about the hexagonal close packing?

1. The coordination number is 12
2. It has 74% packing efficiency
3. Tetrahedral voids of the second layer are covered by the spheres of the third layer
4. In this arrangement spheres of the fourth layer are exactly aligned with those of the first layer

17.

What is the coordination number in a square close packed structure in two dimensions?

1. 2
2. 3
3. 4
4. 6

18.

The correct order of the packing efficiency in different types of unit cells is-

1. fcc < bcc < simple cubic
2. fcc > bcc > simple cubic
3. fcc < bcc > simple cubic
4. bcc < fcc > simple cubic

19.

The edge lengths of the unit cells in terms of the radius of spheres constituting fcc, bcc, and simple cubic unit cells are respectively .....

1. $2\sqrt{2}r,\ \frac{4r}{\sqrt{3}},\ 2r$
2. $\frac{4r}{\sqrt{3}},\ 2\sqrt{2}r,\ 2r$
3. $2r,\ 2\sqrt{2}r,\ \frac{4r}{\sqrt{3}}$
4. $2r,\ \frac{4r}{\sqrt{3}},\ 2\sqrt{2}r$

20.

In a cubic close-packed structure, the coordination number of atoms is

1. 12
2. 8
3. 1
4. 4

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