CHEMISTRY

BOOKS - NIKITA CHEMISTRY (HINGLISH)

SOLID STATE

Multiple Choice Questions I Solid State And Their Chassification

1. which of the following favours the existenence of a substance in the solid state ?

A. High temperature

B. Low temperature

C. High thermal energy

D. Weak choesive forces

Answer: B

Watch Video Solution

2. At room temperature a substance exists in the solid state only when

A. intermolecular forces balance thermal energy

B. intermolecular forces are stronger than thermal energy

C. thermal enegry dominates over intermoleacular forces

D. there are oppositely charged ions present.

Answer: B

Watch Video Solution

3. Which one has the highest melting point ?

A. Ionic crystal

B. Molecular crystal

C. Covelent crystal

D. Metallic crystal.

Answer: C

Watch Video Solution

4. In graphite, electrons are

A. localised on each carbon atom

B. spread out between third carbon atom

C. localised on every third carbon atom

D. present in antibonding orbital.

Answer: D

Watch Video Solution

5. Wax is an example of

A. Ionic crystal

B. Covalent crystal

C. Molecular crystal

D. Metallic crystal.

Answer: C

View Text Solution

6. Which one is called pseudo solid?

A. glass

B. NaCl

C. KCl

D. KCl and NaCl both

Answer: A

 Watch Video Solution

7. Why are solid rigid?

A. Because of large intermolecular forces

B. Because of vibration motion

C. Because of large intermolecular space

D. All of the above

Answer: A

 Watch Video Solution

8. which of the following is not a characteristic of a crystalline solid ?

A. Definite and characteristic heat of fusion

B. Isotropic nature

C. A regular periodically repeated pattern of arrangemet of constituent particles in the entire crystal

D. A true solid

Answer: B

Watch Video Solution

9. which of the following is a network solid?

A. SO_2 (Solid)

B. I_2

C. Diamond

D. H_2O (Ice)

Answer: C

Watch Video Solution

10. Constituent particles of a solid have

A. translatory motion only

B. rotatory motion only

C. vibratory motion only

D. all the above types of motion.

Answer: C

 Watch Video Solution

11. A low molar heat of fusion is expected for a solid that is:

A. a covalent solid

B. an ionic solid

C. a metallic solid

D. a molecular solid

Answer: D

 Watch Video Solution

12. Which among the following will show anisotropy ?

A. Glass

B. Barium chloride

C. Wood

D. Paper

Answer: B

Watch Video Solution

13. Which of the following is an amorphous solid?

A. Graphite (C)

B. Quartz glass $(\mathrm{Si}O_2)$

C. Chrome alum

D. Silicon carbide (SiC)

Answer: B

Watch Video Solution

14. Which of the following is not a crystalline solid ?

A. KCl

B. CsCl

C. Glass

D. Rhombic S

Answer: B

Watch Video Solution

15. An example of a covalent crystalline solid is

A. Si

B. NaF

C. Ar

D. Al

Answer: A

View Text Solution

16. Amorphous substances show

(A) short and long range order

(B) short range order

(C) long range order(D) have no sharp $M.P$

A. A and C are correct

B. B and C are correct

C. C and D are correct

D. B and D are correct.

Answer: D

Watch Video Solution

Watch video solution

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

A. On heating they may become crystalling at certain temperature

B. They may become crystalling on keeping for long time

C. Amorphous solids can be moulded by heating

D. They are anisotropic in nature

Answer: D

Watch Video Solution

18. Solid CO_2 is

A. Ionic crystal

B. Covalent crystal

C. Metallic crystal

D. Molecular crystal

Answer: D

Watch Video Solution

19. Which among the following will not show anisotropy ?

A. $BaCl_2$

B. $NaCl$

C. Glass

D. KNO_3

Answer: C

View Text Solution

20. Under which category iodine crystals are placed among the following

A. Metallic

B. Ionic

C. Molecular

D. Covalent

Answer: C

Watch Video Solution

21. An example of a substance possessiong gaint covalent structure is :

A. Iodine crystal

B. Silica

C. Solid carbon dioxide

D. White phosphorus

Answer: B

View Text Solution

22. Which type of solid crystals will conduct heat and electricity?

A. Ionic

B. Covalent

C. Molecular

D. Metallic

Answer: D

 Watch Video Solution

23. Most crystals show good cleavage because their atoms ions or molecules are

A. weakly bonded together

B. strongly bonded together

C. spherically symmetrical

D. arranged in planes.

Answer: D

Watch Video Solution

24. Tellurium forms oxides of the formula TeO, TeO_2 and TeO_3. What is the nature of these tellurium oxides ?

A. Monoclinic system

B. Tetragonal system

C. Rhombic system

D. Triclinic system

Answer: B

Watch Video Solution

25. Which of the following is a molecular crystal?

A. SiC

B. NaCl

C. Graphite

D. Ice

Answer: D

Watch Video Solution

26. which of the following is not the characteristic of ionic solids?

A. Very low value of electrical conductivity in the molten state

B. Brittle nature

C. Very strong forces of interactions

D. Anisotropic nature

Answer: A

Watch Video Solution

27. What type of solid is generally characterized by having low melting point and low electrical conductivity?

A. Covalent

B. Ionic

C. Metallic

D. Molecular

Answer: D

 Watch Video Solution

28. Graphite is a good conductor of eletricity due to the presence of ..... .

A. lone pair of electrons

B. free valence electrons

C. cations

D. anions

Answer: B

Watch Video Solution

Multiple Choice Questions Ii Crystal Lattice And Unit Cell

1. Calcite belongs to

A. Tetragonal system

B. Trigonal system

C. Digonal system

D. Hexoagonal system

Answer: B

View Text Solution

2. What are the correct axial distance and axial angles for rhombohedral system?

A. $a = b = c, \alpha = \beta = \gamma \neq 90^\circ$

B. $a = b \neq c, \alpha = \beta = \gamma = 90^\circ$

C. $a \neq b = c, \alpha = \beta = \gamma = 90^\circ$

D. $a \neq b \neq c, \alpha \neq \beta \neq \gamma \neq 90^\circ$

Answer: A

Watch Video Solution

3. The number of atoms in a unit cell of a cubic crystal system is 2, the arrangement of atoms is (A) body centred cubic

A. octahedral

B. fcc

C. bcc

D. none of these

Answer: C

Watch Video Solution

4. Which of the following is not a crystal system?

A. Cubic

B. Hexagonal

C. Triclinic

D. Orthorhombic.

Answer: C

 Watch Video Solution

5. Byavais lattices are of

A. 10 types

B. 8 types

C. 7 types

D. 14 types

Answer: D

View Text Solution

6. In a monoclinic unit cell the relation of sides and angles are respectively

A. $a \neq b \neq c, \alpha = \gamma = 90^\circ, \beta \neq 90^\circ.$

B. $a = b = c, \alpha = \beta = \gamma = 90^\circ$

C. $a = b = c, \alpha = \beta = 90^\circ, \gamma = 120^\circ$

D. $a \neq b = c, \alpha = \beta = \gamma = 120^\circ$

Answer: A

Watch Video Solution

7. The unit cell with crystallographic dimensions,

$a \neq b \neq c, \alpha = \gamma = 90^\circ$ and $\beta \neq 90^\circ$ is :

A. Tetragonal system

B. orthorhombic system

C. monoclinic system

D. Triclinic system

Answer: B

Watch Video Solution

8. The edge atom of a a cube provides how many atoms to the unit cell ?

A. $1/2$

B. $1/4$

C. $1/8$

D. 1

Answer: B

View Text Solution

9. The number of atoms in a cubic based unit cell having one atom on each corner and two atoms on each body diagonal is

A. 8

B. 6

C. 4

D. 9

Answer: D

Watch Video Solution

10. $K_2Cr_2O_7$ is an example of

A. hexagonal

B. triclinic

C. cubic

D. Orthorhombic.

Answer: B

View Text Solution

11. Copper belongs ot

A. cubic system

B. Tetragonal system

C. monoclinic system

D. Triclinic system

Answer: A

View Text Solution

12. Explain how much portin of an atom located at (a) corner and (b) body centre of a cubic unit cell is part of its neighouring unit cell.

A. $1, \frac{1}{2}$

B. $\frac{1}{2}, 1$

C. $\frac{1}{8}, 1$

D. $\frac{1}{8}, \frac{1}{2}$

Answer: C

Watch Video Solution

13. The coordination number of Cu is

A. 1

B. 6

C. 8

D. 12

Answer: D

 Watch Video Solution

14. Graphite belongs to

A. cubic system

B. Tetragonal system

C. rhombohedral system

D. Hexoagonal system

Answer: D

 Watch Video Solution

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

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

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

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

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

Answer: A

Watch Video Solution

16. In the distance between Na^+ and CI^- ions in sodium chliride crystal is X pm , the length of the edge of the unit cell is

A. 4a pm

B. $\frac{a}{4}\text{pm}$

C. 2a pm

D. $\frac{a}{2}\text{pm}$

Answer: C

Watch Video Solution

17. Diamond belongs to the crystal system :

A. cubic

B. triclinic

C. tetragonal

D. hexagonal

Answer: A

View Text Solution

18. For Trigonal system, axial rations are $a = b = c$ and the axial angles are k

A. $\alpha = \beta = \gamma \neq 90^\circ$

B. $\alpha = \beta = \gamma = 90^\circ$

C. $\alpha = \gamma = 90^\circ, \beta \neq 90^\circ$

D. $\alpha \neq \beta \neq \gamma \neq 90^\circ$

Answer: A

View Text Solution

19. Which of the following type of cubic lattice has maximum number of atoms per unit cell ?

A. Simple cubic

B. Body centred cubic

C. Face centred cubic

D. All have same

Answer: C

View Text Solution

20. The number of atoms per unit cell in a simple cube, face – centred cube and body – centred cube are respectively :

A. 8, 9 and 14

B. 1, 2 and 4

C. 4, 5 and 6

D. 2, 3 and 5

Answer: B

Watch Video Solution

21. The simplest unit of three dimensional arrangement of lattice points which sets the pattern for whole lattice is callled

A. space lattice

B. simple lattice

C. unit cell

D. crystal lattice

Answer: C

Watch Video Solution

Multiple Choice Questions Iii Packing Of Constituent Particles Radius Ratio

1. The vacant space in bcc lattice unit cell is

A. 0.23

B. 0.26

C. 0.32

D. 0.74

Answer: B

Watch Video Solution

2. The arrangement of the first two layers, one above the other, in hcp and ccp arrangement is

A. exactly same in both cases

B. partly same and partly different

C. different from each other

D. nothing difinite.

Answer: A

Watch Video Solution

3. The vacant space in bcc lattice unit cell is :

A. 0.23

B. 0.26

C. 0.32

D. none of these

Answer: C

 Watch Video Solution

4. Packing refers to the arrangement of constituent units in such a way that the forces of attraction among the constituent particles is the maximum and the contituents occupy the maximum available space. In two dimensions, there are hexagonal close packing and cubic close packing. In three dimentions, there are hexagonal, cubic as well as body centred close packings.

The pattern of successive layers in ccp arrangement is:

A. AB, AB, AB... Etc.

B. AB, ABC, AB...etc.

C. ABC, ABC, ABC...etc.d

D. none of these

Answer: C

Watch Video Solution

5. Close packing is maximum in the crystal which is

A. Simple cubic

B. Face centred

C. Body centred

D. None

Answer: B

Watch Video Solution

6. The number of atoms per unit cell in bcc lattice is

A. 6

B. 8

C. 9

D. 12

Answer: C

Watch Video Solution

7. In a closest packed lattice, the number of tetrahedral voids formed will be

A. equal to the number of spheres in the lattice

B. half than that of the number of spheres

C. double than that of the number of spheres

D. none of these

Answer: C

View Text Solution

8. If in a closest packed arrangement r is the radius of the sphere respresenting the tetrahedral void and R is the radius of the spheres in closest packed arrangement then

A. R = 0.414 r

B. r = 0.414 R

C. R = 0. 225 r

D. r = 0.224 R

Answer: B

Watch Video Solution

Watch Video Solution

9. In the crystals structures of sodium chloride, the arrangement of Cl^- ions is

A. fcc

B. bcc

C. Both fcc and bcc

D. none of these

Answer: A

Watch Video Solution

10. If the corrdination number of an element in its crystal lattice is 8, then packing is :

A. fcc

B. hcp

C. bcc

D. none of the above

Answer: C

View Text Solution

11. The total number of identical spheres required in cubic close packing arrangement of a unit cell is

A. 6

B. 8

C. 12

D. 14

Answer: C

View Text Solution

12. The vacant space in bcc lattice unit cell is :

A. 0.68

B. 52.4%

C. 60.4%

D. 0.32

Answer: A

Watch Video Solution

13. the correct order of the packing effeciency in different types of unit cells is ..... .

A. fcc lt bcc lt simple cubic

B. fcc gt bcc gt simple cubic

C. fcc lt bcc gt simple cubic

D. bcc lt fcc gt simple cubic

Answer: B

Watch Video Solution

14. If in a closest packed arrangement r is the radius of the sphere respresenting the tetrahedral void and R is the radius of the spheres in closest packed arrangement then

A. R = 0.225 r

B. r = 0.225 R

C. r = 0.414 R

D. R = - 0.414 r

Answer: B

Watch Video Solution

15. Which of the following does not adopt hcp structure ?

A. Be

B. Mg

C. Fe

D. Mo

Answer: C

View Text Solution

16. What is the coordination number in a square close packed structures in two dimensions?

A. 2

B. 3

C. 4

D. 6

Answer: C

Watch Video Solution

17. The regular three dimensional arrangement of points in a crystal is known as crystal lattice and the smallest repeating pattern in the lattice is called unit cell. The unit cells are characterised by the edge lengths a, b, c and the angles between them α, β and γ respectively. Based on this, there are seven crystal systems. In a cubic unit cell:

$a = b = c$ and $\alpha = \beta = \gamma = 90^\circ$ The number of points in simple, body centred and face centred cubic cells are 1,2 and 4 respectively In both the hcp and ccp of

spheres, the number of tetrahedral voids per sphere is two while the octahedral voids is one.

A double triangular void surrounded by three spheres above and three spheres below is called

A. triangular void

B. tetrahedral void

C. octahedral void

D. trigonal bipyramidal void.

Answer: C

Watch Video Solution

18. All nobe gases crystallise in the ccp kstructure except

A. Helium

B. Neon

C. Argon

D. Krypton

Answer: A

View Text Solution

19. ccp as same as with

A. bcc

B. fcc

C. hcp

D. none of these

Answer: B

View Text Solution

20. The arranegement $ABC, ABC, ABC \ldots\ldots$ is referred as

A. cubic close packing

B. tetrahedral close packing

C. octahedral close packing

D. hexagonal close packing

Answer: A

Watch Video Solution

21. Which of the following crystallizes in fcc structrue ?

A. Al

B. Be

C. Mg

D. Mo

Answer: A

View Text Solution

22. The number of octabedral voids (s) per atoms present in a cubic packed structure is

A. 1

B. 2

C. 4

D. 8

Answer: C

Watch Video Solution

23. In a hexagonal closest packing in two layers one above the other, the coordiantion number of each sphere will be

A. 4

B. 6

C. 8

D. 9

Answer: D

View Text Solution

24. What is meant by the term "coordination number"?

b. What is the coordination number of atoms:

i. in a cubic-packed structure?

ii. In a body-centreds structure?

A. 6, 8

B. 8, 6

C. 12, 6

D. 12, 8

Answer: D

Watch Video Solution

25. A tetrahedral void in a crystal implies that

A. shape of the void is tetrahedral

B. molecules forming the void are terahedral in shape

C. the void surrounded tetrahedrally by four spheres

D. the void is surrounded by six spheres.

Answer: C

Watch Video Solution

26. In a face centred cubic lattice the number of nearest neighbours for a given lattice point are:

A. 6

B. 8

C. 12

D. 14

Answer: C

 Watch Video Solution

27. What is the total number of atoms per unit cell in a face centred cubic (fcc) structure ?

A. 6 at edge centres and8 along body diagonals

B. 12 at edge centres and one at body centre

C. 8 along body diagonal and6 at edge centtres

D. all the edge centres only .

Answer: B

Watch Video Solution

28. The available space occupied by spheres of equal size in three dimensions in both hcp and ccp arrangement is

A. 0.74

B. 0.7

C. 60.4%

D. 52.4%

Answer: A

Watch Video Solution

29. which of the following statemets is not true about the hexagonal close packing ?

A. The coordination number is 12

B. It has 74% packing efficiency

C. Tetrahedral voids of the second layer are covered by the spheres of the third layer

D. In this arrangement spheres of the fourth layer are exactly aligned with thoseof the first layer

Answer: D

Watch Video Solution

30. A solid is made of two element X and Y .The atoms Z are in CCP arrangement while the atoms X occupy all the terahedral sites .What is the formula of the compound ?

A. XZ

B. Xz_2

C. X_2Z

D. X_2Z_3

Answer: C

Watch Video Solution

31. In a closest packed lattice, the number of octahedral sites as compared to tetrahedral ones will be

A. equal

B. smaller

C. larger

D. not difinite

Answer: C

Watch Video Solution

32. Which one of the following is not a close packing ?

A. hcp

B. ccp

C. bcc

D. fcc

Answer: C

View Text Solution

33. The coordination number of each atom in body centered cubic unit cell is

A. 4

B. 6

C. 8

D. 12

Answer: C

Watch Video Solution

34. the number of tetrahedral voids per unit cell in NaCl crystal is ..... .

A. 1

B. 2

C. 4

D. 8

Answer: B

 Watch Video Solution

35. What is the coordination number of sodium ions in the case of sodium chloride structure

A. 2

B. 4

C. 6

D. 8

Answer: C

 Watch Video Solution

36. The cordination number of a metal crystallising in a hexagonal close-packed structure is:

A. 12

B. 4

C. 8

D. 6

Answer: A

 Watch Video Solution

37. In which of the following crystals, alternate tetrahedral voids are occupied?

A. NaCl

B. CaF_2

C. Na_2O

D. ZnS

Answer: D

Watch Video Solution

38. Which of the following statements is not true about NaCl struture ?

A. Mg

B. Zinc

C. Copper

D. Lithium

Answer: D

View Text Solution

39. Which of the following statements is not true about NaCl structure?

A. Cl^- ions are in fcc arrangement

B. Na^+ ions has coordination number 4

C. Cl^- ions has coordination number 6

D. Each cell contains 4 NaCl molecules

Answer: B

Watch Video Solution

40. For tetrahedral coordination number, the radius ratio $\frac{r_{c^+}}{r_{a^-}}$ is :

A. 0 to 0.155

B. $0.115 - 0.225$

C. $0.225 - 0.414$

D. $0.414 - 0.732$

Answer: C

Watch Video Solution

41. A metallic crystal cystallizes into a lattice containing a sequence of layers $ABABAB\ldots$. Any packing of spheres leaves out voids in the lattice. What percentage by volume of this lattice is empty spece?

A. 0.74

B. 0.26

C. 0.5

D. none of these

Answer: B

Watch Video Solution

42. In A^+B^- ionic compound radii of $A^=$ and B^- ions are 180pm and 187 pm respectively .The crystal structure of this compound will be

A. NaCl type

B. CsCl type

C. ZnS type

D. similar to diamond

Answer: D

Watch Video Solution

43. For cubic - coordination the value of ratio is

A. $0.000 - 0.225$

B. $0.225 - 0.414$

C. $0.414 - 0.732$

D. `0.732-1.000

Answer: D

Watch Video Solution

44. If the ratio is in the range of $0.414 - 0.732$, then the coordination number will be

A. 2

B. 4

C. 6

D. 8

Answer: C

Watch Video Solution

45. The empty space availablein scc crystal lattice is

A. $5.87r^3$

B. $3.81r^3$

C. $4.37r^3$

D. $3.94r^3$

Answer: B

View Text Solution

46. The ratio of cationic radius to anionic radius in an ionic crystal is greater than 0.732 its coordination number is

A. 1

B. 4

C. 6

D. 8

Answer: D

 Watch Video Solution

47. Hexagonal closet packed arrangement of equal -sized spheres is described by

A. ABC ABC

B. ABC ABC

C. AB AB AB

D. AB BA BA

Answer: C

Watch Video Solution

48. If the value of ionic radius ratio $\left(\frac{r_c}{r_a}\right)$ is 0.52 in an ionic compound , the geometrical of ions in crystal is

A. planar

B. pyramidal

C. Tetrahedral

D. octahedral

Answer: D

Watch Video Solution

49. Each unit cell of NaCl consists of $13Cl6(-)$ ions and

A. $13Na^{+}$

B. $14Na^{+}$

C. $6Na^{+}$

D. All are wrong

Answer: B

View Text Solution

50. At the limiting value of radius ratio r_+ / r_-

A. Forces of attraction are larger than the forces of repulsion

B. Forces of attraction are smaller than the forces of repulsion

C. Forces of attraction andrepulsion are just equal

D. None of these

Answer: C

View Text Solution

51. The radius ratio of the cation to the anion of an ionic compound is 0.4. Its structural arrangement is

A. Planar triangular

B. Tetrahedral

C. Octahedral

D. Body-centred cubic

Answer: B

View Text Solution

Multiple Choice Questions Iv Imperrection In Solids

1. Which defect cause decrease in the density of crystal?

A. Frenkel

B. Schottky

C. Interstitial

D. F-centre

Answer: B

Watch Video Solution

2. At zero Kelvin a piece of germanium

A. Frenkel defect

B. Schottky defect

C. Metal excess defect

D. No defect

Answer: B

Watch Video Solution

3. As a result of Frenkel defect ,

A. there is no effect on the density

B. there in no effect on the conductivity

C. there is no effect on the dielectric constant

D. there is no effect on all the three abov.

Answer: A

View Text Solution

4. Schottky defect is observed in crystals when ..... .

A. some carions move from their lattice site to interstitial sites

B. equla number of cations and anions are missing from the lattice

C. some lattice sites are occupied by electrons

D. some imurity is present in the lattice

Answer: B

Watch Video Solution

5. Non-stoichionmetric metal deficiency is shown in the salts of :

A. all metals

B. alkali metals only

C. alkaline earth metals only

D. Transition metals only .

Answer: D

View Text Solution

6. Schottky defect.

A. thereisno effect on the density

B. density of the crystal increases

C. density of the crystal decreases

D. any of the above three can happen.

Answer: C

Watch Video Solution

7. which of the follwing defects is also known as dislocation defect ?

A. Frenkel defect

B. Schottky defect

C. Non-stoihiometric defect

D. None of the above

Answer: A

Watch Video Solution

8. Schottky defect lowers the density of ionic crystals while Frenkel defect does not. Discuss.

A. low

B. 1.3

C. 1.5

D. slightly less than unity

Answer: A

Watch Video Solution

9. Which of the following has Frenkel defect?

A. NaCl

B. AgBr

C. Graphite

D. Diamond

Answer: B

 Watch Video Solution

10. Schottky defect is likely to be found in :

A. AgI

B. NaCl

C. ZnS

D. ZnO

Answer: B

View Text Solution

11. Cations are present in the interstitial sites in ..... .

A. Frenkel defect

B. Schottky defect

C. Vacancy defect

D. Metal deficiency defect

Answer: A

Watch Video Solution

12. Which has Frenkel defect ?

A. AgBr

B. AgI

C. ZnS

D. All of these

Answer: D

Watch Video Solution

13. Which one of the following is correct ?

A. Schottky defect lowers the density

B. Frenkel defect increases the dielectric consstant of the crystals

C. Stoichiometric defects make the crystals good electrical conductors

D. All the three.

Answer: D

View Text Solution

14. Which of the following crystals exhibits Schottky defect?

A. AgBr

B. ZnS

C. AgI

D. CsCl

Answer: D

Watch Video Solution

15. When carbon are trapped into the crystal of iron, the defect is known as :

A. Schottky defect

B. Frenkel defect

C. Stoichiometric defects

D. Interstitial defect

Answer: D

View Text Solution

16. Brass is an example of a the defect

A. Schottky defect

B. Frenkel defect

C. Interstitial defect

D. Substitution impurity defect

Answer: D

View Text Solution

17. In $AgBr$ crystal , the ion size lies in the order $Ag^+ << Br^-$ The $AgHt$ crystal should have the following characheristics

A. defect less (perfect) crystal

B. Scgittky defect

C. Frenkel defect

D. Both Schottky and Frenkel defect

Answer: D

Watch Video Solution

18. When NaCl crystal is doped with $MgCl_2$,the nature of defect produced is

A. Interstitial defect

B. Schottky defect

C. Frenkel defect

D. None of these

Answer: D

Watch Video Solution

19. In a solid lattice the cation has left a lattice sirte and is located at an interstital position , the lattice defect is

A. Interstitial defect

B. Vacancy defect

C. Frenkel defect

D. Schottky defect

Answer: C

Watch Video Solution

Multiple Choice Questions V Properties Of Solids

1. silicon doped with electron rich impurity forms ..... .

A. p-type semicondutor

B. n-type semiconductor

C. intrinsic semiconductor

D. insulator

Answer: B

Watch Video Solution

2. Which onr of the following statements is wrong ?

A. The conductivity of metals decreases with increase in temperature

B. The conductivity of semiconductors increases with increase in temperature

C. There is no superconductor at room temper -ture

D. Ionic solids conduct electricity due to presence of ions .

Answer: D

View Text Solution

3. If Si is doped with B,

A. n-type semiconductor

B. p-type semiconductor

C. a combination of the above two types

D. None of the above

Answer: B

Watch Video Solution

4. The oxide that is insulator is

A. VO

B. coO

C. ReO_3

D. Ti_2O_3

Answer: B

View Text Solution

5. which of the following is true about the change the charge acquired by p- type semiconductors ?

A. Positive

B. Neutral

C. Negative

D. Depends on concentration of p impurity

Answer: B

Watch Video Solution

6. Which substance will conduct the current in the solid state ?

A. Diamond

B. Graphite

C. iodine

D. Sodium chloride

Answer: B

View Text Solution

7. A ferromagnetic substance becomes a permanent magnet when it is placed in a magnetic field because:

A. all the domains get oriented in the direction of magnetic field

B. all the domains get oriented in the direction opposite to the direction of

magnetic field

C. domains get oriented randomly

D. domains are not affected by magnetic filed

Answer: B

Watch Video Solution

8. Crystals where dipoles may align themselves in an ordered manner so that there is a net dipole moment, exhibit

A. pyro-electricity

B. para,agmetosm

C. dimagnetism

D. antiferro-electricity

Answer: B

View Text Solution

9. Metals have conductivity of the order of $\left(ohm^{-1}M^{-1}\right)$

A. $10^2 - 10^4$

B. $10^4 - 10^7$

C. $10^7 - 10^8$

D. $> 10^8$

Answer: B

View Text Solution

10. Which of the following arrangements shows schematic alignment of magnetic moments of ferromagnetic substances ?

A. ↑↑↑↑↑↑

B. ↓↓↑↓↓↑

C. ↑↑↓↑↑↓

D. ↑↓↑↓↑↓

Answer: A

View Text Solution

11. An oxide of transition metal that shows paramagnetism is

A. CrO_2

B. V_2O_3

C. TiO

D. TiO_2

Answer: C

View Text Solution

12. Which of the following statements is not true ?

A. Paramagetic substances are weakly attracted by magnetic field

B. Ferromagnetic substances cannot be magnetised permanently

C. The domains in antiferromagnetic substances are oppositely oriented with respect to each other

D. Pairing of electrons cancels their magnetic moment in the diamagnetic substances

Answer: B

View Text Solution

13. Ferromagnetism is maximum in

A. Fe

B. Ni

C. Co

D. None

Answer: A

View Text Solution

14. Which of the following ferromagnetic ?

A. Ni

B. Co

C. Fe_3O_4

D. All are correct

Answer: D

View Text Solution

15. Germanium is an example of

A. An intrinsic semiconductor

B. An n-type semiconductor

C. A p-type semiconductor

D. insulator

Answer: A

Watch Video Solution

16. If the electrical resistance of a typical substance suddenly drops to zero then the subtance is called

A. Conductor

B. Superconductor

C. Insulator

D. Semiconductor .

Answer: B

Watch Video Solution

17. Select the correct statement

A. A cubic close packed structure has eight tetrahedral and six octaedral interstices

B. Graphite has three dimensional crystal lattice

C. Diamond has two dimensional crystal lattice

D. Coordination number of body centred cubic lattice is eight .

Answer: D

View Text Solution

18. Which compound will show the highest lattice energy ?

A. Kf

B. NaF

C. CsF

D. RbF

Answer: B

Watch Video Solution

19. which substance acts as superconductor at 4 K ?

A. Hg

B. Cu

C. Na

D. Mg

Answer: A

View Text Solution

20. In graphite adjacent layers of carbon atoms are held together by

A. coordinate covalent bond

B. covalent bonds

C. van der Waals forces

D. double bonds.

Answer: C

 Watch Video Solution

21. In a crystal, the atoms are located at the position of

A. Maximum P . E .

B. Minimum P . E .

C. Zero P . E .

D. Infinite P . E .

Answer: B

 Watch Video Solution

22. A solid with high electrical and thermal conductivity from the following is

A. Si

B. Li

C. NaCl

D. Ice

Answer: B

Watch Video Solution

23. When n and p-type semiconductors are allowed to come into contact

A. some electrons will flow from n to p

B. some electrons will flow from p to n

C. the impurity element will flow from n to p

D. the impurity element will flow from p to n

Answer: A

24. Assertion : Conductivity of silicon increases by doping it with group-15 elements.

Reason : Doping means introduction of small amount of impurities like P, As or Bi into the pure crystal.

A. P is non-metal whereas Al is a metal

B. P is a poor conductor while Al is a conductor

C. P gives rise to extra electrons while Al gives rise to holes

D. P gives rise to holes while Al gives rise to extra electrons

Answer: C

Watch Video Solution

25. Silicon doped with arsenic is an example of :

A. p-type semiconductor

B. n-type semiconductor

C. like a metallic conductor

D. an insulator

Answer: B

 Watch Video Solution

26. which kind of defects are introduced by doping ?

A. Dislocation defect

B. Schottky defect

C. Frenkel defects

D. Electronic defects

Answer: D

Watch Video Solution

27. If we mix a pentavalent impurity in the crystal lattice of germinium the type of semiconductor formed will be:

A. p-Type

B. n-Type

C. both a) and b)

D. none of the two

Answer: B

Watch Video Solution

28. Of the elements Sr, Zr, Mo, Cd and Sb, all of the which are in the 5th period , the ones that are paramagnetic are

A. Sr, Cd and Sb

B. Zr, Mo and Cd

C. Sr, Zr and Cd

D. Zr, Mo and Sp

Answer: D

View Text Solution

Multiple Choice Questions I Crystal Structure

1. A compound made up of elements A and B crystallizes in the cubic structures. Atoms A are present on the corners as well as face centres whereas atoms B are present on the edge centres centres as well as body centre. What is the formula of the compound? Draw the structure of its unit cell.

A. A_2B

B. AB_2

C. AB

D. A_2B_2

Answer: C

Watch Video Solution

2. In chromium chloride $\left(CrCl_3, Cl^-\right.$ ions have cubic close packed arragement and Cr^{3+} ions are present in the octahedral holes. The fraction of the total number of holes occupied is

A. $1/3$

B. $1/6$

C. $1/9$

D. $1/12$

Answer: C

View Text Solution

3. A solid has a structure in which W atoms are located at the corners of a cubic lattice, O atom at the centre of edges, and Na atom at

the centre of the cube. The formula for the compound is

A. $NaWO_2$

B. $NaWO_3$

C. Na_2WO_3

D. $NaWO_4$

Answer: B

 Watch Video Solution

4. In solid oxide are arranged in ccp .One - sixth of tetrabedral voids are occupied by cation A which one third of octahedral voids are occupied by cation B .What is the formula of compound ?

A. A_2BO_3

B. ABO_3

C. AB_2O_3

D. $A_2B_2O_3$

Answer: B

Watch Video Solution

5. In the crystal $A^{2+}B^{2-}$, having anions in the face-centred cubic packing if the radius of the anion is 1.84Å ideal radius of the cation present in the tetrahedral hole will be

A. 0.225Å

B. 0.414Å

C. 0.732Å

D. none of these

Answer: B

View Text Solution

6. An element occurs in two crystalline form α and β. The α-from has an f with $\alpha = 3.68\text{Å}$ and β-from has a b with $a = 2.92\text{Å}$. Calculate the ratio of their densities.

A. 1 . 1

B. $1:2$

C. $2:1$

D. $2:3$

Answer: A

Watch Video Solution

7. If three elements A, B and C crystallize in a cubic structure with atoms A at corners, B at the body centre and C at the face crntres, the formula of the compound will be

A. ABC

B. ABC_2

C. ABC_3

D. AB_2C

Answer: B

View Text Solution

8. The radius of the Na^+ is 95 pm and that of CI ion is 181 pm Predict the coordination number of Na^+ ?

A. 4

B. 6

C. 8

D. unpredictable

Answer: B

 Watch Video Solution

9. A compound is formed hexagonal close-packed structure. What is the total number of

voids in 0.5 mol of it? How many of these are tetrahedral voids?

A. 3.011×10^{23}

B. 6.022×10^{23}

C. 9.033×10^{23}

D. 1.802×10^{24}

Answer: C

Watch Video Solution

10. In a metal oxide , the oxide ions are arranged in hexagonal close packing and metal lone occupy two - third of the octahedral voids .The formula of the oxide is

A. MO

B. M_2O_3

C. MO_2

D. M_2O

Answer: B

Watch Video Solution

Watch Video Solution

11. The total number of tertahedral voids face centred unit cell is

A. 6

B. 8

C. 10

D. 12

Answer: B

View Text Solution

12. A solid AB has $NaCl$ structure. If the radius of the cation A is 100 pm, what is the radius of anion B?

A. 241 pm

B. 414 pm

C. 225 pm

D. 44.4 pm

Answer: A

Watch Video Solution

13. A binary silod $\left(A^{+}B^{-}\right)$ has a zine blende stracture with B inos consititating the lattice and A^{+} inos occupyiong $25\,\%$ of the terahedral holes. The formula of the solid is

A. AB

B. A_2B

C. AB_2

D. AB_4

Answer: C

Watch Video Solution

14. A compound formed by two elements M and N. Element N forms ccp and atoms of M occupy $1/3rd$ of tetrahedral voids. What is the formula of th compound?

A. MN_3

B. M_3N

C. M_3N_2

D. M_2N_3

Answer: D

Watch Video Solution

15. A compund is made of two elements P and Q are in p arrangement while atoms P occupy all the tetrahedral voids. What is the formula of the compound?

A. PQ

B. PQ_2

C. P_2Q

D. P_3Q

Answer: C

Watch Video Solution

16. In a crystalline solid, having formula AB_2O_4 oxide ions are arranged in cubic close packed lattice while cations A are present in tetrahedral voids and cations B are present in octahedral voids.

(a) What percentage of the tetrahedral voids

is occupied by A?

(b) What percentage of the octahedral voids is occupied by B ?

A. 0.5

B. 0.25

C. 0.75

D. 12.5%

Answer: D

Watch Video Solution

17. The radius of an atom of an element is 500 pm. If it crystallizes as a face-centred cubic lattice, what is the length of the side of the unit cell?

A. 176.8 pm

B. 1154.7 pm

C. 1414 pm

D. 1000 pm

Answer: C

 Watch Video Solution

18. The C - C and Si - C interatomic distances are 154 pm and 188 pm respectively. The atomic radius of Si is

A. 77 pm

B. 94 pm

C. 114 pm

D. 111 pm

Answer: D

Watch Video Solution

19. If the radius of an atom of an elements is 75 pm and the lattice type is body-centred cubic, what is the edge length of the unit cell?

A. 32.475 pm

B. 173.2 pm

C. 37.5 pm

D. 212.1 pm

Answer: B

Watch Video Solution

20. Silver metal crystallises in a cubic closed packed arrangement with edge length 404 pm .Thus radius of the silver atom is

A. 203.5

B. 176.23

C. 143.9

D. 287.7

Answer: C

Watch Video Solution

21. The percentage of empty space in a body centred cubic arrangement is :

A. 74

B. 68

C. 32

D. 26

Answer: C

Watch Video Solution

22. Solid A^+B^- has a bcc structure .If the distance of closest apporach between two atoms is 173 pm ,the edge length of the cell is:

A. 200 pm

B. $\sqrt{3}/\sqrt{2}$ pm

C. 142.2 pm

D. $\sqrt{2}$ pm

Answer: A

Watch Video Solution

23. The ionic radius of Cl^- ion is 1.81Å . The inter-ionic distances of NaCl and NaF are 2.79Å respectively. The ionic radiusof F^- ion will be

A. 0.98Å

B. 0.80Å

C. 1.33Å

D. 2.29Å

Answer: C

View Text Solution

24. An alloy of copper, silver and gold is found to have copper constituting the ccp lattice. It gold atoms occupy the edge centres and silver is persent at body centre, the alloy has a formula

A. Cu_4Ag_2Au

B. Cu_4Ag_4Au

C. Cu_4Au_3Ag

D. $cuAg_3Au$

Answer: C

View Text Solution

25. In a face centred cubic arrangement of A and B atoms whose A atoms are at the corner of the unit cell and B atoms at the face centres. Once of the A atom is missing from

one corner in unit cell. The simplest formula of compound is

A. A_7B_3

B. AB_3

C. A_7B_{24}

D. $A_{7/8}B_3$

Answer: C

Watch Video Solution

26. The number of atoms in a cubic based unit cell having one atom on each corner and two atoms on each body diagonal is

A. 4

B. 9

C. 12

D. 14

Answer: B

Watch Video Solution

27. A binary solid $\left(A^{+}B^{+}\right)$ has a rock sell structure .If the edge length is $400\pm$ and radius of cation is 75 pm the radius of amion attion is

A. 100 pm

B. 125 pm

C. 250 pm

D. 325 pm

Answer: B

Watch Video Solution

28. A solid AB has the NaCL structure, If radius of cation A^+ is 120 pm, calculate the maximum possible value of the radius of the anion B^-

A. 240 pm

B. 60 pm

C. 49.6 pm

D. 290 pm

Answer: D

Watch Video Solution

29. CsCl has bcc structure with Cs^+ at the centre and Cl^- ion at each corner. If r_{Cs^+} is 1.69Å and r_{Cl^-} is 1.81Å what is the edge length of the cube?

A. 4.04

B. 3.50

C. 3.03

D. 1.95

Answer: A

Watch Video Solution

30. KCl crystallises in the same type of lattice as does NaCl. Given $\frac{r_{Na^+}}{r_{Cl^-}} = 0.5$ and $\frac{r_{Na^+}}{r_{K^+}} = 0.7$ The ratio of the side of the unit cell for NaCl to that for KCl is

A. $1 : 1.172$

B. $1:1.1143$

C. $1:1.1413$

D. $1:1.732$

Answer: B

View Text Solution

31. Edge length of M^+X^- (fcc structure) is $7.2^\circ A$. Assuming $M^+ - X^-$ contact along the cell edge, radius of $X(-)$ ion is $(r_{M+} = 1.6^\circ A)$:

A. $2.0A^{\circ}$

B. $5.6A^{\circ}$

C. $2.8A^{\circ}$

D. $3.8A^{\circ}$

Answer: A

Watch Video Solution

32. Gold (atomic radius = 0.144nm) crystallises in a face centred unit cell. What is the length of the side of the cell ?

A. 0.414

B. 0.407

C. 1.414

D. 1.407

Answer: B

Watch Video Solution

33. The edge of unit of $FCCXe$ crystal is 620 pm .The radius of Xe atom is

A. 189.37 pm

B. 209.87 pm

C. 219.25 pm

D. 235.16 pm

Answer: C

Watch Video Solution

34. Caculate the ionic radius of a Cs^+ ion, assuming that the cell edge length for CsCl is

0.4123 nm and that the ionic radius of a Cl^- ion is0.81 nm

A. 0.352 nm

B. 0.116 nm

C. 0.231 nm

D. 0.176 nm

Answer: D

View Text Solution

35. A compound formed by elements A and B crystallises in cubic structure in which A atoms are at the corners of the cube while B atoms are at the centre of cubic. Formula of the compound is

A. AB

B. AB_2

C. A_2B

D. AB_4

Answer: A

Watch Video Solution

36. Gold (at. Mass 197 g mol^{-1}) crystallises in cubic closest packed structures (the face-crntred cubic) and has a density of 19.3 g/cm^3 . Atomic radius is

A. 144.17 pm

B. 407.8 pm

C. 128.32 pm

D. 203.4 pm

Answer: A

View Text Solution

37. Calculate the approximate number of unit cells present in 1 g of gold. Given that gold cyrstallises in a face centred cubic lathce (Given atomic mass of gold = 197 u).

A. 6.02×10^{23}

B. 7.64×10^{20}

C. 3.82×10^{20}

D. 15.28×10^{20}

Answer: B

Watch Video Solution

38. Calcium metal crystallises in fcc lattice with edge length of 556 pm. Calcualte the density in g/cm^3) of metal if it contains 0.2% Schottky defects.

A. 3.992

B. 1.5455

C. 1.5427

D. 1.4987

Answer: C

Watch Video Solution

39. The density of KBr is $2.75gcm^{-3}$. The length of the unit cell is 654 pm. Atomic mass of $K = 39$, $Br = 80$. Then what is true about the predicted nature of the solid?

A. Face centred cubic

B. simple cubic system

C. body centred cubic system

D. none of these

Answer: A

 Watch Video Solution

40. Niobium crystallizes in body-centred cubic structure. If the density is $8.55 gcm^{-3}$,

calculate the atomic radius of niobium using its atomic mass $93u$.

A. 200 pm

B. 185 pm

C. 143 pm

D. 129 pm

Answer: C

Watch Video Solution

41. A face-centred cubic element (atomic mass 60) has a cell edge of 400 pm. What is its density?

A. $6.2 gcm^{-3}$

B. $24.8 gcm^{-3}$

C. $12.4 gcm^{-3}$

D. $3.1 gcm^{-3}$

Answer: A

Watch Video Solution

42. Potassium has a bcc structure with nearest neighour distance 4.52Åits atomic weight is 39 its density (in kg m^{-3}) will be

A. 454 kg m^{-3}

B. 804 kg m^{-3}

C. 852 kg m^{-3}

D. 908 kg m^{-3}

Answer: D

Watch Video Solution

43. The number of atoms in $100gan f$ crystal with density $d = 10g/cm^3$ and the edge equal to 100 pm is equal to

A. 3×10^{25}

B. 0.5×10^{25}

C. 1×10^{25}

D. 2×10^{25}

Answer: B

Watch Video Solution

44. A metal has bcc structure and the edge length of its unit cell is 3.04Å . The volume of the vnit cell in cm^3 will be

A. $1.6 \times 10^{-21} cm^3$

B. $2.81 \times 10^{-23} cm^3$

C. $6.02 \times 10^{-23} cm^3$

D. $6.6 \times 10^{-24} cm^3$

Answer: B

View Text Solution

45. The density of solid argon is $1.65 g / mL$ at $-233^{\circ} C$. If the argon atom is assumed to be sphere of radius $1.54 \times 10^{-8} cm$, what percentage of solid argon is apparentaly empty space ? $(At. Wt. of Ar = 40)$

A. 0.54

B. 0.82

C. 0.62

D. 0.48

Answer: C

Watch Video Solution

46. An element (atomic mass $= 100g/mol$) having bcc structure has unit cell edge 400 pm .Them density of the element is

A. $10.376g/cm^3$

B. $5.188g/cm^3$

C. $7.289g/cm^3$

D. $2.144g/cm^3$

Answer: B

Watch Video Solution

47. An element with molar mass $2.7 \times 10^2 kgmol^{-1}$ forms a $2.7 \times 10^3 kg^{-3}$, what is the nature of the cubic unit cell?

A. sc

B. fcc

C. bcc

D. end centred

Answer: B

Watch Video Solution

48. An fcc lattice has a lattice parameter $a = 400$ pm. Calculater the molar volume of the lattice including all the empty space.

A. 7.6 mL

B. 6.5 mL

C. 10.8 mL

D. 9.6 mL

Answer: D

Watch Video Solution

49. A metal has bcc structure and the edge length of its unit cell is 3.04Å. The volume of the unit cell cm^3 will be

A. $1.6 \times 10^{23} cm^3$

B. $1.6 \times 10^{-23} cm^3$

C. $6.02 \times 10^{-23} cm^3$

D. $6.6 \times 10^{-24} cm^3$

Answer: B

View Text Solution

50. Aluminium crystallizes in a cubic close-packed structre. Its metallic radius is $125p \pm$

a. What is the length of the side of the unit cell?

b. How many unit cell are there in $1.00cm^3$ of aluminium?

A. 4.42×10^{22}

B. 2.36×10^{21}

C. 2.26×10^{22}

D. 3.6×10^{18}

Answer: C

Watch Video Solution

Question From Competition Exam

1. The property of crystalline solid is not

A. Asnisotropic

B. Isotropic

C. Hard

D. Dense

Answer: B

View Text Solution

2. Given :

	Column A	Column B
(A)	Ionic solid	$(I)NaCl$
(B)	Metallic solid	$(II)Fe$
(C)	Covalent solid	$(III)C(\text{graphite})$
(D)	Molecular solid	$(IV)\text{Dry ice}$

A. A - II, B - I, C - IV, D - III

B. A - I, B - II, C - III, - D - IV

C. A - III, B - II, C - I, D - IV

D. A - II, B - IV, C - I, D - III21.

Answer: B

View Text Solution

3. 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

A. AB

B. A_2B

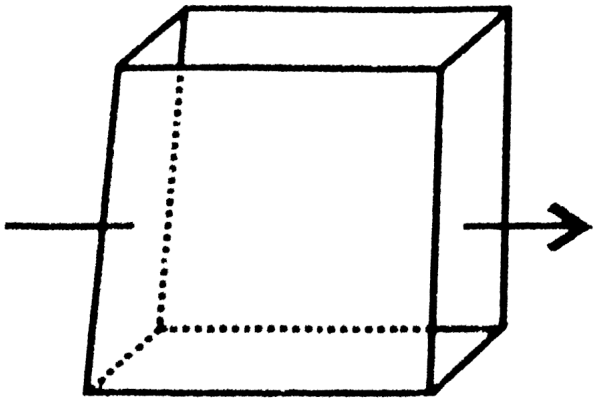
C. AB_3

D. A_3B

Answer: C

Watch Video Solution

4. In NACl unit cell, all the ions lying along the axis as shown in the figure are removed. Then the number of Na^+ and Cl^- ions remaining in the unit cell are k



A. 4 and 4

B. 3 and 3

C. 1 and 1

D. 4 and 3

Answer: D

View Text Solution

5. Percentage of free space in cubic close packed struchure and in body centred structure are respectively.

A. 48% and 26%

B. 30% and 26%

C. 26% and 32%

D. 32% and 48%

Answer: C

6. In a compound ,atoms of element Y from ccp lattice and those of element X occupy 2/3rd tetrahedral voids.The formula of the compound will be:

A. X_2Y_3

B. X_2Y

C. X_3Y_4

D. X_4Y_3

Answer: D

Watch Video Solution

7. AB crystallizes in a body centred cubic lattice with edge length a equal to $387pm$ .The

distance between two oppositely charged ions in the lattice is :

A. 300 pm

B. 335 pm

C. 250 pm

D. 200 pm

Answer: B

Watch Video Solution

8. Number of unit cells in 4g of X(atomic mass=40). Which crystallises in bcc pattern in $(N_0 = \text{Avogadro number})$

A. 0.1 N_A

B. $2 \times 0.1 N_A$

C. $\frac{0.1 N_A}{2}$

D. $2 \times N_A$

Answer: C

Watch Video Solution

9. In Which of the following substances the carbon atom is arranged in a regular tetrahedral struture?

A. Diamond

B. Benzene

C. Graphite

D. Carbon black

Answer: A

Watch Video Solution

10. Why does ZnO show increased electrical conductivity and turns yellow on heating?

A. Frenkel defect

B. Metal excess defect

C. Metal deficiency defect

D. Schottky defect

Answer: B

Watch Video Solution

11. In $AgBr$ crystal , the ion size lies in the order $Ag^+ < < Br^-$ The $AgHt$ crystal should have the following characheristics

A. Defectless (Perfect)crystal

B. Schottky defect only

C. Frenkel defect only

D. Both Schottky and Frenkel defect

Answer: D

Watch Video Solution

12. The edge length of a face-centred cubic unit cell is $508 \pm$. If the radius of the cation is $110 \pm$ the radius of the anion is

A. 285 pm

B. 398 pm

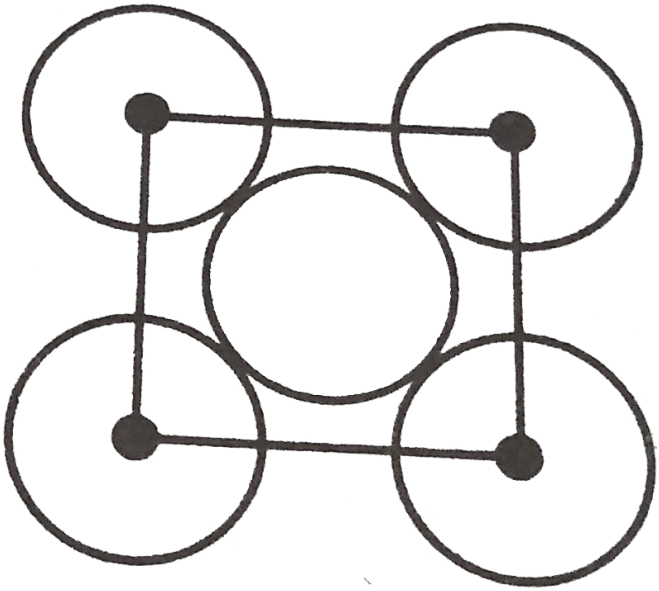
C. 144 pm

D. 618 pm

Answer: C

Watch Video Solution

13. The packing efficiency of the two dimensional square unit cell shown below is:



A. $39.27\ \%$

B. $68.2\ \%$

C. $74.05\ \%$

D. $78.54\ \%$

Answer: D

Watch Video Solution

14. How many nearest neighbours surrounded each particle in a face-centred cubic lattice?

A. 4

B. 6

C. 8

D. 12

Answer: D

Watch Video Solution

15. Which of the following dimensio of a unit cell represent a cubic unit

A. $a = b = c, \alpha = \beta = \gamma = 90^\circ$

B. $a = b = c, \alpha = \beta = 90^\circ \neq \gamma$

C. $a = b \neq c, \alpha = \gamma = 90^\circ$

D. $a \neq b \neq c, \alpha \neq \beta \neq \gamma$

Answer: A

View Text Solution

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

A. A_2B

B. AB_2

C. A_2B_3

D. A_2B_5

Answer: D

Watch Video Solution

17. In CsCl stricture, the coordination number of Cs^+ is

A. Equal of that of Cl^- , that is 6

B. Equla to that of Cl^- , that is 8

C. Not equla to that of Cl^- , that is 6

D. Not equla to that of Cl^- , that is 8

Answer: B

View Text Solution

18. In A^+B^- ionic compound radii of $A^=$ and B^- ions are 180pm and 187 pm

respectively .The crystal structure of this compound will be

A. NaCl type

B. CsCl type

C. ZnS type

D. similar to diamond

Answer: B

 Watch Video Solution

19. A solid compound XY has $NaCl$ structure. If the radius of the cation is 100 pm, the radius of the anion $\left(Y^{-}\right)$ will be

A. 241.5 pm

B. 165.7 pm

C. 275.1 pm

D. 322.5 pm

Answer: A

Watch Video Solution

20. Copper crystallises in fcc with a unit cell length of 361 pm. What is the radius of copper atom?

A. 181 pm

B. 108 pm

C. 128 pm

D. 157 pm

Answer: B

 Watch Video Solution

21. If the unit length of the unit cell is 5 $\mathring{A}$ the smallest distance is A° between two neigghbouring metal atoms is a fcc is

A. 2.5

B. 5.00

C. 7.07

D. 3.535

Answer: D

View Text Solution

22. The total number of octahedral void (s) per atom present in a cubic close packed structure is

A. 1

B. 3

C. 2

D. 4

Answer: A

 Watch Video Solution

23. 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

A. 288 pm

B. 408 pm

C. 144 pm

D. 204 pm

Answer: A

View Text Solution

24. Lithium forms body centred cubic structrue. The length of the side of its unit cell is 351 pm. Atomic radius of the lithium will be

A. 75 pm

B. 300 pm

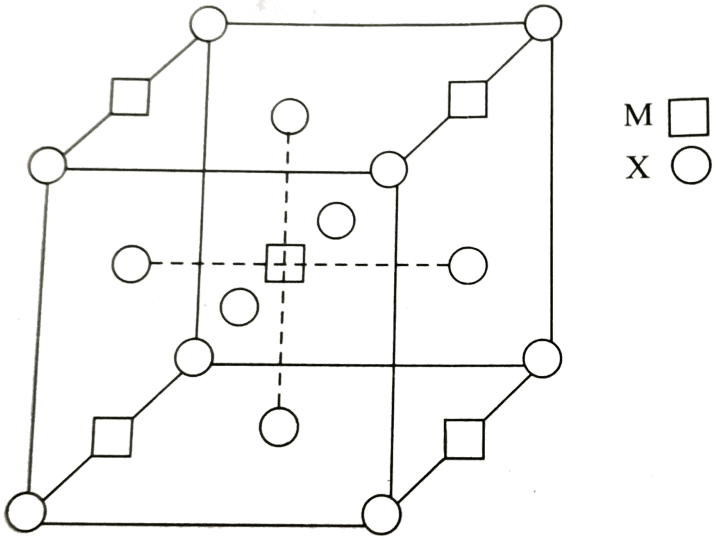
C. 240 pm

D. 152 pm

Answer: D

View Text Solution

25. A compound M_pX_q has cubic close packing (p) arrangement of X. Its unit cell structure is shown below. The empirical formula of the compound is



a. MX **b.** MX_2 **c.** M_2X

A. MX

B. MX_2

C. M_2X

D. M_5X_{14}

Answer: B

 Watch Video Solution

26. Barium titanate has the pervoskite structure, i.e. a cubinc lattice with Ba^{2+} ions at the corners of the unit cell, oxide ions at the face centres and titanium ions at the body

centred. The molecular formula of barium titante is

A. $BaTiO_3$

B. $BaTiO_4$

C. $BaTiO_2$

D. $BaTiO$

Answer: A

Watch Video Solution

27. In a face centred cubic lattice, a unit cell is shared equally by low many unit cells ?

A. 8

B. 4

C. 2

D. 6

Answer: D

View Text Solution

28. The distance is picometer between centre of two closest sodium atoms in bcc of sodium metal with a unit length of $4.3A^{\circ}$ is

A. 214

B. 372

C. 256

D. 328

Answer: B

View Text Solution

29. With respect to graphite and diamond, which of the statement given is correct?

A. Graphite is harder than diamond

B. Graphite has higher electrical conductivity than diamond

C. Graphite has higher thermal conductivity than diamond

D. Graphite has smaller C - C bond order than diamond

Answer: B

Watch Video Solution

30. Which of the following exists as covalent crystals in the solid state?

A. Phosphorus

B. Iodine

C. Silicon

D. Sulphur

Answer: C

Watch Video Solution

31. Experimentally it was found that a metal oxide has formula $M_{0.98}O$. Metal M, present as M^{2+} and M^{3+} in its oxide. Fraction of the metal which exists as M^{3+} would be

A. $5.08\ \%$

B. $7.01\ \%$

C. $4.08\ \%$

D. $6.05\ \%$

Answer: C

Watch Video Solution

32. A solid has a structure in which W atoms are located at the corners of a cubic lattice, O atom at the centre of edges, and Na atom at the centre of the cube. The formula for the compound is

A. Na_2WO_3

B. Na_2WO_2

C. $NaWO_2$

D. $NaWO_3$

Answer: D

Watch Video Solution

33. The number of octahedral and tetradedral holes respectively present in a hexagonal close packed(hep) crystal of 'X' atoms are

A. x,2x

B. x, x

C. 2x, 3x

D. 2x, 2x

Answer: A

Watch Video Solution

34. Atoms of an element A occupy $\frac{2}{3}$ tetrahedral volds in the hcp, formed by the elements, 'B' . The formula of compound is

A. A_2B_3

B. A_2B

C. AB_2

D. A_4B_3

Answer: D

View Text Solution

35. An example of a non- stoichiometric compound is

A. Al_2O_3

B. Fe_3O_4

C. NiO_2

D. PbO

Answer: B

Watch Video Solution

36. Which one of the following is the most correct statement?

A. Brass is an interstitial alloy, while steel is a subsitutional alloy

B. Brass is a substitutional alloy while steel is an interstitial alloy

C. Brass and steel are both substitutional alloys

D. Brass and steel are both interstitial alloys

Answer: C

Watch Video Solution

37. Amorphous solids are

A. Solid substance in real sense

B. Liquid in real sense

C. Supercooled liquid

D. Substance with difinite melting point

Answer: C

 Watch Video Solution

38. In which of the following $8:8$ coordination is found?

A. CsCl

B. MgO

C. Al_2O_3

D. All the these

Answer: A

Watch Video Solution

39. The coordination number of F^- ion in CaF_2 crystalline structure is

A. 3

B. 4

C. 6

D. 8

Answer: B

Watch Video Solution