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Solid State

Time – 1 ½ Hrs. M.M. - 150

Q.1. The total number of constituent particles per unit cell in bcc structures is –

(a) 1 (b) 2 (c) 3 (d) 4

Q.2. The total number of constituent particles per unit cell in fcc structure is –

(a) 1 (b) 2 (c) 3 (d) 4

Q.3. The total number of tetrahedral voids per atoms in close packed structure is –

(a) 1 (b) 2 (c) 3 (d) 4

Q.4. The CN number of an atom in square close packing of atoms in 2-dimension is –

(a) 2 (b) 4 (c) 6 (d) 12

Q.5. The CN of an atom in hexagonal close packing of atoms in 2-dimension is –

(a) 2 (b) 4 (c) 6 (d) 12

Q.6. The CN number of an atom in square close packing of atoms in 3-dimension is –

(a) 2 (b) 4 (c) 6 (d) 12

Q.7. The total number of tetrahedral voids per unit cell in fcc structure is –

(a) 2 (b) 2 (c) 4 (d) 8

Q.8. The total number of octahedral voids per unit cell in fcc structure is –

(a) 2 (b) 2 (c) 4 (d) 8

Q.9. Which of the following represents the location of an octahedral void in a unit cell of fcc structure –

(a) Body centre (b) Edge centre (c) Both (d) None

Q.10. Which of the following represents the location of an tetrahedral void in a unit cell of fcc structure –

(a) Body centre (b) Edge centre (c) Face centre (d) None

Q.11.The radius ratio of an ionic crystal is 0.534. The CN number of cation in the crystal will be-

(a) 3 (b) 4 (c) 6 (d) 8

Q.12. The radius ratio of an ionic crystal is 0.734. The geometry of the crystal will be –

(a) Tetrahedral (b) Cubical (c) Octahedral (d) Unpredictable

Q.13. Which of the following structures has least packing efficiency –

(a) simple cubic (b) bcc (c) fcc (d) All are equally efficient

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Q.14. In which of the following Schottky defect is most common –

(a) NaCl (b) ZnS (c) AgCl (d) All

Q.15. In which of the following Frenkel defect is most common –

(a) NaCl (b) CsCl (c) AgCl (d) All

Q.16. In which of the following both Schottky and Frenkel defects are most common –

(a) NaCl (b) ZnS (c) AgCl (d) AgBr

Q.17. Which of the following is stoichiometric point defect –

(a) Frenkel defects (b) Schottky defect (c) Both (d) None

Q.18. In order to exhibit Schottky defect the most common criteria is –

(a) The co-ordination number of cation should be high

(b) The size of cation and anion should be comparable

(c) Both of the above

(d) The co-ordination number of cation should be low

Q.19. In order to exhibit Frenkel defect the most common criteria is –

(a) The co-ordination number of cation should be low

(b) The size of cation should be much more smaller than that of anion

(c) Both of the above

(d) The co-ordination number of cation should be high

Q.20. Which of the following is incorrect about Frenkel defect –

(a) The cation gets dislocalized to the interstitial site

(b) The equal number of cations and anions are missing from crystal lattice

(c) Density remains unchanged

(d) The electrical conductance gets increased

Q.21. Which of the following is incorrect about Schottky defect –

(a) The cation gets dislocalised to the interstitial site

(b) The cations and anions are missing in stoichiometric ratio from crystal lattice

(c) Density gets decreased

(d) The electrical conductance gets increased

Q.22. The anionic sites trapped with electrons in ionic crystals are called –

(a) F- centres (b) Epi-centres (c) Active sites (d) None

Q.23. The yellow colour of NaCl crystals is due to presence of –

(a) F- centres (b) Epi-centres (c) Active sites (d) None

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Q.24. If silicon is doped with phosphorus then the type of semiconductor formed is –

(a) p-type (b) n-type (c) Both (d) Unpredictable

Q.25. If silicon is doped with boron then the type of semiconductor formed is –

(a) p-type (b) n-type (c) Both (d) Unpredictable

Q.26. Which of the following is Ferromagnetic –

(a) Sn (b) Zn (c) Ni (d) MnO

Q.27. Which of the following is Anti-Ferromagnetic –

(a) Sn (b) Zn (c) Benzene (d) MnO

Q.28. Which of the following is Ferrimagnetic –

(a) Fe_3O_4 (b) Zn (c) Benzene (d) MnO

Q.29. If the domains are aligned parallel and anti-parallel manner in equal numbers then the substance is –

(a) Diamagnetic (b) Paramagnetic (c) Ferromagnetic (d) Anti-Ferromagnetic

Q.30. If the domens are aligned parallel and anti-parallel in un-equal numbers then the substance is –

(a) Diamagnetic (b) Paramagnetic (c) Ferromagnetic (d) Anti-Ferromagnetic

Q.31. In a compound element B as anion adopts fcc arrangement and element A as cation occupies all the tetrahedral voids. The formula of the compound is -

(a) AB (b) AB_2 (c) A_2B (d) Unpredictable

Q.32. In a compound element B as anion adopts fcc arrangement and element A as cation occupies one half the of the octahedral voids. The formula of the compound is -

(a) AB (b) AB_2 (c) A_2B (d) None

Q.33. NaCl crystal is the example of -

(a) 4:4 co-ordination (b) 8:8 co-ordination (c)6:6 co-ordination (d) None

Q.34. CsCl crystal is the example of -

(a) 4:4 co-ordination (b) 8:8 co-ordination (c)6:6 co-ordination (d) None

Q.35. ZnS crystal is the example of -

(a) 4:4 co-ordination (b) 8:8 co-ordination (c)6:6 co-ordination (d) None

Q.36. The total number of Na^+ and Cl^- ions per unit cell in NaCl crystal is -

(a) 2 & 2 (b) 4 & 4 (c) 6 & 6 (d) None

Q.37. The total number of Cs^+ and Cl^- ions per unit cell in CsCl crystal is -

(a) 2 & 2 (b) 4 & 4 (c) 6 & 6 (d) 1 & 1

Q.38. The total number of Zn^{++} and S^{--} ions per unit cell in ZnS crystal is -

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(a) 2 & 2 (b) 4 & 4 (c) 6 & 6 (d) None

Q.39. Which of the following is not the property of crystalline solid-

(a) They have long range order (b) They have sharpe melting point

(c) They show anisotropism (d) They are amorphous in nature

Q.40. Which of the following is not a crystalline solid-

(a) NaCl (b) ZnS (c) Glass (d) Quartz

Q.41. Which of the following is considered to be super-cooled liquid-

(a) NaCl (b) ZnS (c) Glass (d) Quartz

Q.42. Which of the following is molecular solid-

(a) NaCl (b) ZnS (c) Iodine (d) Diamond

Q.43. Which of the following is covalent solid-

(a) NaCl (b) ZnS (c) Iodine (d) Diamond

Q.44. Which of the following is ionic solid-

(a) NaCl (b) ZnS (c) Both (d) Diamond

Q.45. Which of the following has sp^3 hybridization in carbon -

(a) Graphite (b) Diamond (c) Both (d) None

Q.46. Which of the following has sp^2 hybridisation in carbon -

(a) Graphite (b) Diamond (c) Both (d) None

Q.47. Which of the following is the crystelline allotrope of carbon -

(a) Graphite (b) Diamond (c) Fullrene (d) All

Q.48. Which of the following has football shaped molecule -

(a) Graphite (b) Diamond (c) Fullrene (d) All

Q.49. Which of the following is hardest-

(a) Graphite (b) Diamond (c) Fullrene (d) Quartz

Q.50. Which of the following shows *Piezoelectric effect* -

(a) $PbZrO_3$ (b) $NH_4H_2PO_4$ (c) Quartz (d)All

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