CHEMISTRY

JEE MAIN AND ADVANCED

MOCK TEST 16

Example

1. The two ions A^{+}' and 'B^{-} have radii 85 and 200 pm respectively. In the closed packed crystal of compound AB, the coordination number of A^{+} ion is

A. 3

B. 4

C. 6

D. 8

Answer: C

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2. Cesium and chloride ions are in contact along the body diagonal in a body-centred cubic lattice. The edge lenth of the unit cell is 350 pm and

Cs^+ has a radius of 133pm. Hence, the radius of Cl^- ion is approximately

A. 170

B. 133

C. 180

D. 150

Answer: A

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3. Which of the following given statement(s) is/are correct for both fluorite and antifluorite structures? (i) coordination number of cation is 8 (ii) Number of formula unit is one unit cell is 4 (iii) 100% tetrahedral voids are occupied (iv) Radius ratio of cation and anion is 0.20

A. (i) and (ii)

B. (i), (ii) & (iii)

C. (ii) and (iii)

D. (i), (ii), (iii) & (iV)

Answer: C

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4. A solid AB has ZnS-type structure. The edge lenth of unit cell is 400 pm abd the radius of B^- ion is 0.130 nm. Then the radius of A^+ ion is

A. 35.8 pm

B. 43.2 pm

C. 60.5 pm

D. 53.2 pm

Answer: B

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5. Which of the following is correct?

A. AgBr shows both Schottky and Frankel defect

B. Frenkel defect is shown by ionic solids where there is large difference in size of anion and cation

C. In Frankel defect, dielectric constant of crystal increases

D. All are correct

Answer: D

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6. Antiferromagnetic substance possess:

A. Low magnetic moment

B. Large magnetic moment

C. Zero magnetic moment

D. Non-zero value of magnetic moment

Answer: C

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7. $MgFe_2O_4$ has spinel structure , then the percentge of tetrahedral voids and the octahedral voids occupied are respectively

A. 25% & 37.5%

B. 12.5% & 50%

C. 25% & 25%

D. 37.5% & 25%

Answer: B

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8. If an ionic solid XY (X & Y are monovalent ions) is doped with 10^{-2} moles % of another ionic solid AY_3 , then the concentration of the cation vacancies created is

A. $6.023 \times 10^{19} mol^{-1}$

B. $60.23 \times 10^{18} mol^{-1}$

C. $12.05 \times 10^{21} mol^{-1}$

D. $1.205 \times 10^{21} mol^{-1}$

Answer: D

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9. Which of the following given statesment is incorrect?

A. F-centres generation is responsible factor for imparting colour to the crystal

B. Frenkel defect is usually shown by ionic compound having low coordination number

C. Stoichiometry of crystal remains uneffected due to schottky defect

D. Density of crystal always increses due to susbtitutional impurity defect

Answer: D

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10. Which of the following given statement for semiconductor is correct?

A. p-type semiconductor is formed by doping Si with B

B. p-type semiconductor is formed by doping Si with P

C. n-type semiconductor is formed by doping Si with Al

D. n-type semiconductor is formed by doping Ge with B

Answer: A

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11. Which of the following given moleculues in a pair are paramagnetic and ferrimagnetic substance respectively?

A. Fe_3O_4 '&' H_2O

B. MnO&'CrO_2

C. Cu^2+ & $ZnFe_2O_4$

D. C_6H_6 '&' O_2

Answer: C

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12. In 'Na_2 O' structure

A. O^2- ions constitute CCP and 'Na^+' ions occupy all the octahedral holes

B. O^2-' ions constitute CCP and 'Na^+' ions occupy all the tetrahedral holes

C. O^2-' ions constitute CCP and 'Na^+' ions occupy 50% of tetrahedral holes and 100% octahedral holes

D. `Na^+' ions constitute CCP and 'O^2-' ions occupy half of octahedral holes

Answer: B

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13. When acrystal structure of NaCl type is pressurised

A. The coordination number is decreased to 8 and converted to CsCl type crystal structure

B. The coordination number is remains same

C. The coordination number is increased to 8 and converted to CsCl type crystal structure

D. The coodination number is increased to 4 and coverted to ZnS type crystal structure

Answer: C

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14. Ferromagnetism arises becases of the sponteneous alignment of the magnetic moments due to unpaired electrons as

A. uparrowuparrowuparrowuparrowuparrow

B. uparrowuparrowuparrowdownarrowdownarrow

C. uparrowdownarrowuparrowdownarrow

D. uparrowuparrowdownarrowuparrowuparrow

Answer: A

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15. The minimum distance between two tetrahedral voids in NaCl type crystal structure is (a is edge lenth)

A. $\frac{\sqrt{3}a}{4}$

B. $\frac{a}{2}$

C. $\frac{a}{2 \times \sqrt{2}}$

D. $\frac{\sqrt{2}a}{2}$

Answer: B

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16. 2 M of 100 mL Na_2SO_4 is mixed with 3 M of 100 mL NaCl solution and 1 M of 200 mL $CaCl_2$ solution . Then the ratio of the concentration of cation and anion is

A. $1:1$

B. $2:1$

C. $2:3$

D. $1:2$

Answer: A

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17. Among the following , select the pair that does not form an ideal solution

A. Carbon tetrachloride and Silicon tetrachloride

B. Chlorobenzene and Bromobenzene

C. Chloroform and Carbon tetrachloride

D. Benzene and toluene

Answer: C

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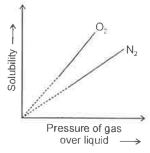
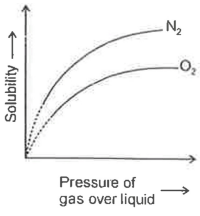
18. Which oth following graph is correct for solubility of O_2 and N_2 in water at 298

A. 

B. (##AAK_MCP_16_NEET_CHE_E16_018_Q02##)

C. (##AAK_MCP_16_NEET_CHE_E16_018_Q03##)

D. 

Answer: A

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19. Consider the data given below

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On the basis of the given data, arrange the gases in their increasing

A. AltBltCltD

B. BltDltAltC

C. CltDltAltB

D. CltAltDltB

Answer: B

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20. The volume of water added to 500 mL , 0.5 M NaOH so that its strenth becomes 10mg NaOH per mL is

A. 250 mL

B. 500 mL

C. 750 mL

D. 1000 mL

Answer: B

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21. Amount (in g) of sample containing 80% NaOH required to prepare 60 litre of 0.5 M solution is

A. 1000

B. 1200

C. 1500

D. 1600

Answer: C

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22. Henry's law is not valid when

A. Temperature is high

B. Pressure is low

C. The gas is not highly soluble

D. The gas neither reacts chemically with solvent nor dissociates or associates in the solvent

Answer: A

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