

SURAJ SCHOOL

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Holiday Homework

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Class 12th, Chemistry

- The molarity of a glucose solution containing 36 g of glucose per 400 mL of the solution is:
(A) 1.0 (B) 0.5 (C) 2.0 (D) 0.05
- 1 kg of NaOH solution contains 4 g of NaOH. The approximate concentration of the solution is:
(A) 0.1 molar (B) 0.1 molal (C) Decinormal (D) About 0.1 N
- To prepare 0.1 M KMnO_4 solution in 250 mL flask, the weight of KMnO_4 required is:
(A) 4.80 g (B) 3.95 g (C) 39.5 g (D) 0.48 g
- The number of moles present in 2 litre of 0.5 M NaOH is:
(A) 2 (B) 1 (C) 0.1 (D) 0.5
- The weight of solute present in 200 mL of 0.1 M H_2SO_4 :
(A) 2.45 g (B) 4.9 g (C) 1.96 g (D) 3.92 g
- The nature of mixture obtained by mixing 50 mL of 0.1 M H_2SO_4 and 50 mL of 0.1 M NaOH is:
(A) Acidic (B) Basic (C) Neutral (D) Amphoteric
- If 250 mL of a solution contains 24.5 g H_2SO_4 the molarity and normality respectively are:
(A) 1M, 2N (B) 1M, 0.5M (C) 0.5M, 1N (D) 2M, 1N
- The volume strength of H_2O_2 solution is 10. What does it mean:
(A) at S.T.P. 10 g solution of H_2O_2 gives 10 mL of O_2
(B) at S.T.P. 1 g equivalent of H_2O_2 gives 10 mL of O_2
(C) at S.T.P. 10 litre solution of H_2O_2 gives 10 mL of O_2
(D) at S.T.P. 1 mL solution of H_2O_2 gives 10 mL of O_2
- The normality of 0.3 M phosphorus acid (H_3PO_3) is:
(A) 0.1 (B) 0.9 (C) 0.3 (D) 0.6
- The normality of 4% (wt./vol.) NaOH is:
(A) 0.1 (B) 1.0 (C) 0.05 (D) 0.01
- The density of NH_4OH solution is 0.6 g/mL. It contains 34% by weight of NH_4OH . Calculate the normality of the solution:
(A) 4.8N (B) 10N (C) 0.5N (D) 5.8N
- A molal solution is one that contains one mole of a solute in :
(A) 1000 g of the solution (B) 1000 c.c. of the solution
(C) 1000 c.c of the solvent (D) 1000 g of the solvent
- Out of molarity (M), molality (m), formality (F) and mole fraction (x) those independent of temperature are:
(A) M, m (B) F, x (C) m, x (D) M, x
- 3.0 molal NaOH solution has a density of 1.110 g/mL. The molarity of the solution is:
(A) 2.9732 (B) 3.05 (C) 3.64 (D) 3.0504
- 1000 g aqueous solution of CaCO_3 contains 10 g of carbonate. Concentration of solution is:
(A) 10 ppm (B) 100 ppm (C) 1000 ppm (D) 10,000 ppm
- When 5.0 gram of BaCl_2 is dissolved in water to have 10^6 gram of solution. The concentration of solution is :
(A) 2.5 ppm (B) 5 ppm (C) 5M (D) 5 g L⁻¹
- How many grams of glucose be dissolved to make one litre solution of 10% glucose:
(A) 10g (B) 180g (C) 100g (D) 1.8g

18. Vapour pressure of a solvent containing nonvolatile solute is:
 (A) more than the vapour pressure of solvent (B) less than the vapour pressure of solvent
 (C) equal to the vapour pressure of solvent (D) none
19. The relative lowering in vapour pressure is:
 (A) $\propto X_{\text{solute}}$ (B) $\propto \frac{1}{X_{\text{solute}}}$ (C) $= X_{\text{solute}}$ (D) $\propto m$
20. The vapour pressure of a dilute solution of a solute is not influenced by :
 (A) temperature of solution (B) melting point of solute
 (C) mole fraction of solute (D) degree of dissociation of solute
21. An aqueous solution of methanol in water has vapour pressure:
 (A) equal to that of water (B) equal to that of methanol
 (C) more than that of water (D) less than that of water
22. When a substance is dissolved in a solvent, the vapour pressure of solvent decreases. This brings:
 (A) an increase in b.pt. of the solution (B) a decrease in b.pt. of a solution
 (C) an increase in f.pt. of the solvent (D) none
23. Solute when dissolved in water:
 (A) increases the vapour pressure of water (B) decreases the boiling point of water
 (C) decreases the freezing point of water (D) all of the above
24. If the vapour pressure of solution of two liquids are less than those expected from ideal solution they are said to have:
 (A) negative deviation from ideal behaviour
 (B) positive deviations from ideal behaviour
 (C) ideal behaviour
 (D) positive deviation for lower concentration and negative deviations for higher concentration
25. A 5.8% solution of NaCl has vapour pressure close to:
 (A) 5.8 % solution of urea (B) 2 m solution of glucose
 (C) 1 m solution of urea (D) 5.8 % solution of glucose
26. The boiling point of C_6H_6 , CH_3OH , $C_6H_5NH_2$ and $C_6H_5NO_2$ are 80 C, 65 C, 184 C and 212 C respectively. Which will show highest vapour pressure at room temperature:
 (A) C_6H_6 (B) CH_3OH (C) $C_6H_5NH_2$
 (D) $C_6H_5NO_2$
27. Boiling point of water is defined as the temperature at which:
 (A) vapour pressure of water equal to that of atmospheric pressure
 (B) bubbles are formed
 (C) steam comes out
 (D) none of the above
28. Which solution will show maximum elevation in b.pt.:
 (A) 0.1M KCl (B) 0.1M $BaCl_2$ (C) 0.1M $FeCl_3$ (D) 0.1M $Fe_2(SO_4)_3$
29. The correct relationship between the boiling points of very dilute solutions of $AlCl_3(t_1)$ and $CaCl_2(t_2)$ having the same molar concentration is:
 (A) $t_1 = t_2$ (B) $t_1 > t_2$ (C) $t_2 > t_1$ (D) $t_2 \geq t_1$
30. Cryoscopic constant of a liquid is:
 (A) decrease in freezing point when 1 gram of solute is dissolved per kg of the solvent
 (B) decrease in the freezing point when 1 mole of solute is dissolved per kg of the solvent
 (C) the elevation for 1 molar solution
 (D) a factor used for calculation of elevation in boiling point

31. At certain Hill-station pure water boils at 99.725°C . If K_b for water is $0.513^{\circ}\text{C kg mol}^{-1}$, the boiling point of 0.69 m solution of urea will be :
- (A) 100.079°C (B) 103°C (C) 100.359°C (D) unpredictable
32. The freezing point of 1 molal NaCl solution assuming NaCl to be 100% dissociated in water is: (A) -1.86°C (B) -3.72°C (C) $+1.86^{\circ}\text{C}$ (D) $+3.72^{\circ}\text{C}$
33. 10 gram of solute with molecular mass 100 g mol^{-1} is dissolved in 100 gram solvent to show 0.3°C elevation in boiling point. The value of molal ebullioscopic constant will be:
- (A) 10 (B) 3 (C) 0.3 (D) unpredictable
34. Depression in freezing point of solution of electrolytes are generally:
- (A) lower
(B) higher than what should be normally
(C) low or high depending upon nature of electrolyte
(D) what it should be normally
35. A liquid is in equilibrium with its vapour at its boiling point. On the average the molecules in the two phases have equal:
- (A) inter-molecular forces (B) potential energy (C) total energy (D) kinetic energy
36. Which salt may show the same value of vant Hoff factor (i) as that of $\text{K}_4\text{Fe}(\text{CN})_6$ in very dilute solution state:
- (A) $\text{Al}_2(\text{SO}_4)_3$ (B) NaCl (C) $\text{Al}(\text{NO}_3)_3$ (D)
- Na_2SO_4 37. Which compound corresponds vant Hoff factor (i) to be equal to 2 in dilute solution:
- (A) K_2SO_4 (B) NaHSO_4 (C) Sugar (D)
- MgSO_4 38. In which of the following, the vant Hoff factor (i) is equal to one:
- (A) NaCl (B) KNO_3 (C) Urea (D) all
39. If the observed and theoretical molecular mass of NaCl is found to be 31.80 and 58.50, then the degree of dissociation of NaCl is:
- (A) 83.96% (B) 8.39% (C) 90% (D) 100%
40. The substance A when dissolved in solvent B shows the molecular mass corresponding to A_3 . The vant Hoff's factor will be:
- (A) 1 (B) 2 (C) 3 (D) 1/3
41. Which of the following conditions is not correct for ideal solution:
- (A) no change in volume on mixing (B) no change in enthalpy on mixing
(C) it obeys Raoult's law
(D) Ionisation of solute should occur to a small extent
42. Solutions distilled without change in composition at a temperature are called:
- (A) Amorphous (B) Azeotropic mixture
(C) Ideal solution (D) Super saturated solution
43. If mole fraction of the solvent in a solution decreases then:
- (A) vapour pressure of solution increases (B) b.pt decreases
(C) osmotic pressure increases (D) all are correct
44. An azeotropic solution of two liquids has boiling point lower than either of them when it:
- (A) shows a negative deviation from Raoult's law (B) shows no deviation from Raoult's law
(C) shows positive deviation from Raoult's law (D) is saturated
45. The passing of particles through semipermeable membrane is called:
- (A) osmosis (B) electrodialysis (C) electrophoresis (D) electroplating

46. From the colligative properties of solution which one is the best method for the determination of mol. wt of proteins & polymers:
 (A) osmotic pressure (B) lowering in vapour pressure
 (C) lowering in freezing point
 (D) elevation in B.Pt 47.
- As a result of osmosis, the volume of the concentrated solution:
 (A) gradually decreases (B) gradually increases
 (C) suddenly increases (D) none
48. The osmotic pressure of a solution of benzoic acid dissolved in benzene is less than expected because:
 (A) benzoic acid is an organic solute (B) benzene is a non-polar solvent
 (C) benzoic acid dissociates in benzene (D) benzoic acid gets associated in benzene 49.
- Two solutions have different osmotic pressures. The solution of higher osmotic pressure is called:
 (A) isotonic solution (B) hypotonic solution
 (C) isotopic solution (D) hypertonic solution 50.
- Blood is isotonic with:
 (A) 0.16 M NaCl (B) Conc. NaCl (C) 30% NaCl (D) 50% NaCl
51. Which one of the following pairs of solution can we expect to be isotonic at the same temperature:
 (A) 0.1 M urea and 0.1 M NaCl (B) 0.1 M urea and 0.2 M $MgCl_2$
 (C) 0.1 M NaCl and 0.1 M Na_2SO_4 (D) 0.1 M $Ca(NO_3)_2$ and 0.1 M Na_2SO_4
52. A 5% solution of cane sugar is isotonic with 0.877% of X. The molecular weight of substance X is:
 (A) 58.98 (B) 119.96 (C) 95.58 (D) 126.98
53. Which statement is incorrect about osmotic pressure (π), volume (V) and temperature (T):
 (A) $\pi \propto \frac{1}{V}$ if T is constant (B) $\pi \propto T$ if V is constant
 (C) $\pi \propto V$ if T is constant (D) πV is constant if T is constant
54. The osmotic pressure of equimolar solutions of urea, $BaCl_2$ and $AlCl_3$ will be in the order:
 (A) $AlCl_3 > BaCl_2 > Urea$ (B) $BaCl_2 > AlCl_3 > Urea$
 (C) $Urea > BaCl_2 > AlCl_3$ (D) $BaCl_2 > Urea > AlCl_3$