CHEMISTRY

BOOKS - TARGET CHEMISTRY (HINGLISH)

SOLUTIONS AND COLLIGATIVE PROPERTIES

Classical Thinking

1. The mixture of salt and sugar is called a _____ mixture .

A. Coarse

B. homogeneous

C. Reacmic

D. Solution

Answer: A

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2. In a solution the larger proportion of the component is known as _____.

A. Solution

B. Solute

C. solvent

D. mixed solution

Answer: C

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3. Depending on the physical states of solvents and solutes , there are _____ types of solutions.

A. five

B. seven

C. nine

D. twelve

Answer: C

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4. Sugar dissolved in water is a _____ type of solution .

A. solid in solid

B. solid in gas

C. solid in liquid

D. gas in solid

Answer: C

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5. An alloy is a homogeneous mixture of _____.

A. a metal and a non- metal

B. two or more metal

C. two or more metals with non-metals

D. all of these

Answer: D

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6. An example for solid in solid solution is _____.

A. Bronze

B. soda water

C. sodium chloride

D. camphor in air

Answer: A

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7. The amount of solute dissolved in unit volume of solvent is termed as _____ of solution .

A. molarity

B. nomality

C. molality

D. concentration

Answer: D

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8. Standard solution is one whose concentration is _____.

A. decrmolar

B. exactly known

C. centrimolar

D. decinormal

Answer: B

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9. A solution in which small amount of solute gats dissolved at a given temperature , so that further

dissolution of solute can take place is called _____ solution .

A. satuated

B. unsatured

C. molar

D. supersatured

Answer: B

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10. A solutiion that contain more solute than the saturated solution at a given termperature _____ solution .

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11. The mass of a solute in grams , present in 100 g of solution is termed as _____.

A. percentage bu volume

B. percentage by mass

C. Mole percentage

D. mole fraction

Answer: B

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12. 50 g of solute is dissolved in 0.95 kg of the solvent . The mass percent of the solution in _____.

A. 50

B. 0.95

C. 5

D. 0.095

Answer: C

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13. Mole fraction (x) of a component is equal to ____.

A. $\frac{\text{number of moles of solute}}{\text{number of litres of solution}}$

B. $\frac{\text{number of grem - equivents of solute}}{\text{number of littres of solutons}}$

C. $\frac{\text{number of moles of solute}}{\text{number of kilograms of solvent}}$

D. $\frac{\text{number of moles of a component}}{\text{total number of moles of all components}}$

Answer: D

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14. The mole fraction of nitrogen , in a mixture of a solution have a sum of _____.

A. 0.5

B. 0.75

C. 0.66

D. 0.33

Answer: D

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15. Mole fraction of the two compounds of a solution have a sum of

A. more than one

B. less than one

C. exactly one

D. hundred

Answer: C

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16. The mole fraction of a solvent in a solution is 0.8 . The mole fraction of the solute will be _____.

A. 0.2

B. 0.4

C. 0.8

D. 0.6

Answer: A

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17. Molarity is expressed as

A. g/L

B. L/mol

C. mol/L

D. mol /1000 g

Answer: C

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18. IF 250 mL of 0.25 M NaCl solution is diluted with water to a volume of 500 mL , the new concentration of the solution is _____.

A. $0.167M$

B. $0.125M$

C. $0.0833M$

D. $0.0167M$

Answer: B

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19. IF 25 mL of $0.4M$solution is diluted with water to a volume of 600 mL . The new concentration of the solution is _____.

A. $0.167M$

B. $0.125M$

C. $0.0833M$

D. $0.0167M$

Answer: D

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20. 20 mL of HCI soution requires 19.85 mL of 0.01 M NaOH solution for complete neutralization . The molarity of HCI solution is _____M.

A. 0.0099

B. 0.099

C. 0.99

D. 9.9

Answer: A

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21. Which of the following is CORRECT ?

A. Molality (m) of a solution

$$= \frac{\text{Number of mole of solute}}{\text{Number of litres of solution}}$$

B. Molality (m) of a solution

$$= \frac{\text{Number of gram-equivalanes of solute}}{\text{Number of litres of solution}}$$

C. Molality (m) of a solution

$$= \frac{\text{Number of moles of solute}}{\text{Number of kilograms of solvent}}$$

D. Molality (m) of a solution

$$= \frac{\text{Number of moles of a component}}{\text{Total number of moles of all components}}$$

Answer: C

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22. A molal solution is one that contains one mole of a solute in

A. 1 L of the solvent

B. 1000 g of the solvent

C. 1 L of the solution

D. 22.4 of the solution

Answer: B

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23. the solubility of which of the following salts does NOT increase with temperature ?

A. NHO_3

B. KBr

C. Na_2SO_4

D. $NANO_3$

Answer: C

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24. Name the method that is used for the separation of invidual components having different solubilities at the same temperature from a mixture of water soluble salts , present in aqueous solutions .

A. Crystallization

B. Fractional crystallization

C. Evaporation

D. Distillation

Answer: B

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25. The solubility of a gas in water depends upon

A. Only (i)

B. only (ii) and (iii)

C. only (iv)

D. (i) ,(ii) ,(iii) and (iv)

Answer: D

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26. When NaCl is added to carbonated soft drink , the solubility of CO_2 in the drink ____.

A. Reamains the same

B. increases

C. decreases

D. increases initually and then decreases slowly

Answer: C

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27. Solubility of gas decreases in a liquid by

A. increase in temperature

B. reduction in gas pressure

C. decrease in temperature

D. amount of liquid taken

Answer: C

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28. An alloy is a solution of ___.

A. solid in liquid

B. solid in gas

C. gas in solid

D. solid in solid

Answer: D

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29. Duralumin is an alloy of _____.

A. aluminium , copper ,magnesium and manganease

B. aluminium ,copper and tin

C. aluminium , nickel , copper and cobalt

D. aluminimum , maganese , cobalt and sodium

Answer: A

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30. Babbit metal is an alloy of tin , copper and _____.

A. lead

B. bismuth

C. antimony

D. aluminimum

Answer: C

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31. An alloy having zero temperature coefficient of electrical resistance is _____.

A. manganin

B. babbitt metal

C. duralumin

D. stainless steel

Answer: A

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32. The properties that depend only on the number of solute particles and NOT on its nature are called as _____ properties .

A. Physical

B. chemical

C. colligative

D. intensive

Answer: C

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33. which of the following is a colligative property ?

A. Conductance of a solution

B. surface tension of a solution

C. elevation of boiling point of a solution

D. Radioctivity of a solution

Answer: C

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34. Vapour pressure of the solution of a non- volatile solute is always __.

A. equal to the vapour pressure of pure solvent

B. higher than vapour pressure of pure solvent

C. lower than vapour pressure of pure solvent

D. constant

Answer: C

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35. which of the following in INCORRECT ?

A. vapour pressure of a liquid increases with increase in temperature

B. Boiling point of a liquid is a liquid becomes equal to external pressure .

C. Vapour pressure of a solution is lower than the vapour pressure of the pure solvent

D. The relative lowering of valour pressure is directly proportional to the mole fraction of the solvent .

Answer: D

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36. The atmospheric pressure is sum of the _____.

A. pressure of the biomolecules

B. Vapour pressure of atmospheric constituents

C. vapour pressure of chemicals and vapour pressure of volatiles

D. Pressure created on the atmospheric molecules

Answer: B

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37. The vapour pressure at equilibrium of a liquid in a closed vessel depends on _____.

A. Pressure

B. Concentration

C. temperature

D. volume

Answer: C

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38. Vapour pressure of a solution is _____.

A. directly proportional to the mole fraction of the solvent

B. inversely proportional to the mole fraction of the solute

C. Inversely proportional to the mole fraction of the solvent

D. directly proportional to the mole fraction of the solute

Answer: A

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39. An ideal solution is that which _____ over the entire range of concentration .

A. Shows positive deviation from Raoult 's law

B. Shows negative deviation from raoult 's law

C. Obeys Raout's law

D. Both (A) and (B)

Answer: C

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40. The lowering of vapour pressure of a solvent by the addition of a non- volatile solute to . It , is directly proportional to _____.

A. the product of vapour pressure of pure solvent and mole fraction of the non- volatile solute

B. the product of vapour pressure of pure solvent and mole fraction of the pure solvent

C. the sum of vapour pressure of pure solvent and mole fraction of the non- volatile solute

D. The sum of vapour pressure of pure solvent and mole fraction of the pure solvent

Answer: A

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41. The mathematical expression for relative lowering of vapour pressure is _____

A. $\frac{p_1^\circ - p}{P_1^\circ} = \frac{n}{n+N}$

B. $\frac{p - p_1^\circ}{p} = \frac{n}{n+N}$

C. $\frac{p - P_1^\circ}{p_1^\circ} = \frac{n}{n+N}$

D. $\frac{P_1^\circ - P}{P_1^\circ} = \frac{n+N}{N}$

Answer: A

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42. At 300 K , when a solute is aded to a solvent ,its vapour pressure over mercury reduces from 50 mm to 45 mm . The value of mole fraction of solute wil be _____.

A. 0.005

B. 0.01

C. 0.1

D. 0.9

Answer: C

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43. Boiling point of water is defined as the temperature at which:

A. Vapour pressure of water equals to that of atomospheric pressure

B. bubbles are formed

C. steam comes out

D. vapour pressure of water is higher than that of atmospheric pressure

Answer: A

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44. Which of the following statement than CORRECT for the boiling point of solvent containing a dissolved solid substance ?

A. Boiling point of the liquid is depressed .

B. Boiling point of the liquid is elevated

C. there is no effect on the boiling point

D. The change in the boiling point depends upon the polarity of the liquid

Answer: B

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45. The boiling point of a solution of a non- volatile solute is always _____.

A. Lower than the boiling point of solvent

B. higher than the boiling point of solvent

C. equal to the boiling point of solvent

D. independent of the boiling point of the solvent

Answer: B

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46. The molal elevation constant is the ratio of the elevation of bouling point to _.

A. Molarity

B. molality

C. mole fraction of solute

D. mole fraction of solvent

Answer: B

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47. K_b is given by _____.

A. $\frac{\Delta T_b \times W_2 \times M_2}{1000 \times W_1}$

B. $\frac{W_2 \times 1000}{\Delta \times W_1 \times M_2}$

C. $\frac{\Delta T_b \times W_1 \times M_2}{1000 \times W_2}$

D. $\frac{W_1 \times 1000}{\Delta T_b \times W_2 \times M_2}$

Answer: C

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48. Unit of boiling point elevation constant (K_b) is _____.

A. $kgmol^{-1}$

B. $Kmol^{-1}$

C. $gmol^{-1}$

D. $kkgmol^{-1}$

Answer: D

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49. the boiling point of 0.15 molar aqueous solution of an unknown solute is 373.23 K at 1 atm . The molal elevatio constant of water is _____ K kg mol^{-1}

A. 0.53

B. 0.88

C. 1.8

D. 5.3

Answer: A

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50. A temperature at which the vapour pressure of a solid is equal to the vapour pressure of liquid is called _____.

A. elevation of boiling point

B. Freezing point

C. boiling point

D. depression of freezing point

Answer: B

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51. 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. increases the freezing point of water

Answer: C

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52. Depression in freezing point in any dilute solution is directly proportional to _____.

A. molarity

B. molality

C. mass of solvent

D. mole fraction of solvent

Answer: B

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53. Relationship between K_f , m and ΔT_f can be written as ____.

A. $\Delta T_f = K_f / m$

B. $\Delta T_f = K_f m$

C. $\Delta T_f = K_f + m$

D. $\Delta T_f = m / K_f$

Answer: B

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54. What is the molality of solution of a certain solute in a solvent .If there is a freezing point depression of 0.184 $^{\circ}C$ and if the freezing point constant is 18.4 K kg mol^{-1}?

A. $0.01m$

B. $1m$

C. $0.001m$

D. $100m$

Answer: A

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55. The molar mass of the solute using depression of freezing point may be calculated using the formula ,_____.

A. $M_2 = \frac{K_f W_2 1000}{\Delta T_f m}$

B. $M_2 = \frac{K_f W_1 1000}{\Delta T_f W_2}$

C. $M_2 = \frac{\Delta T_f W_2 1000}{K_f W_1}$

D. $M_2 = \frac{K_f W_2 1000}{\Delta T_f W_1}$

Answer: D

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56. In cold countries , ethylene glycol is added to the water in the radiatiors of cars during winter .this results in _____.

A. Lowering of freezing point

B. reducing the viscosity

C. lowering of boiling point

D. making water a better conductor of electricity

Answer: A

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57. A membrane, which permits the solvent and not the solute to pass through it is termed as

A. semipermeable membrane

B. permeable membrane

C. filer membrane

D. porous membrane

Answer: A

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58. Osmosis is a process in which _____.

A. solvent molecules flow through a semipermeable membrane from a solution of lower concentration to a solution of higher concentration

B. solute molecuales flow therough a semipermeable membrane from a solution of lower concentration to a solution of higher concentration

C. solvent molecules flow through a semipermeable membrane from a solution of higher concentration to a solution of lower concentration

D. solute molecules flow through a semipermeable membrane from a solution of higher concentration to a solution of lower concentration

Answer: A

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59. During osmosis, flow of water through a semipermeable membrane is:

A. unidirectional

B. bidirectional

C. multidirectional

D. unpredictable

Answer: A

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60. The solution which has higher osmotic pressure than some other solution is known as.....

A. hypotonic solution

B. isotopic solution

C. isotonic solution

D. hypertonic solution

Answer: D

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61. IF two solutions sparated by a semi-permeable membrane have the same osmotic pressure , they are called _____ solutions

A. hypertonic

B. hypotonic

C. isotonic

D. saturated

Answer: C

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62. The pressure at which reverse osmosis starts is called _____ pressure .

A. absolute

B. atmosperic

C. osmotic

D. vapour

Answer: C

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63. At constant temperature , the osmotic pressure of a solution is __

A. directly proportional to the concentration

B. Inversely proportional to the concentration

C. directly proportional to the square of the concentration

D. directly proportional to the square root of the concentration

Answer: A

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64. Pure water can be obtained from sea water by

A. diffusion

B. reverse osmosis

C. osmosis

D. crystallization

Answer: B

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65. A plant cell shrinks when it is kept in

A. a hypotonic solution

B. a hypertonic solution

C. a solution isotonic with the cell sap

D. water

Answer: B

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66. If a thin slice of sugar beet is placed in concentrated solution of $NaCl$, then

A. sugar beet will lose water from its cells

B. sugar beet will lose water from solution

C. sugar beet will neither absorb nor lose water

D. sugar beet will dissolve in solution

Answer: A

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67. If mole fraction of the solvent in a solution decreases than:

A. vapour pressure of solution increases

B. boiling point decreases

C. osmotic pressure increases

D. osmotic pressure decreases

Answer: C

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68. Which statement is incorrect about osmotic pressure (π), volume (V), and temperature (T)?

A. $\pi \propto 1/V$ if T is constant

B. $\pi \propto T$ if V and n are constant

C. $\pi \propto V$ if T is constant

D. πV is constant if T and n are constant

Answer: C

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69. 1 M and 2 M solutions of glucose are prepared in water .Hence ,___.

A. the osmotic pressure of both the solutions will be the same temperature

B. 2M solution will have higher osomotic pressure

C. 1 M solution will have higher osmotic pressure

D. Osmotic pressure will be independent of the concentration

Answer: B

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70. The molar mass (M_2) of W_2 solute and the osmotic pressure (π) of the solution prepared in V litres by the solute at temperature T has the following relationship _____.

A. $M_2 = \frac{W_2 RT}{\pi V}$

B. $M_2 = \frac{W_2 R}{\pi T}$

C. $M_2 = mRT/\pi$

D. $M_2 RT = \pi$

Answer: A

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71. According to van't Holf - Avogadro's law volume occupied by a solution is _____.

A. directly proportional to mass of solute

B. inversely proportional to mass of solute

C. directly proportional to number of molecules of solute

D. inversely proportional to number of molecules of solute

Answer: C

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72. Acetic acid dissolved in benzene shows a molecular mass of _____$gmol^{-1}$.

A. 60

B. 120

C. 180

D. 240

Answer: B

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73. Van't Hoff factor is _____.

A. less than one in case of dissociation

B. always more than one

C. always less than one

D. less than one in case of association

Answer: D

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74. The van't Hoff factor will be highest for ____.

A. sodium chloride

B. magnesium chloride

C. sodium chloride

D. urea

Answer: C

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75. The degree of dissociation (α) of a weak electrolyte A_xB_y is related to van't Hoff factor (i) by the expression

A. $\alpha = \dfrac{I-1}{(x+y-1)}$

B. $\alpha = \dfrac{i-1}{(x+y+1)}$

C. $\alpha = \dfrac{x+y-1}{i-1}$

D. $\alpha = \dfrac{x+y+1}{i-1}$

Answer: A

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76. Molar solution means 1 mole of solute present in

A. 1000 g of solvent

B. 1 litre of solvent

C. 1 litre of solution

D. 1000 g of solution

Answer: C

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77. $5cm^3$ of acetone is added to $100cm^3$ of water . Then the vapour pressure of the vapour pressure of the solution _____.

A. will be equal to the vapour pressure of pure water

B. will be less than the vapour pressure of pure water

C. Will be greater than the vapour pressure of pure water

D. Will be very large

Answer: C

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78. Effect of adding a non-volatie solute to a solvent is"

A. Its vapour pressure being increased

B. Its freezing point being increased

C. Its boiling point being increased

D. Its osmotic pressure being decreased

Answer: C

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79. The molecular mass of a non-voltile liquid CANNOT be determined by _____ method .

A. Victor Meyer's

B. osmotic pressure

C. cryoscpoic

D. ebulliocopic

Answer: A

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80. The thermometer used in determination of depression in freezing point of a solution is _____.

A. Beackmann thermometer

B. Kelvin thermometer

C. joule's thermometer

D. Ostwald's thermometer

Answer: A

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81. Swimming for a long time in salt water makes the skin of one's finger tips wrinkled. Which one of the following properties is responsible for this observation ?

A. Osmosis

B. Dialysis

C. Electrodialsis

D. Coagulation

Answer: A

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82. The solution , which obeys Roult's law over the entire range of concentration , at a given temperature is called a /an _____ solution .

A. non-ideal

B. unsatured

C. saturated

D. ideal

Answer: D

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83. Which of the following has the highest boiling point ?

A. 1 M glucose solution

B. 1 M CH_3COOH solution

C. 1 M Na_2SO_4 solution

D. 1 M urea solution

Answer: C

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84. When a substance is dissolved in a solvent the vapour pressure of solvent decreases. This brings:

A. an increase in the boiling point of the solution

B. a decrease in the boiling point of the solution

C. no change in the boiling point of the solution

D. a decrease in the boiling point followined by an increase in the boiling point of the solution

Answer: A

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85. When common salt is dissolved in water

A. increase its freezing point and increase the boiling point

B. decrease its freezing point and increase the boiling point

C. increase both the boiling point and freezing point

D. decrease both the boiling point and freezing point

Answer: B

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86. The term cryosopiosopic constant and edullioscopic constant are related with _____respectively

A. Depression in freezing point and elevation in boiling point

B. depression in boiling point and elevation in freezing point

C. depression in both freezing point and boiling point

D. elevation in both freezing point boiling

Answer: A

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87. The hard shell of an egg is dissolved in acetic acid , and then egg was subsequently placed in saturated solution of $NaCl$, ____

A. the egg will shrink

B. the egg will become harder

C. the egg will swell

D. there will be no change in the size of egg

Answer: A

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Critical Thinking

1. Consitents of the solution CANNOT be easily separated from a _____.

A. true solution

B. colloidal solution

C. coarse mixture

D. supension

Answer: A

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2. A solution having three components is called a _____solution .

A. quaternary

B. binary

C. single

D. ternary

Answer: D

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3. Which of the following is FALSE ?

A. Colloidal solution are heterogeneous .

B. True solutions are homogeneous

C. Solutions prepared in water are called aqueous solutions .

D. Coarse mixtures are either homoheneous or heterogenous

Answer: D

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4. Which of the following is CORRECT ?

A. All the solids always act as solutions.

B. All the liquids always acct as solvents.

C. Gases can neither act as solvent nor as solute .

D. All the three states of matter may act as solvent or solute .

Answer: D

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5. In which of the following, the physical states of solute and solvent are solid and gas respectively ?

A. Chloroform in nitrogen

B. Iodine in air

C. Carbon dioxide in water

D. Benzonic acid in benzene

Answer: B

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6. How many grams of glucose will be dissolved in water to make one litre solution of 10 % W /V glucose ?

A. 10 g

B. 80 g

C. 100 g

D. $1.8g$

Answer: C

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7. An aqueous solution of glucose is 10 % W/V in stength . The volume in which 1 g mole of it is dissolved will be _____.

A. $0.9L$

B. $1.8L$

C. $9L$

D. $18L$

Answer: B

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8. The mole fraction of water in $20\ \%\ (wt.\ /wt.\ )$ aqueous solution of H_2O_2 is:

A. $\frac{77}{68}$

B. $\frac{68}{77}$

C. $\frac{20}{80}$

D. $\frac{80}{2}$

Answer: B

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9. A mixture has 18 g water and 414 g ethanol . The mole fraction of water in mixture is (assume ideal behaviour of the mixture)_____.

A. 0.1

B. 0.4

C. 0.7

D. 0.9

Answer: A

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10. The molerity of a solution obtained by dissolving 0.01 mol of NaCl in 500 mL . Of solution is _____.

A. $0.0005M$

B. $0.01M$

C. $0.02M$

D. $0.1M$

Answer: C

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11. 200 mL of a solution contains 5.85 k g dissolved sodium chloride . The concentration of the solution wil be _____.

$(Na = 23, Cl = 35.5)$

A. 1 molar

B. 2 molar

C. 0.5 molar

D. 0.25 molar

Answer: C

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12. Molarity of 15 % H_2SO_4 of density 1.1 g / cm^3 is _____.

A. $1.86M$

B. $1.42M$

C. $1.68M$

D. $1.24M$

Answer: C

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13. What is the molarity of a $FeSO_4.7H_2O$ solution having 5.56 of it dissolved in 250 mL of water ? (molar mass =278)

A. $0.02M$

B. $0.4M$

C. $0.04M$

D. $0.08M$

Answer: D

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14. H_2O_2 solution used for hair bleaching is sold as a solution of approximately 5.0 g H_2O_2 per 100 mL of the solution. The molecular mass of H_2O_2 is 34. The molarity of this solution is approximately

A. $3.0M$

B. $1.5M$

C. $0.15M$

D. $4.0M$

Answer: B

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15. Density of water is 1 g/ mL . The concentration of water in mol / litre is _____.

A. 1000

B. 18

C. 0.018

D. 55.5

Answer: D

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16. A solution of $CaCl_2$ is 0.5 mol/litre , then the moles of chloride ion in 500 mL will be :

A. 0.25

B. 0.50

C. 0.75

D. 1.00

Answer: B

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17. What volume of 0.8M solution contains 0.1 mol of the solute ?

A. $62.5mL$

B. $100mL$

C. $500mL$

D. $125mL$

Answer: D

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18. The number of moles of KCI in 1000 mL of 3M solution is _____.

A. 1

B. 2

C. 3

D. 1.5

Answer: C

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19. Which of the following solutions is a 1 M solution ?

$(C = 12, H = 1, O = 16, Ca = 39.98, Cl = 35.5, Na = 23)$

A. 0.46 g of C_2H_5OH in 100 mL of solution

B. 110.98 g of $CaCl_2$ in 1000 mL of soltution

C. 0.23g of CH_3OH in 100mL of solution

D. 5.85 g of $NaCl$ in 1000 mL of solution

Answer: B

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20. the solution A and B are 0.1 M and 0.2 M in s substance . If 100 mL of A Is mixture with 25 mL of B and there is no change is volume , the final molarity of the solution is _____.

A. 0.15

B. 0.18

C. 0.30

D. 0.12

Answer: D

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21. Molecular weight of glucose is 180. A solution of glucose which contains $18g$ per litre is

A. 2 molal

B. 1molal

C. 0.1 molal

D. 18 molal

Answer: C

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22. A sugar syrup of weight $214.2g$ contains $34.2g$ of sugar $(C_{12}H_{22}O_{11})$. Calculate

a. the molal concentration.

b. the mole fraction of the sugar in the syrup.

A. 0.55

B. 5.5

C. 55

D. 0.1

Answer: A

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23. A 500 g toothpaste sample has 0.2 g fluoride concentration. What is the concentration of F^{Θ} in ppm ?

A. 200

B. 250

C. 400

D. 1000

Answer: C

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24. The statement " if 0.003 moles of a gas are dissolved in 900 g of water under a pressure of 1 atmosphere , 0.006

moles will be dissolved under a pressure of 2 atmospheres ". Illustrates : ____.

A. Dalton's law of partial pressure

B. Graham's law

C. Roault's law

D. henry 's law

Answer: D

View Text Solution

25. Which is CORRECT about Heny's law?

A. the gas in contact with the liquid should behave as an ideal gas

B. Solubility of gases in a liquid increases with increase inexternal pressure .

C. Solubility of gases in a liquid decrease with increase in external pressure

D. Solbility of gases in a liquid increases with increase in temperature .

Answer: B

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26. Gases such as CO_2 and NH_4 are more soluble in water than N_2 because _____.

A. both hace low boiling points

B. both are able to form hydrogen bonds with water

C. they undergo chemical reaction with water

D. they dispace air from water

Answer: C

View Text Solution

27. Fishers prefer staying at the lower layer of water during summer days because ___.

A. the temperature of water at lower layer is higher and it contains more amount of dissolved oxygen

B. The temperature of water at lower layer is lesser and it contains more amount of dissolved oxygen

C. the pressure of water lower layer is lesser and it contains more amount of dissolved oxygen

D. the pressure of water at lower layer is higher and it contains more amount of dissolved oxygen

Answer: B

Watch Video Solution

28. When the cap of a carbonated soft drink beverage bottle is removed , effervescence is produced due to _____.

A. decrease in temperature

B. increases in temperature

C. decrease in solubility if CO_2

D. increase in external pressure

Answer: C

Watch Video Solution

29. What is the Henry's law constant of dissolved O_2 at $10^\circ C$ at 1 atmospheric pressure , if partial pressure of

oxygen is 0.24 atm ?

the concentration of dissolved oxygen is $3.12 \times 10^{-4} moldm^{-3}$

A. $2.5 \times 10^{-3} moldm^{-3} atm^{-1}$

B. $1 \times 10^{-4} moldm^{-3} atm^{-1}$

C. $1.3 \times 10^{-3} moldm^{-3} atm^{-1}$

D. $1.3 \times 10^{-4} mol^{-3} atm^{-1}$

Answer: C

Watch Video Solution

30. The solubility of nitrogen gas at 2 atm pressure at $25^{\circ} C$ is $13.6 \times 10^{-4} moldm^{-3}$ calculate the solubility

of N_2 gas from atmosphere at $25^\circ C$, of atmospgeric pressure is 2 atmosphere and partial pressure of N_2 gas at this temperature and pressure is 1.53 atm.

A. $1.60 \times 10^{-3} moldm^{-3}$

B. $2.16 \times 10^{-3} moldm^{-3}$

C. $1.06 \times 10^{-3} moldm^{-3}$

D. $2.60 \times 10^{-3} moldm^{-3}$

Answer: C

View Text Solution

31. The solubility of oxygen gas at $25^\circ C$ at 1 atmosheric pressure is 1.43×10^{-4} mol dm^{-3} Calculate the partial

pressure of oxygen if the Henry's law constant for oxygen is 0.65×10^{-3} mol $dm^{-3}atm^{-1}$

A. $2.22atm$

B. 0.22atm

C. 0.44 atm

D. 4.44atm

Answer: B

Watch Video Solution

32. Amalgams are a solution of _____.

A. gas in gas

B. liquid in gas

C. metals in liquid metal

D. solid in gas

Answer: C

Watch Video Solution

33. Which of the following statements is TRUE about solid solutions ?

A. solid solutions are composed of metals only

B. solid solutions are composed of non-metals only

C. Both metal and non-metal must be present in a solid solution.

D. solid siolution can be composed of metals or non-metals or a combination of both .

Answer: D

Watch Video Solution

34. The alloy widely used for construction of aircrafts is _____.

A. Bronze

B. duralumin

C. babbitt metal

D. hardened lead

Answer: B

Watch Video Solution

35. Hardened lead , which is used for making bullets , its alloy made of lead and _____.

A. copper

B. antimony

C. tin

D. magnesium

Answer: B

Watch Video Solution

36. Alloys like bronze and lead shot , make use of _____ as hardencing agent .

A. antimony

B. copper

C. arsenic

D. chromium

Answer: C

Watch Video Solution

37. The colligative properties of a solution depend on

A. nature of solute particles present in it

B. nature of solvent used

C. number of solute particles present in it

D. number of moles of solvent only

Answer: C

Watch Video Solution

38. Which is not a colligative property?

A. Refractive index

B. Relative lowering of vapour pressure

C. Depression of freexing point

D. Elevation of boiling point

Answer: A

Watch Video Solution

39. Colligative properties are used for the determination of _____.

A. molar mass

B. equivalent weight

C. arrangement of moles

D. melting point and boiling point

Answer: A

Watch Video Solution

40. The vapour pressure of water at 300 K in a closed container is 0.4 atm . If the volume of the container is doubled , its vapour pressure at 300 K will be _____.

A. $0.8atm$

B. $0.2atm$

C. $0.4atm$

D. $0.6atm$

Answer: C

Watch Video Solution

41. For a dilute solution, Raoult's law states that

A. the lowering of vapour pressure is equal to mole fraction of solute

B. the relattive lowering of vapour pressure is equal to mole fraction of solute

C. the relative lowering of vapour pressure is proportional to amout of solute .

D. The vapour pressure of the solution is equal to mole fraction of the solute

Answer: B

Watch Video Solution

42. If P° and P_S are the vapour pressure of the solvent and its solution respectively and x_1 and x_2 are the mole fraction of the solvent and solute respectively, then

A. $P = P^\circ N_1$

B. $P = P^\circ N_2$

C. $P^\circ = PN_2$

D. $P = P^\circ (N_1 / N_2)$

Answer: A

Watch Video Solution

43. The vapour pressure of a dilute aqueous solution of glucose is 750mmHg at 373K. The mole fraction of the solute is

A. $1/76$

B. $1/7.6$

C. $1/38$

D. $1/10$

Answer: A

Watch Video Solution

Watch Video Solution

44. Which one of the following has the lowest vapour pressure at $20^{\circ} C$?

A. 0.1 M urea solution

B. 0.1 M potassium chloride solution

C. 0.1 M sodium sulphate solution

D. 0.1M sodium phosphate solution

Answer: D

Watch Video Solution

45. The vapour pressure of benzene at a certain temperature is $640mm$ of Hg A non-volatile and non-electrolyte solid weighing $0.175g$ is added to $39.08g$ of benzene .the vapour pressure of the solution is$600mm$ of Hg.What is the molecular weight of solid substance ?

A. 49.50

B. 59.6

C. 69.5

D. 79.8

Answer: C

Watch Video Solution

46. The vapour pressure of a pure liquid 'A' is 70 torr at $27^\circ C$. It forms an ideal solution with another liquid B. The mole fraction of B is 0.2 and total pressure of the solution is 84 torr at $27^\circ C$. The vapour pressure of pure liquid B at $27^\circ C$ is :

A. 14

B. 56

C. 70

D. 140

Answer: D

Watch Video Solution

47. A small amount of a non-valatile , non-electroyte solute is dissolved in 56.8 cm^3 of benzene (density 0.89 g/cm^3) .At room temperature ,the vapour pressure of this solution is 98.9 mm Hg , while that of benzene is 100 mm .Hg , Find the molarilty of this solution

A. 0.144

B. 14.4

C. 1.44

D. 0.100

Answer: A

View Text Solution

48. Vapour pressure of a solution of $5g$of non-electrolyte in $100g$water at a particular temperature is$2985N/m^2$.The vapour pressure of pure water is$3000N/m^2$.The molecular weight of the solute is

A. $60gmol^{-1}$

B. $120gmol^{-1}$

C. $180gmo^{-1}$

D. $380gmol^{-1}$

Answer: C

Watch Video Solution

49. The vapour pressure of benzene at $80^\circ C$ is lowered by $10mm$ by dissoving $2g$ of a non-volatile substance in $78g$ of benzene .The vapour pressure of pure benzene at $80^\circ C$ is $750mm$.The molecular weight of the substance will be:

A. 15

B. 150

C. 1500

D. 2000

Answer: B

Watch Video Solution

50. The vapour pressure of water at $20^{\circ}Cis17.54mm$. When 20g of non - ionic substance is dissolved in 100g of water, the vapour pressure is lowered by $0.30mm$. What is the molecular mass of the substance ?

A. $210.5gmol^{-1}$

B. $206.88gmol^{-1}$

C. $215.2gmol^{-1}$

D. $200.8gmol^{-1}$

Answer: A

Watch Video Solution

51. A solution is obtained by dissolving $12g$of urea(mol.wt.60)in a litre of water.Another solution is obtained by dissolving $68.4g$ of cane sugar (mol.wt.342)`in a litre of water at are the same temperature .The lowering of vapour pressure in the first solution is

A. same as that of 2^{nd} solution

B. nearly one - fifth of the 2^{nd} solution

C. double than that of 2^{nd} solution

D. nearly five times that of 2^{nd} solution

Answer: A

Watch Video Solution

52. Which of the following will have the highest boiling point at 1atm pressure ?

A. $0.1mNaCl$

B. $0.1m$ Benzene

C. $0.1mBaCl_2$

D. $0.1m$ Glucose

Answer: C

Watch Video Solution

53. The molal boiling point constant for water is $0.513^\circ Ckgmol^{-1}$. When 0.1mole of sugar is dissolved in

200ml of water , the solution boils under a pressure of one atmosphere at

A. $100.513^\circ C$

B. $100.0513^\circ C$

C. $100.256^\circ C$

D. $101.025^\circ C$

Answer: C

Watch Video Solution

54. The value of K_b for a solvent is X K $kgmol^{-1}$ A 0.2 m solution of a non-electrolyte in this solvent will boil at ___ . (Given : boiling point of solvent $= A^\circ C$)

A. $(A+X)^{\circ}C$

B. $\left(A+\frac{X}{10}\right)^{\circ}C$

C. $\left(A+\frac{X}{5}\right)^{\circ}C$

D. $\left(A+\frac{X}{5}\right)K$

Answer: C

Watch Video Solution

55. 0.1 molal aqueous solution of glucose boils at 100.16 $^{\circ}C$. The boiling point of 0.5 molal aqueous solution of glucose will be _____.

A. $500.80^{\circ}C$

B. $100.80^{\circ}C$

C. $20.16^\circ C$

D. $20.8^\circ C$

Answer: B

Watch Video Solution

56. When 10 of a non-volatile solute is dissolved in 100 g of benzene . It raises boiling point by $1^\circ C$ then moler mass of the solute is _____.

(if K_b = 2.53 Km^(-1)`

A. $223 gmol^{-1}$

B. $233 gmol^{-1}$

C. $243 gmol^{-1}$

D. $253 g mol^{-1}$

Answer: D

Watch Video Solution

57. Boiling point fo chloroform was raised by $0.323 K$,when $0.5143 g$ of anthrance was dissolved in $35 g$of chloroform .Molecular mass of anthracene is

$\left(K_b f \text{ or } CHCl_3 = 3.9 \text{K.kg mol}^{-1}\right)$

A. $79.42 g / mol$

B. $132.32 g / mol$

C. $177.42 g / mol$

D. $242.32 g / mol$

Answer: C

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58. Elevation in boiling point was $0.52^{\circ}C$ when 6 g of a compound X was dissolved in 100 g of water. Molecular weight of X is (K_b of water is $5.2^{\circ}C$ per 100 g of water)

A. 120

B. 60

C. 600

D. 180

Answer: B

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59. Which of the following will have the highest freezing point at one atmosphere ?

A. $0.1MNaCl$ solution

B. $0.1M$ sugar solution

C. $0.1MBaCl_2$ solution

D. $0.1MFeCl_3$ solution

Answer: B

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60. Which has the minimum freezing point ?

A. one molal NaCl solution

B. One molal KCl solution

C. one molal $CaCl_2$ solution

D. one molal urea solution

Answer: C

Watch Video Solution

61. The freezing points of equimolar solutions of glucose KNO_3 and $AlCl_3$ are in order of ____.

A. $ALCl_3 < KNO_3 <$ glucose

B. glucose $< KNO_3 < AlCl_3$

C. Glucose $< AlCl_3 < KNO_3$

D. $AlCl_3 <$ Glucose $< KNO_3$

Answer: A

Watch Video Solution

62. which will show maximum depression in freezing point when concentration is 0.1 M?

A. NaCl

B. Urea

C. Glucose

D. K_2SO_4

Answer: D

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63. The freezing point of a 0.05 molal solution of a non-electrolyte in water is $\left[K_f = 1.86^\circ C/m\right]$

A. $271.3K$

B. $0.93K$

C. $272.907K$

D. $-0.0093K$

Answer: C

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64. A solution containing 6.8 g of a non-ionic solute in 100 g water was found to freeze at 272.07 K . The freezing point depression constant mass of the solute is _____.

A. $13.6 g mol^{-1}$

B. $34 g mol^{-1}$

C. $68 g mol^{-1}$

D. $136 g mol^{-1}$

Answer: D

Watch Video Solution

65. 6g of non-volatile, non-electrolyte x dissolved in 100g of water freezes $-0.93^{\circ}C$. The molar mass of x in $\mathrm{g\ mol^{-1}}$ is :

$\left(K_f \text{of} H_2O = 1.86\mathrm{K\ kg\ mol^{-1}}\right)$

A. $60 gmol^{-1}$

B. $120 gmol^{-1}$

C. $180 gmol^{-1}$

D. $140 gmol^{-1}$

Answer: B

Watch Video Solution

66. The amount of urea to be dissolved in 500 cc of water $\left(K_f = 1.86\right)$ to produce a depresssion of $0.186^\circ C$ in the freezing point is :

A. $0.6g$

B. $60g$

C. $3g$

D. $6g$

Answer: C

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67. How much polystrene of molar mass 9000 g mol^{-1} would have to be dissolved in 100 g of C_6H_6 to lower its freezing point by $1.05K$?

A. 19.3g `

B. $193g$

C. $38.6g$

D. $77.2g$

Answer: B

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68. The molal freezing point constant of water is $1.86 Km^{-1}$. If $342g$ of cane sugar $(C_{12}H_{22}O_{11})$ is dissolved in $1000g$ of water, the solution will freeze at

A. $-1.86^{\circ}C$

B. $1.86^{\circ}C$

C. $-3.92^{\circ}C$

D. $2.42^{\circ}C$

Answer: A

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69. 1.00 g of a non-electrolyte solute dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40 K. the freezing point depression constant of benzene is 5.12 K kg mol^{-1}. Find the molar mass of the solute.

A. $256 gmol^{-1}$

B. $2.56 gmol^{-1}$

C. $512 \cdot 10^{3} gmol^{-1}$

D. $2.56 \times 10^{4} gmol^{-1}$

Answer: A

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70. 0.440 g of a substance dissolved in 22.2 g of benzene lowered the freezing point of benzene by $0.567^{\circ}C$. The molecular mass of the substance is _____ $\left(K_f = 5.12Kkgmol^{-1}\right)$

A. $178.9gmol^{-1}$

B. $177.8gmol^{-1}$

C. $176.\ 7gmol^{-1}$

D. $175.6gmol^{-1}$

Answer: A

Watch Video Solution

71. The depression of freezing point of watar for a particular solution is 0.186 K. The boiling point of the same solution is _____.

$\left(K_f = 1.863 = Kkg = 0.512kKgmolmol^{-1}\right)$

A. $100.186K$

B. $100.512K$

C. $273.512K$

D. $373.0512K$

Answer: D

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72. Which of the following solution has highest osmotic pressure ?

A. $1MNaCl$

B. $1M$ urea

C. $1M$ sourcose

D. 1 M glucose

Answer: A

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73. The osmotic pressure of equimolar solutions of $BaCl_2$, $NaCl$,and glucose follow the order

A. glucose $> NaCl > BaCl_2$

B. $NaCl > NaCl >$ glucose

C. $BaCl_2 > NaCl >$ Glucose

D. $Glu\cos e > BaCl_2 > NaCl$

Answer: C

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74. Blood has been found to be isotonic with

A. normal saline solution

B. saturated NaCl solution

C. Saturated KCI solution

D. satureated solution of a 1:1 mixture of NaCl and KCI

Answer: A

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75. $0.5m$ solution of urea is isotonic with

A. $0.5MNaCl$ solution

B. $0.5M$ sugar solution

C. $0.5MBaCl_2$ solution

D. $0.5M$ solution benzoic acid in benzene

Answer: B

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76. The osmotic pressure at $17^{\circ}C$ of an benzne solution containing 1.75 g of sucrose per 150 mL solution is _____.

A. $0.81atm$

B. $0.08atm$

C. $8.1atm$

D. $9.1atm$

Answer: A

Watch Video Solution

77. Solution contatining 1.63 g of boric acid in 450 mL and 20 g of sucrose (molecular mass = 342) per litre are isotonic . The molar mass of boric acid is _____.

A. $\frac{342 \times 1.63}{20}$

B. $\frac{1.63 \times 1000 \times 342}{20 \times 450}$

C. $\frac{1.63 \times 342 \times 450}{1000 \times 20}$

D. $\frac{20 \times 342 \times 450}{1000 \times 1.63}$

Answer: B

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78. Osmotic pressure of a sugar solution at $24^{\circ}C$ is 2.5 atmosphere .Determine the concentration of the solution in gram mole per litre.

A. 10.25

B. 1.025

C. 102.5

D. 0.1025

Answer: D

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79. $0.6g$of a solute is dissolved in 0.1litre of a solvent which develops an osmotic pressure of 1.23 at m at $27^\circ C$ .The molecular mass of the substance is

A. $149.5g/mol$

B. $120.15g/mol$

C. $430/mol$

D. $60g/mol$

Answer: B

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80. If 3g of glucose (molecular mass 180) is dissolved in 60g of water at $15^{\circ}C$, then the osmotic pressure of this solution will be :

A. $0.34atm$

B. $0.36atm$

C. $6.57atm$

D. $5.57atm$

Answer: C

Watch Video Solution

81. A 5% (w/V) solution of cane sugar (molecular mass = 342) is isotonic with 1% (w/V) solution of a subtance X. The molecular mass of X is :

A. $171.2 gmol^{-1}$

B. $68.4 gmol^{-1}$

C. $136.2 gmol^{-1}$

D. $342 gmol^{-1}$

Answer: B

Watch Video Solution

82. Acetic acid has molecular weight of 120 in benzene solution. This is due to

A. water prevents association of acetic acid

B. acetic acid dissociates in water and associates in benzene

C. acetic acid fully dissolves in benzene

D. acetic acid does not ionize benene

Answer: B

Watch Video Solution

83. 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. $t_2 \geq t_1$

Answer: B

Watch Video Solution

84. How many grams of KCI should be added to 1000 g of water , so that the freezing point reduces to - $10^{\circ}C$?

$\left(K_f \text{for water} \quad = 1.86^{\circ}Ckgmol^{-1}\right)$

A. $74.5g$

B. $745g$

C. $268g$

D. $199.66g$

Answer: D

Watch Video Solution

85. If α is the degree of dissociation of Na_2SO_4 the van't Hoff's factor (i) used for calculating the molecular mass is

A. $1 + \alpha$

B. $1 - \alpha$

C. $1 + 2\alpha$

D. $1 - 3\alpha$

Answer: C

Watch Video Solution

86. Which of the following compounds corresponds to Van't Hoff factor (i) to be equal to 2 for dilute solution ?

A. K_2SO_4

B. $NaHSO_4$

C. Sugar

D. $MgSO_4$

Answer: D

Watch Video Solution

87. At the higher altitudes the boiling point of water lowers because

A. atmospheric pressure is low

B. temeratue is low

C. atmospheric pressure is high

D. temperature is high

Answer: A

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88. Equimolal solutions A and B show depression in freezing point in the ratio $2:1$. A remains in the normal state in solution. B will be

A. normal

B. dissociated

C. associated

D. unpredictable

Answer: C

Watch Video Solution

89. Which does NOT influence the solbility of a solid in a liquid solvent ?

A. Nature of solute

B. Nature of solvent

C. Temperature

D. Pressure

Answer: D

View Text Solution

90. The ratio of the value of any colligative property of KCl solution to that of sugar solution is

A. 1

B. 0.5

C. 2.0

D. 3

Answer: C

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91. On dissolving 3.24 g of sulphur in 40 g of benezene by 0.81 K. K_b value of benene is 2.53 k kg mol^{-1} . Atomic

mass of sulphur is 32 $gmol^{-1}$. The molecular formula of sulphur is _____.

A. s_6

B. S_7

C. S_8

D. S_9

Answer: C

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Competitive Thinking

1. To prepare a solution of concentration of 0.03 g/ml. of $AgNO_3$. What amount of $AgNO_3$ should be added in 60mL of solution?

A. 1.8

B. 0.8

C. 0.18

D. None of these

Answer: A

Watch Video Solution

2. 5.85 g of NaCl are dissolved in 90 g of water. The mole fraction of NaCl is-

A. 0.1

B. 0.01

C. 0.2

D. 0.02

Answer: D

Watch Video Solution

3. An aqueous sucrose (molar mass = 342) solution is labelled as 20% W/W . What is the mole fraction of water

in this solution ?

A. 0.955

B. 0.987

C. 0.961

D. 0.945

Answer: B

Watch Video Solution

4. What is the mole fraction of ethanol and water respectively in a sample of rectified spirit which contains 95 % of ehtanol by weight ?

A. 0.5 and 0.5

B. 0.6 and 0.4

C. 0.75 and 0.25

D. 0.88 and 0.12

Answer: D

Watch Video Solution

5. Molarity is _____.

A. the number of moles of solute present in 1 dm^3 volume of solution

B. the number of moles of solute dissolved in 1 kg of solvent

C. the number of moles of solute dissolved in 1 kg of slution

D. the number of moles of solute dissolved in 100 dm^3 volume of solution

Answer: A

Watch Video Solution

6. 5.0 g of sodium hydroxide `("molar mass 40 g mol"^(-1))` is dissolved in little quanitity of water and the solution is

diluted upto 100 mL. What is the molarity of the resulting solution ?

A. $0.1 mol dm^3$

B. $1.0 mol dm^{-3}$

C. $0.125 mol dm^{-3}$

D. $1.25 mol dm$

Answer: D

Watch Video Solution

7. The molarity of urea (molar mass 60 g mol^{-1}) solution by dissolving 15 g of urea in 500 cm^3 of water is

A. $2 mol dm^{-3}$

B. $0.5 mod m^{-3}$

C. $0.125 mol dm^{-3}$

D. $0.0005 mol dm^{-3}$

Answer: B

Watch Video Solution

8. What is the molarity of a 450 mL solution containing 5 g of $NaOH$?

A. $0.125 M$

B. $0.278 M$

C. $2M$

D. $3.2M$

Answer: B

Watch Video Solution

9. What is the weight (in g) of Na_2CO_3 molar mass = 106) present in 250 mL of Its 0.2 M solution ?

A. 0.53

B. 5.3

C. 1.06

D. 10.6

Answer: B

Watch Video Solution

10. 6.02×10^{20} molecules of urea are present in 100 ml of its solution. The concentration of solution is :

A. $0.02M$

B. $0.01M$

C. $0.001M$

D. $0.1M$

Answer: B

Watch Video Solution

11. 25 mL of a solution of barium hydroxide on titration with a 0.1 molar solution of hydrochloric acid gave a titre value of 35 mL. The molarity of barium hydroxide solutions was

A. 0.07

B. 0.14

C. 0.28

D. 0.35

Answer: A

Watch Video Solution

12. $25cm^3$ of oxalic acid completely neutralised 0.064g of soldium hydroxied. molarity of the oxalic acid solution is

A. 0.064

B. 0.045

C. 0.015

D. 0.032

Answer: D

Watch Video Solution

13. What is the volume (in mL) of 0.5 M NaOH required to prepare one litre of 0.2 M NaOH ?

A. 200

B. 500

C. 400

D. 250

Answer: C

Watch Video Solution

14. Two solutions of a substance (non-electrolyte) are mixed in the following manner , 480 mL of 1.5 M [first solution] + 520 mL of 1.2 M [second solution] . What is the molarity of the final mixture ?

A. $1.20M$

B. $1.50M$

C. $1.344M$

D. $2.70M$

Answer: C

Watch Video Solution

15. What is the molarity of H_2SO_4 solution that has a density 1.84 g/c c at 35° C and contains 98% by weight?

A. $4.18M$

B. $8.14M$

C. $18.4M$

D. $18M$

Answer: C

Watch Video Solution

16. The density (in g mL^{-1}) of a 3.60 M sulphuric acid solution that is 29% of acid by mass is

A. 1.22

B. 1.45

C. 1.64

D. 1.88

Answer: A

Watch Video Solution

17. How many grams of concentrated nitric acid solution should be used to prepare $250mL$ of $2.0MHNO_3$? The concentrated acid is $70\,\%\,HNO_3$:

A. $45.0gconc.\,HNO_3$

B. $90.0gconc.\,HNO_3$

C. $70.0gconc.\,HNO_3$

D. $54.0gconcHNO_3$

Answer: A

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18. What is the volume of ethyl alcohol (density 1.15 g/cc) that has to be added to prepare 100 cc of 0.5 M ethyl alcohol solution in water ?

A. $1.15cc$

B. $2cc$

C. $2.15CC$

D. $2.30cc$

Answer: B

Watch Video Solution

19. What is the molarity of a solution containting 200 mg of urea (molar mass : 60 g mol^{-1}) dissolved in 500 g of

water ?

A. $0.08325m$

B. $2cc$

C. $2.15cc$

D. $2.30cc$

Answer: A

Watch Video Solution

20. What will be the molality of solution having 18 g of glucose (molecular weight = 180) dissolved in 500 g of water ?

A. $1 molkh^{-1}$

B. $0.5 molkg^{-1}$

C. $0.2 molkg^{-1}$

D. $2 molkg^{-1}$

Answer: C

Watch Video Solution

21. The molality of solution containing 15.20 g of urea (molar mass = 60) dissolved in 150 g of water is _____.

A. $1.689 molkg^{-1}$

B. $0.1689 molkg^{-1}$

C. $0.5922 molkg^{-1}$

D. $0.2533 molkg^{-1}$

Answer: A

Watch Video Solution

22. What will be the value of molality for an aqueous solution of 10% w/W NaOH?

A. 2.778

B. 5

C. 10

D. 2.5

Answer: A

Watch Video Solution

23. The perent weight of NaOH in 1.25 molal sodium hydroxide solution is _____

A. 5

B. 12.5

C. 4.76

D. 1.25

Answer: C

Watch Video Solution

24. The density of 2% (W//W)$aqueous KI solution is 1.202$ g mL^(-1)` . What is the approximate molaility ? Molar mass of Ki =166)

A. $0.5m$

B. 1.5m

C. $0.14m$

D. $2.5m$

Answer: C

Watch Video Solution

25. What is the mole fraction of the solute in a 1.00 m aqueous solution ?

A. 0.0354

B. 0.0177

C. 0.177

D. 1.770

Answer: B

Watch Video Solution

26. 0.2 molal NaOH solution is prepared in water . Mole fraction of solute is _____.

A. 3.6×10^{-3}

B. 3.6×10^{-5}

C. 3.3×10^{-4}

D. 3.58×10^{-3}

Answer: D

Watch Video Solution

27. Which of the following is dependent on temperature?

A. Molarity

B. mole fraction

C. weight percentage

D. molality

Answer: A

Watch Video Solution

28. Solubility of which among the following substances in water increases slightly with rise in temperature ?

A. KNO_3

B. $NaNO_3$

C. KBr

D. $NaBr$

Answer: D

Watch Video Solution

29. Which among the following alloys is used in making instruments for electrical measurements ?

A. Stainless steel

B. manganin

C. Spiegeleisn

D. Duralumin

Answer: B

Watch Video Solution

30. Which one of the following is a colligative property?

A. Viscosity

B. surface tension

C. Refractive index

D. Osmotic pressure

Answer: D

Watch Video Solution

31. Equimolar solutions in the same solvent have-

A. same boiling point but different freezing point

B. same freezing point but different boiling point

C. same boiling and same freezing points

D. different boiling and different freezing points

Answer: C

Watch Video Solution

32. The vapour pressure of pure liquid solvent A is $0.80atm$. When a non-volatile substance B is added to the solvent, its vapour pressure drops to $0.60atm$, the mole fraction of component B in the solution is

A. 0.25

B. 0.50

C. 0.75

D. 0.90

Answer: A

Watch Video Solution

33. 9 g of glucose (mol wt = 180) is dissolved in 90 of H_2O . Relative .lowering of vapour pressure is ___.

A. 0.99

B. 0.099

C. 0.0099

D. 0.00099

Answer: C

Watch Video Solution

34. Vapour pressure of CCl_4 at $25^\circ C$ is 143 mm Hg . 0.5 g of a non-volatile solute (molar mass = $65 mol^{-1}$) is dissolved in 100 mL of CCl_4 (density = 1.538g mL^{-1}) Vapour pressure of solution is :

A. $141.93 mm$

B. 94.39mm

C. 199.34 mm

D. $143.99 mm$

Answer: A

Watch Video Solution

35. Benzene and toluene form nearly ideal solutuions. At $20^\circ C$, the vapour pressure of benzene is 75 torr and that of toulene is 22 torr. The partial vapour pressure of benzene at $20^\circ C$ for a solution containing 78g of benzene and 46g of toluene in torr is

A. 50

B. 25

C. 37.5

D. 53.5

Answer: A

Watch Video Solution

36. On dissolving 18 g solid in 100 g H_2O at $20^\circ C$, water vapour pressure decreases from 17.53 mm to 17.22 mm. The molecular weight os solids is _____.

A. $18gmol^{-1}$

B. $183gmol^{-1}$

C. $27gmol^{-1}$

D. $274gmol^{-1}$

Answer: B

Watch Video Solution

37. The vapor pressure of acetone at $20^{\circ}C$ is 185 torr. When $1.2g$ of a non-volatile solute was dissolved in $100g$ of acetone at $20^{\circ}C$, it vapour pressure was 183 torr. The molar mass $\left(gmol^{-1}\right)$ of solute is:

A. 32

B. 64

C. 128

D. 488

Answer: B

Watch Video Solution

38. At 298 K 1.0 g of a non-colatile solute is dissoved in 100 g of acetone (mol mass=58). The vapour pressure of the solution at this temperature is found to be 192.5 mm Hg. Calculate themolar mass of the solute. The vapour pressure of pure acetone at 298 K is found to be 195 mm Hg.

A. 22.24

B. 35.24

C. 45.24

D. 55.24

Answer: C

Watch Video Solution

39. Vapour pressure of pure solvent and its solution at certain temperature are 600 mm and 600 mm of Hg Respectively if 3.6×10^{-3} kg of solute is the molar mass of solute (solvent =Benzene C= 12, H=1)

A. $78.0 gmol^{-1}$

B. $58.5 gmol^{-1}$

C. $72.0 gmol^{-1}$

D. $156 gmol^{-1}$

Answer: A

View Text Solution

40. $18g$ glucose $(C_6H_{12}O_6)$ is added to $178.2g$ water. The vapour pressure of water (in torr) for this aqueous solution is:

A. 7.6

B. 76.0

C. 752.4

D. 759.0

Answer: C

Watch Video Solution

41. Derive the relation between elevation of boiling point and molar mass of the solute .

A. $M_2 = \frac{K_b . W_2}{\Delta T_b . W_1}$

B. $M_2 = \frac{K_b . W_1}{\Delta T_b . W_2}$

C. $M_2 = \frac{\Delta T_b . K_b . K_b}{W_1 . W_2}$

D. $M_2 = \frac{\Delta T_b . W_1}{K_b . W_2}$

Answer: A

Watch Video Solution

42. Identify the compound amongst the following of which 0.1 M aqueous solution has highest boiling point.

A. Glucose

B. Sodium chloride

C. Calcium chloride

D. Ferric chloride

Answer: D

Watch Video Solution

43. Pressure cooker reduces cooking time because :

A. heat is more evenly disteributed in the cooking space

B. boiling point of water involved in cooking is increased

C. the higher pressure inside the cooker crushes the food material

D. cooking involves chemical changes helped by a rise in temperature

Answer: B

Watch Video Solution

44. An aqueous dilute solution containing non- volatile solute boils at 100.052 $^{\circ}C$ what is the molality of solution

? $K_b = 0.52 kgmol^{-1}K$, Boiling temperature of water $= 100^\circ C$)

A. $0.1m$

B. $0.01m$

C. $0.001m$

D. $1.0m$

Answer: A

Watch Video Solution

45. The elevation in boilng point of a solution of 13.44 g of $CuCl_2$ 1 kg of water will be ____.

(Molecular mass of $CuCl_2 = 134.4$ and $K_b = 0.52km^{-1}$)

A. 0.16

B. 0.05

C. 0.1

D. 0.2

Answer: A

Watch Video Solution

46. The boiling point of water $(100^\circ C)$becomes $100.25^\circ C$ if 3gramss of a nonvolatile solute is dissolved in $200ml$of water.The molecular weight of solute is

A. $12.2g/mol$

B. $15.4g/mol$

C. $17.3g/mol$

D. $20.4g/mol$

Answer: C

Watch Video Solution

47. The boiling point of a solution of 0.11 of a substance in 15g of ether was found to be $0.1^{\circ}C$ higher than that of pure ether. The molecular weight of the substance will be $(K_b = 2.16)$:

A. $148gmol^{-1}$

B. $158 gmol^{-1}$

C. $168 gmol^{-1}$

D. $178 gmol^{-1}$

Answer: B

Watch Video Solution

48. In the depression of freezing point experiment, it is found that the:

A. Vapour pressure of the solution is less than that of pure solvent

B. Vapour pressure of the solution is more than that of pure solvent

C. only solute molecules solidify at the freezing point

D. only solvent molecules soidify at the freezing point

Answer: A

Watch Video Solution

49. IF molality of the dilute solution is doubled the value of molal depression constant $\left(K_f\right)$ will be _____.

A. halved

B. tripled

C. unchanged

D. doubled

Answer: C

Watch Video Solution

50. The freezing point of equimolal aqueous solution will be highest for

A. $C_6H_5NH_3^+Cl^-$

B. $Ca(NO_3)_2$

C. $La(NO_3)_3$

D. $C_6H_{12}O_6$

Answer: D

Watch Video Solution

51. Among the following 0.10 m aqueous solutions, which one will exhibit the largest freezing point depression?

A. KCI

B. $C_6H_{12}O_6$

C. $Al_2(SO_4)_3$

D. K_2SO_4

Answer: C

Watch Video Solution

52. Equimolar salt solution of which of the following will show a maximum depression in freezing point ?

A. sodium sulphate

B. Potassium chloride

C. Magnesium sulphate

D. magnesium carbonate

Answer: A

Watch Video Solution

53. Find the K_f if 6 g of urea is dissolved in 0.1 dm^3 of water and it corresponds to $0.15^\circ C$ in ΔT (Molacular

weight of urea = 60 g mol^{-1})

A. 0.015

B. 0.15

C. 0.30

D. 0.030

Answer: B

Watch Video Solution

54. A 0.2 molal aqueous solution of weak acid (HX) is 20% ionised. The freezing point of this solution is (Given, $K_f = 1.86^\circ Cm^{-1}$ for water)

A. $-0.31^{\circ}C$

B. $-0.45^{\circ}C$

C. $-0.53^{\circ}C$

D. $-0.90^{\circ}C$

Answer: B

Watch Video Solution

55. 0.08 kg of M (mol , wt $= 62$) in 400 gm of water freezing point of mixture is approximately _____.

A. $268.15K$

B. $267.15K$

C. $266.15K$

D. $186K$

Answer: B

Watch Video Solution

56. After adding non-volatile solute, freezing point of water decreases to $-0.186^{\circ}C$. Calculate ΔT_b if :

$K_f = 1.86\text{K kg mol}^{-1}$ and $K_b = 0.521\text{K kg mol}^{-1}$

A. $0.521K$

B. $0.0521K$

C. $1.86K$

D. $0.186K$

Answer: B

Watch Video Solution

57. The freezing point of a solution containing 4.8 g of a compound in 60 g of benezene is $4.48^{\circ}C$ what is the molar mass of the compound ? $\left(k_f = 5.1Km^{-1}\right.$, freezing point of benezene $= 5.5^{\circ}C)$

A. $100gmol^{-1}$

B. $200gmol^{-1}$

C. $300gmol^{-1}$

D. $400gmol^{-1}$

Answer: D

Watch Video Solution

58. An aqueous solution of a weak monobasic acid containing $0.1g$in 21.7g of water freezes at$272.813K$.If the value of $K_f$for water is $1.86K/m$,what is the molecular mass of the monobasic acid

A. $50.0g/mol$

B. $46.2g/mol$

C. $55.5g/mol$

D. $25.4g/mol$

Answer: D

Watch Video Solution

59. For 0.1 M of NaCl and 0.1 M of $NaSO_4$ solution , which of the following statement is TRUE ?

A. Osmotic pressure of both solutions is same .

B. Osmotic pressure of NaCl solution will be more than Na_2SO_4 solution

C. Osmotic pressure of Na_2SO_4 solution will be more than NaCl

D. Osmotic pressure of Na_2SO_4 will be less than that of NaCl solution

Answer: C

Watch Video Solution

60. Van't Hoff equation for osmotic pressure of dilute solution is given as ____.

A. $\pi V = K$

B. $\pi V = \frac{W_2 RT}{M_2}$

C. $\pi = \frac{W_2 RT}{M_2}$

D. $\pi V = CRT$

Answer: B

Watch Video Solution

61. If M,W and V represent molar mass of solute then mass of solute and volume of solution in litres respecitively which among following equation is true ?

A. $\pi = \frac{n}{V}RT$

B. $\pi = nRT$

C. $\pi = \frac{V}{n}RT$

D. $\pi = nVRT$

Answer: C

Watch Video Solution

62. The equation that represents general van't Hoff equation is

A. $\pi = \frac{n}{V}RT$

B. $\pi = nRT$

C. $\pi = \frac{V}{n}RT$

D. $\pi = nRT$

Answer: A

Watch Video Solution

63. The osmotic pressure of solution containing $34.2g$ of cane sugar (molar mass = 342 g mol^{-1}) in 1 L of solution

at $20^{\circ}C$ is (Given $R = 0.082$ L atm $K^{-1}mol^{-1}$)

A. $2.40atm$

B. $3.6atm$

C. $24atm$

D. $0.0024atm$

Answer: A

Watch Video Solution

64. $30 \times 10^{-4}kg$ of urea dissolved in water to make 500 mL aqueous solution and this solution is isotonic with cane - sugar solutions .How much mass of cane sugar in

its one litre solutions ?

$(H = 1, N = 14, O = 16, C = 12)$

A. $17.1g$

B. $171.0g$

C. $3.42g$

D. $34.2g$

Answer: D

Watch Video Solution

65. The van't hoff factor (i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is

A. 3

B. 0

C. 1

D. 2

Answer: A

Watch Video Solution

66. For which among the following equimolar aqueous solutions Van't Hoff factor has the lowest value ?

A. Aluminium chloride

B. Potassium sulphate

C. Ammonium chloride

D. Urea

Answer: D

Watch Video Solution

67. Which of the following electrolytes has the same value of van't Hoff factor (i)is that of $Al_2(SO_4)_3$(if all are $100\ \%$ ionised?

A. K_2SO_4

B. $K_3\left[Fe(CN)_6\right]$

C. $Al(NO_3)_3$

D. $K_4\left[Fe(CN)_6\right]$

Answer: D

Watch Video Solution

68. Van't Hoff factor for aqueous monofluorouroacetic acid is _____.

A. $i = 1 + 2\alpha$

B. $i = 1 - 2\alpha$

C. $i = 1 + \alpha$

D. $i = 1 - \alpha$

Answer: C

Watch Video Solution

69. The van't Hoff factor for $0.1MBa(NO_3)_2$ solution is 2.74. The degree of dissociation is

A. $91.3\ \%$

B. $87\ \%$

C. $100\ \%$

D. $74\ \%$

Answer: B

Watch Video Solution

70. Which one of the following is not a colligative property?

A. Elevation in boiling point

B. Lowering in boiling pressure

C. osmotic pressure

D. freezing point

Answer: D

Watch Video Solution

71. Which one of the following statement is FALSE ?

A. the correct order of osmotic pressure for 0.01 M aqueous solution of each compound is

$BaCl_2 > CH_3COOH >$ surose

B. The osmotic pressure (π) of a solution is given by the equation $\pi = MRT$ where M is the Molarity of the solution

C. Roult's law states that the vapour Pressure of a component over a solution is proportional to its mole fraction .

D. Two sucrose solutions of same molality prepared in different solvents will have the same freezing point depression .

Answer: D

View Text Solution

72. IF 10 mL of 0.1 aqueous solution of NaCl is divided into 1000 drops of equal volume , what will be the concentration of one drop ?

A. $0.01M$

B. $0.10M$

C. $0.001M$

D. $0.001M$

Answer: B

Watch Video Solution

73. To observe an elevation of boiling point of $0.05^{\circ}C$, the amount of a solute (molecular weight = 100) to be added

to 100 g of water $(K_b = 0.5)$ is

A. 2g

B. $0.5g$

C. $1g$

D. $0.75g$

Answer: C

Watch Video Solution

74. Van't Hoff factor of centimolal solution of $K_3[Fe(CN)_6]$ is 3.333 . Calculate the percent dissociation of $K_3[Fe(CN)_6]$

A. 33.33

B. 0.78

C. 78

D. 23.33

Answer: C

Watch Video Solution

75. The freezing point of benzene decreases by $0.45^{\circ}C$ when $0.2g$ of acetic acid is added to $20g$ of benzene. IF acetic acid associates to form a dimer in benzene, percentage association of acetic acid in benzene will be $\left(K_f \text{for benzene} = 5.12Kkgmol^{-1}\right)$

A. $61.2\ \%$

B. $75.6\ \%$

C. $82.7\ \%$

D. $94.6\ \%$

Answer: D

Watch Video Solution

76. $0.06\ \%$ (W/V) aqueous solution of urea is isotonic with _____.

A. $0.06\ \%\ (w/v)$ glucose solution

B. $0.6\ \%\ (w/V)$ glucose solution

C. 0.01M glucose solution

D. $0.1M$ glucose solution

Answer: C

Watch Video Solution

77. The Van't Hoff factor of benzoic acid solution in benzene is 0.5. In this solution. Benzoic acid

A. Dissociates

B. forms dimer

C. remains unchanged

D. forms tetramer

Answer: B

Watch Video Solution

78. Pure water can be obtained from sea water by

A. centrifugation

B. Plasmolysis

C. Reverse osmosis

D. sedimentration

Answer: C

Watch Video Solution

79. What is the mass of the precipitate formed when 50 mL of 16.9 % (w//v) solution of $AgNO_3$ is mixed with 50 mL of 5.8 % (w/v) NaCl solutions (Ag = 107.3 ,N=14,O=16 ,Na=23 ,Cl=35.5)

A. 7g

B. 14g

C. 28g

D. $3.5g$

Answer: A

Watch Video Solution

80. At $100^\circ C$ the vapour pressure of a solution of $6.5g$ of an solute in $100g$ water is $732mm$.If $K_b = 0.52$, the boiling point of this solution will be :

A. $102^\circ C$

B. $103^\circ C$

C. $101^\circ C$

D. $100^\circ C$

Answer: C

Watch Video Solution

81. The relation between solubility of a gas in liquid at constant temperature and external pressure is stated by which law ?

A. Raoult 's Law

B. van't Hoff 's law

C. Van't Hoff charles , law

D. henry 's law

Answer: D

Watch Video Solution

Evaluation Test

1. In a flask at a certain temperature , there are 2g H_2 and $8gO_2$ the mole fraction of H_2 in the given mixture is _____

A. 0.4

B. 0.8

C. 0.2

D. 1.25

Answer: B

Watch Video Solution

2. An aqueous solution contains $25\ \%$ acetic acid and 57% ethanol . The mole fraction of acetic acid , ehtanol and

water in order is given by _____.

A. $0.16, 0.58, 0.37$

B. $0.38, 0.47, 0.16$

C. $0.16, 0.47, 0.38$

D. $0.38, 0.32, 0.14$

Answer: C

Watch Video Solution

3. 4.0 molar solution is obtained when 1.0 mole solute is dissolved in _____.

A. 250 mL solution

B. 250 mL solvent

C. 250 g solvent

D. 1000 mL solvent

Answer: A

Watch Video Solution

4. IF 45 mL of 0.2 M solution A is mixed with 60mL of a 0.3 M solution B and there is no change in volume , the final molarity of the solution is _____.

A. $0.35M$

B. $0.42M$

C. $0.18M$

D. $0.26M$

Answer: D

Watch Video Solution

5. 1000g of aqueous solution of Na_2CO_3 contains to g to sodium carbonate Concentration of solution Is _____.

A. $10,000ppm$

B. $1000ppm$

C. $400ppm$

D. $10ppm$

Answer: A

Watch Video Solution

6. The vapour pressure of pure benzene at $25^{\circ}C$ is 180 mm Hg. The vapour pressure lowering caused by the addition of 2.5 g of a solute (Molar mass = 342) to 250 g of benzene is _____.

A. $1.4mmHg$

B. $2.6mmHg$

C. $4.1mmHg$

D. $3.2mmHg$

Answer: C

Watch Video Solution

7. A small amount of a non-volatile solute is dissilved in $64.5cm^3$ of acetone (density $0.791g/cm^3$) the vapour pressure of this solution at room temperature is 260 mm Hg , while that of acetone is 285 mm Hg . What is the molality of the solution ?

A. $1.51M$

B. $2.51M$

C. $1.05M$

D. $1.15M$

Answer: A

Watch Video Solution

8. The vapour pressure of a certain pure liquid A at 298 K is 40 mbar. When a solution of B is prepared in A at the same temperature, the vapour pressure is found to be 32 mbar. The mole fraction of A in the solution is

A. 0.18

B. 0.14

C. 0.23

D. 0.34

Answer: B

Watch Video Solution

9. A solution has 1:3 ratio of cyclopentane to cyclohexane . The vapour pressure of the pure compounds at $25^{\circ}C$ are 331 mm Hg for cyclohexane . What is the mole fraction of cyclopenyance in the vapour above the solution ?

A. 0.42

B. 0.39

C. 0.49

D. 0.23

Answer: C

View Text Solution

10. 0.3 molal aqueous solution of sucrose boils at $100.51^\circ C$. The boiling point of 0.7 molal aqueous solution of surose will be ____.

A. $100.09^\circ C$

B. $101.11^\circ C$

C. $100.91^\circ C$

D. $101.19^\circ C$

Answer: D

Watch Video Solution

11. A solution contains 0.524 g of camphor (molar mass = 152 g/ mol dissolved in 36.8 g of ether (boiling point $= 34.6^{\circ} C)$. The molal elevation constant per 100 g of ether is 19.4 K kg mol^{-1} . The boiling point of the solution is _____.

A. $317.68K$

B. $307.78K$

C. $307.6K$

D. $317.6K$

Answer: B

Watch Video Solution

12. 0.1 M solution each of glucose, sodium chloride, sodium sulphate and sodium phosphate are taken I the of depression in freezing point is _____.

A. $1:3:2:1$

B. $1:2:3:4$

C. $4:3:2:1$

D. $1:1:2:4$

Answer: B

Watch Video Solution

13. The depession inn freezing point of a 5% aqueous solution of a substance 'A' is equal to the depression in

freezing point of a 3% aqueous solution of a substance 'B' .If the molecules weight of'A' is _____.

A. $72g/mol$

B. $112.2g/mol$

C. $117.52g/mol$

D. $122.52g/mol$

Answer: D

Watch Video Solution

14. The depression of freezing point of a solvent (b.p:303 K) for a particular solution is 0.153 K. Calculate the molal

elevation constant if the boiling point of the solution is $304.52K$. $\left(K_f = 1.68Kkgmol^{-1}\right)$

A. $1.68km^{-1}$

B. $16.8Km^{-1}$

C. $0.68Km^{-1}$

D. $11.6km^{-1}$

Answer: B

Watch Video Solution

15. Two elements A and B form compounds having molecular formula AB_2 and AB_4. When dissolved in $20g$ of benzene, $1g$of AB_2 lowers the freezing point by $2.3K$,

whereas $1.0g$ of AB_4 lowers it by $1.3K$. The molar depression constant for benzene is $5.1Kkgmol^{-1}$. Calculate the atomic mass of A and B.

A. $23.88, 40.31$

B. $25.59, 42.64$

C. $27.13, 44.83$

D. $29.28, 46.73$

Answer: B

Watch Video Solution

16. A solution containing 3.56 g of a polymer in 1 litre of a solvent was found to have an osmotic pressure of

5.2×10^{-4} atmosphere at 300K . The molecules mass of the ploymer is _____.

$(R = 0.082 L atm mol^{-1} K^{-1})$

A. $1.68 \times 10^{3} g mol^{-1}$

B. $1.68 \times 10^{2} g mol^{-1}$

C. $1.68 g mol^{-1}$

D. $1.68 \times 10^{5} g mol^{-1}$

Answer: D

Watch Video Solution

17. A solution of glucose containing 9.2 g/ litre (molecular weight : 180 g /mol) is isotonic with 3% solution of a non-

volatile solute . The molecular weight of the solute will be _____.

A. $267.2 gmol^{-1}$

B. $587 gmol^{-1}$

C. $567 gmol^{-1}$

D. $5.87 gmol^{-1}$

Answer: B

Watch Video Solution

18. IF 10 g of solute was dissolved in 250 mL. of water and osmotic pressure of the solution was found to be 600 mm

of Hg at 300 K, then molecular weight of the solute is _____$.gmol^{-1}$

A. $\frac{22800 \times R}{1.5}$

B. $\frac{22800}{1.5}$

C. $\frac{1.5 \times R}{22800}$

D. $\frac{228 \times R}{1.5}$

Answer: A

Watch Video Solution

19. IF density of a solvent is greater than 1 kg dm^{-3} , then the molarity (M) and molality (m) are related as _____.

A. $M > m$

B. $M < m$

C. $m = M$

D. $m \leq m$

Answer: A

Watch Video Solution

20. The vapour pressure will be lowest for _____.

A. $0.1M$sugar solution

B. $0.1M$ NaCl solution

C. $0.1MCu(NO_3)_2$ solution

D. $0.1MAgNO_3$solution

Answer: C

Watch Video Solution

21. At certain Hill-station pure water boils at $99.725^\circ C$. If K_b for water is $0.513^\circ Ckgmol^{-1}$, the boiling point of $0.69m$ solution of urea will be:

A. $100.079^\circ C$

B. $103^\circ C$

C. $100.359^\circ C$

D. unpredictable

Answer: A

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22. A solution containing 500 g of a protein per litre is isotonic with a solution containing 3.42 g of sucrose per litre . The molar mass of protein is _____$.gmol^{-1}$

A. 47500

B. 14600

C. 34200

D. 50000

Answer: D

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23. The osmotic pressure of a solution at 276 K is 2.5 atm . Its osmotic pressure at 546 K under similar conditions will be ____.

A. $0.5atm$

B. $1.0atm$

C. $2.5atm$

D. $5.0atm$

Answer: D

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24. Identify the compound amongst the following of which 0.05 m aqueous solution has highest boiling point .

A. Urea

B. Potassium chloride

C. Calcium chloride

D. silver nitrate

Answer: C

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25. For sodium chloride dissolved in water , the van't Hoff factor (i) accounts for the extent of _____ of the solute .

A. Solubility

B. Mobility

C. dissociation

D. mole fraction

Answer: C

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