CHEMISTRY

BOOKS - SURA CHEMISTRY (TAMIL ENGLISH)

SOLUTIONS

Evaluation

1. The molality of a solution containing 1.8 g of glucose dissolved in 250g of water is

A. 0.2 M

B. 0.01 M

C. 0.02 M

D. 0.04M

Answer: D

▶ **Watch Video Solution**

2. Which of the following concentration terms is are Independent of temperature?
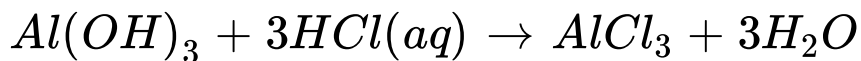
A. molality

B. molarity

C. mole fraction

D. (a) and ©

Answer: D

▶ **Watch Video Solution**

3. Stomach acid a dilute solution of HCI can be neutralised by reaction with Aluminium hydroxide.

$$Al(OH)_3 + 3HCl(aq) \rightarrow AlCl_3 + 3H_2O$$

how many millitres of 0.1 M $Al(OH)_3$ solution are needed to neutralise 21 ml of 0.1 M HCl?

A. 14 mL

B. 7 mL

C. 21 mL

D. none of these

Answer: B

▶ Watch Video Solution

4. The partial pressure of nitrogen in air is 7.6×76 atm and its Henry's law constant is 7.6×10^6 atm at 300 k. What is the mole fraction of nitrogen gas in the solution obtained when air is bubbled through water at 300 K?

A. 1×10^{-4}

B. 1×10^{-6}

C. 2×10^{-5}

D. 1×10^{-5}

Answer: D

5. The Henry's law constant for the solubility of Nitrogen gas in water at $350K$ is 8×10^4 atm. The mole fraction of nitrogen in air is 0.5.The number of moles of Nitrogen from air dissolved in 10 moles of water at 350 K and 4 atm pressure is

A. 4×10^{-4}

B. 4×10^4

C. 2×10^{-2}

D. 2.5×10^{-4}

Answer: D

▶ **Watch Video Solution**

6. Which one of the following is incorrect for ideal solutions?

A. $\Delta H_{\text{mix}} = 0$

B. $\Delta U_{\text{mix}} = 0$

C.

$$\Delta P = P_{\text{observed}} - P_{\text{calculated by Raoult's law}} = 0$$

D. $\Delta G_{mix} = 0$

Answer: C

▶ **View Text Solution**

7. Which one of the following gases has the lowest value of Henry law constant ?

A. N_2

B. He

C. CO_2

D. H_2

Answer: C

▶ **Watch Video Solution**

8. P_1 and P_2 are the vapour pressures of pure liquid components , 1 and 2 respectively of an ideal binary solution if x_1 represents the mole

Traction of component 1, and the total pressure of the solutions formed by 1 and 2 will be

A. $P_1 + x_1(P_2 - P_1)$

B. $P_2 - x_1(P_2 + P_1)$

C. $P_1 - x_2(P_1 - P_2)$

D. $P_1 + x_2(P_1 - P_2)$

Answer: C

9. Osmotic pressure (π) of a solution is given by the relation

    A. $\pi = nRT$

    B. $\pi V = nRT$

    C. $\pi RT = n$

    D. none of these

Answer: B

▶ **View Text Solution**

10. Which one of the following binary liquid mixtures exhibits positive deviation from Raoults law?

    A. Accetone + chloroform

    B. Water + nitric acid

    C. HCl + water

    D. Ethanol+ water

Answer: D

▶ Watch Video Solution

11. The Henry's law constant for two gases A and B are x and y respectively.The ratio of mole fractions of A to B is 0.2 The ratio of mole fraction of B and A dissolved in water will be

A. $\dfrac{2x}{y}$

B. $\dfrac{y}{0.2x}$

C. $\dfrac{0.2x}{y}$

D. $\dfrac{5x}{y}$

Answer: D

12. At $100°C$ the vapour pressure of a solution containing 6.5 g a solute in 100 g water is 732mm.If $K_b = 0.52$, the boiling point of this solution will be

A. $102°C$

B. $100°C$

C. $101°C$

D. $100.52°C$

Answer: C

13. According to Raoult's law the relative lowering of vapour pressure for a solution is equal to

    A. mole fraction of solvent

    B. mole fraction of solute

    C. number of moles of solute

    D. number of moles of solvent

Answer: B

▶ Watch Video Solution

14. At same temperature , which pair of the following solutions are Isotonic?

    A. $0.2MBaCl_2$ and $0.2M$urea

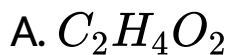   B. $0.1M$ glucose and 0.2 M urea

    C. $0.1MNaCl$ and 0.1 MK_2SO_4

    D. $0.1MBa(NO_3)$ and $0.1MNa_2SO_4$

Answer: D

▶ Watch Video Solution

15. The emplrical formula of a non-electrolyte (X) is CH_2O A. solution containing six gram of X exets the same osmotic pressure as thet of 0.025M glucose solution at the same temperature. The moleculra formula of X is

A. $C_2H_4O_2$

B. $C_8H_{16}O_8$

C. $C_4H_8O_4$

D. CH_2O

Answer: B

16. The K_H for the solution of oxygen dissolved in water is 4×10^4 atm at a given temperature . If the partial pressure of oxygen in air is 0.4 atm the mole fraction of oxygen in solution is

    A. 4. 6×10^3

    B. 1. 6×10^4

    C. 1×10^{-5}

    D. 1×10^5

Answer: C

17. Normality of 1.25 M sulphuric acid is

    A. 1.25 N

    B. 3.75 N

    C. 2.5 N

    D. 2.25 N

Answer: C

18. Two liquids X and Y on mixing gives a warm solution. The solution is

    A. ideal

    B. non-ideal and shows positive deviation from Raoult's law

    C. ideal and shows deviation from Roult's Law

    D. non-ideal and shows negative deviation from Raoult's Law

Answer: D

19. The relative lowering of vapour pressure of a sugar solution in water is 3.5×10^{-3} The mole fraction of water in that solution is

A. 0.0035

B. 0.35

C. $0.0035/18$

D. 0.9965

Answer: D

20. The mass of a non-voltalle solute (molar mass 80 g mol^{-1}) which should be dissolved in 92 g of toluene to reduce its vapour pressure to 90 %

A. 10 g

B. 20 g

C. 9.2 g

D. 8.89 g

Answer: D

21. For a solution the plot of osmotic pressure (π) verses the concentration $(c \text{ in } mol L^{-1})$ gives a straight line with slope 310 R where 'R' is the gas constant The temperature at which osmotic pressure measured is

A. $310 \times 0.082K$

B. $310°C$

C. $37°C$

D. $\dfrac{310}{0.082}K$

Answer: C

▶ **Watch Video Solution**

22. 200 ml of an aqueous solution of a protein contains 1.26 g of protein. At 300 K, the osmotic pressure of this solution is found to be 2.52×10^{-3} bar.The molar mass of protein will

be

$$\left(R = 0.083 L\overline{mol}^{-1}K^{-1}\right)$$

A. $62.22 kgmol^{-1}$

B. $12444 gmol^{-1}$

C. $300 gmol^{-1}$

D. none of these

Answer: A

▶ **Watch Video Solution**

23. The Van't Hoff factor (i) for a dilute aqueous solution of the strong elecrolyte barium hydroxide is

A. 0

B. 1

C. 2

D. 3

Answer: D

▶ **Watch Video Solution**

24. What is the molality of a10 % W/W aqueous sodium hydroxide solution?

A. 2.778

B. 2.5

C. 10

D. 0.4

Answer: B

▶ **Watch Video Solution**

25. The correct equation for the degree of an associating solute, 'n' molecules of which undergoes association in solution is

A. $\alpha = \dfrac{n(i-1)}{n-1}$

B. $\alpha^2 = \dfrac{n(1-i)}{(n-1)}$

C. $\alpha = \dfrac{n(i-1)}{1-n}$

D. $\alpha = \dfrac{n(1-i)}{1-n}$

Answer: C

26. which of the following aqueous solution has the highest bolling point?

A. $0.1 M KNO_3$

B. $0.1 M Na_3 PO_4$

C. $0.1 M BaCl_2$

D. $0.1 M K_2 SO_4$

Answer: B

▶ **Watch Video Solution**

27. The freezing point depression constant for water is $1.86^{\circ} Kkgmol^{-1}$, I f $5gNa_2SO_4$ is dissolved in 45 g water the depression in freezing point as $3.64^{\circ}C$ The Vant Hoff factor for Na_2SO_4 is

A. 2.50

B. 2.63

C. 3.64

D. 5.50

Answer: A

28. Equimotal aquous solutions of NaCl and KCl are prepared If the freezing point of $NaClis - 2°C$ the freezing point of KCl solution is expected tobe

A. $- 2°C$

B. $- 4°C$

C. $- 1°C$

D. $0°C$

Answer: A

29. Phenol dismerises in benzene having Van,t Hoff factor 0.54 What is the degree of association?

A. 0.46

B. 92

C. 46

D. 0.92

Answer: D

30. Assertion : An ideal solution obeys Raoults Law

Reason: In an ideal solution , solvent-solvent as well as solute-solute interactins are similar to solute-solvent interactions.

A. Both assertion and reason are true and reason is the correct explanation of

assertion.

B. Both assertion and reason are true but

reason is not the correct explanation of

assertion

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: A

▶ **Watch Video Solution**

31. Define

Molality

▶ **Watch Video Solution**

32. Define

Normality

▶ **Watch Video Solution**

33. What is a vapour pressure of liquid ? What is relative lowering of vapour pressure?

▶ **View Text Solution**

34. State and explain Henry's law

▶ **Watch Video Solution**

35. State Raoult law and obtain expression for lowering of vapour pressure when nonvolatile solute is dissolved in solvent.

▶ **View Text Solution**

36. what is molal depression constant ? Does it depend on nature of the solute?

▶ View Text Solution

37. What is osmosis?

▶ Watch Video Solution

38. Define the term 'isotonic solution'.

▶ View Text Solution

39. You are provided with a solid 'A' and three solutions of A dissolved in water -one saturated one unsaturated ,and one super saturated. How would you determine which solution is which?

▶ **View Text Solution**

40. Explain the effect of pressure on the solubility.

▶ **Watch Video Solution**

41. A sample of 12 M concentrated hydrochloric acid has a density 1.2 gL^{-1} Calculated the molality.

42. A 0.25 M glucose solution at 370 . 28 K has approxmately the pressure as blood does what is the osmotic pressure of blood?

43. Calculated the molality of a solution containing 7.5 g of glycine $(NH_2 - CH_2 - COOH)$ dissolved in 500g of water

44. Which solution has the lower freezing point ? 10 g of methanol $(CH_3OH_\square)$ in 100 g of water (or) 20 g of ethanol (CH_2H_5OH) in 200 g of water

45. How many moles of solute particles are present in one litre of 10^{-4} M potassium sulphate ?

46. Henry's law constant for solubility of methane In benzene is $4.2 \times 10^{-5} mm$ Hg at a particular constant temperature At this temperature calculate the solubility of methane

at

(i) 750 mm Hg (ii) 840 mm Hg

▶ **Watch Video Solution**

47. The observed depression in freezing point of water for a particular solution in $0.093° k$ calculate the concentration of the solution in molality Given that molal depression constant for water is $1.86KKGmol^{-1}$

▶ **Watch Video Solution**

48. The vapour pressure of pure benzene (C_6H_6) at a given temperature is 640 mm Hg . 2.2 g of non -volatile solute is added to 40 g of benzene. The vapour pressure of the solution is 600 mm Hg . Calcultaed the molar mass of the solute?

▶ **Watch Video Solution**

Additional Question

1. The example of solid solution is

A. glucose in water

B. cooper in gold

C. comphor in nitrogen

D. oxygen in nitrogen

Answer: B

▶ **View Text Solution**

2. The tanks used by scuba divers are filled with air diluted with 11.7% He ,

A. $56.2\ \%\ N_2$ and $32.1\ \%\ O_2$

B. $56.2\ \%\ O_2$ and $32.1\ \%\ N_2$

C. $50.2\ \%\ N_2$ and $38.1\ \%\ O_2$

D. $50.2\ \%\ O_2$ and $38.1\ \%\ N_2$

Answer: B

▶ **View Text Solution**

3. The blocking of capillaries due to sudden release of bubbles of N_2 gas in blood is known as

A. bends

B. blends

C. mends

D. all of these

Answer: A

▶ View Text Solution

4. Which of the following should have maximum

value for k_H ?

A. He

B. H_2

C. N_2

D. CO_2

Answer: A

▶ **Watch Video Solution**

5. The increase in the temperature of the aqueous solution placed in a closed vassel will result in its

A. molality to increase

B. molarity to decrease

C. mole fraction to increase

D. mass % increase

Answer: B

▶ **Watch Video Solution**

6. In a binary solution.

A. solvent my be liquid

B. solvent may be solid

C. solute may be gas

D. any of thses

Answer: D

▶ **Watch Video Solution**

7. The temperature at which the vapour pressure of a liquid equals external pressure in called

A. freezing point

B. boiling point

C. melting point

D. critical temperature

Answer: B

▶ **Watch Video Solution**

8. Solubility of gas decreases in a liquid by

A. increase of temperature

B. cooling

C. increasing pH

D. decreasing pH

Answer: A

▶ **View Text Solution**

---

9. Vapour pressure is the pressure exerted by vapour

A. in equilibrium with liquid

B. in any condition

C. in an open system

D. in atmospheric conditions

Answer: A

▶ **Watch Video Solution**

10. A sample of toothpaste weighting 500 g , on analysis was found to contain $0.2g$ of fluorine The concentration of fluorine in ppm is

A. 4×10^3

B. 4×10^2

C. 4×10

D. 2×10^2

Answer: B

▶ **Watch Video Solution**

---

11. 18 % (w/V) solution of urea (Mol mass = 60)

is

A. 1 M

B. 2 M

C. 0.3 M

D. 3 M

Answer: D

▶ **Watch Video Solution**

12. The value of ebulliosepic constant depends

upon

A. $\Delta H_{\text{solution}}$

B. nature of solvent

C. nature of solute

D. freezing point of solution

Answer: B

▶ **View Text Solution**

13. Correct statement among the following regarding osmoles is

A. Solvent flows from high concentration of solute to low concentration of solute

B. Solvent flows from low concentration of solute to high concentration of solute

C. Solute flows from high concentration to low concentration

D. Solution flows from low concentration to high concentration

Answer: B

▶ View Text Solution

14. For associative solutes

A. $I < 1$ and $\alpha < 1$

B. $I >$ and $\alpha > 1$

C. $I <$ and $\alpha < 1$

D. $I >$ and $\alpha <$

Answer: A

▶ **View Text Solution**

---

15. Which of the following is correct about a solution showing positive deviation?

A. Vapour pressure observed will be the less than that calculated from Raoult's law

B. Minimum boiling azeotrope will be formed

C. $\Delta H_{mix} < 0$

D. $\Delta V_{mix} < 0$

Answer: B

▶ View Text Solution

16. Depression in freezing point for 1 M urea , 1 M NaC1 and 1 M $CaCL_2$ are in the ratio of

A. $1:2:3$

B. $1:1:1$

C. $3:2:1$

D. $1:1:1$

Answer: A

▶ Watch Video Solution

17. When a saturated solution of KCL is heated it becomes

A. unsaturated

B. supersaturated

C. remains saturated

D. attains equilibrium

Answer: A

▶ **Watch Video Solution**

18. Which of the following has maximum freezing point?

A. Pure H_2O

B. $0.1 M NaCl(aq)$

C. $0.01 M NaCl(aq)$

D. $0.5 M NaCl(aq)$

Answer: A

▶ View Text Solution

19. The solution having minimum boiling points is

A. $0.1MC_6H_{12}O_6$

B. $0.1MCaCl_2$

C. $0.1MNaCl$

D. $0.5MAlCl_3$

Answer: A

▶ **View Text Solution**

20. What is the boiling point of 1 molal aqueous solution of $NaCl\left[K_b = 0.52Kmolal^{-1}\right]$.

A. $99.48°C$

B. $98.96°C$

C. $100.52°C$

D. $101.04°C$

Answer: D

▶ **Watch Video Solution**

---

21. For a non-electrolytic solution

A. $i = +ve$

B. $i = -ve$

C. $i = 0$

D. $i = 1$

Answer: D

▶ **Watch Video Solution**

22. The normalitiy of 10 % (weight / volume)(

acetic and is

A. 1N

B. 10 N

C. 1.7 N

D. 0.83 N

Answer: C

▶ View Text Solution

23. The highest temperature at which vapour pressure of any liquids can be measured is

A. Critical temperature

B. Boyle's temperature

C. Boiling point of the liquid

D. Kraft temperature

Answer: C

▶ **View Text Solution**

24. Which of the following equimolar solution have highest vapour pressure?

A. Glucose

B. NaCl

C. K_2SO_4

D. $K_4Fe(CN)_6$

Answer: A

▶ **Watch Video Solution**

25. The osmotic pressure of 0.1 M sodium

chloride solution at $27°C$

A. 4.0 atm

B. 2.46 atm

C. 4.92 atm

D. 1.23 atm

Answer: C

▶ Watch Video Solution

26. If C_2H_5OH and H_2 solution is example of non-ideal solution then which graphical representation is correct?

A. `

(##SUR_CHE_XI_V02_C09_E02_026_O01.png"

width="30%">

B. `

(##SUR_CHE_XI_V02_C09_E02_026_O02.png"

width="30%">

C. `

(##SUR_CHE_XI_V02_C09_E02_026_O03.png"

width="30%">

D. `

(##SUR_CHE_XI_V02_C09_E02_026_O04.png"

width="30%">

Answer: B

▶ **View Text Solution**

---

27. Which of the following statement is true?

A. Molarity of solution is dependent of

temperature

B. Molality of solution is independent of temperature

C. Mole fraction of solute is dependent on temperature

D. The unit of molality is mol dm^{-3}

Answer: B

▶ View Text Solution

28. If vant Hoff factor , i = 1 ,then

A. It is dissociation

B. It is association

C. Both (1) &(2)

D. Neither dissociation nor association

Answer: D

▶ **View Text Solution**

29. Among the following mixtures dipole-dipole as the major interaction is present in

A. Benzene and Cl_4

B. Benzene and C_2H_5OH

C. CH_3COCH_3 and CH_3CN

D. KCl and water

Answer: C

▶ View Text Solution

30. An azeotropic solution of two liquids has a boiling point lower than either of the boiling points of the two liquids when it.

A. shows negative deviation

B. shows positive deviation

C. show no deviation

D. is unsaturated

Answer: B

▶ View Text Solution

31. Two liquids having vapour pressure P_1° and P_2° in pure state in the ratio of 2 :1 are

mixed in the molar ratio of 1 : 2 The ratio of their

moles in the vapour state would be

A. 1 : 1

B. 1 : 2

C. 2 : 1

D. 3 : 2

Answer: A

▶ View Text Solution

32. A pressure cooker reduces cooking time for food because.

    A. Cooking involves chemical changes helped by a rise in temperature

    B. Heat is more evenly distributed in the cooking space

    C. Boiling point of water involved in cooking is increased

    D. The higher pressure inside the cooker crushes the food material

Answer: C

33. In the case of osmoles solvent molecules move from solution having?

    A. higher vapour pressure to lower vapour pressure

    B. higher concentration to lower concentration

C. lower vapour pressure to higher vapour

   pressure

D. higher osmotic pressure to lower osmotic

   pressure

Answer: A

> ▶ **Watch Video Solution**

34. Equimolar solution of non-electrolyte in the

same solvent have

A. same boiling point and same freezing point

B. different boiling point and different freezing point

C. same boiling point but different freezing point

D. same freezing point but different boiling point

Answer: A

▶ **Watch Video Solution**

35. In the phenomenon of osmosis through the semipermeable membrane

   A. solvent molecules pass from solution to solvent

   B. solvent molecules pass from solvent to solution

   C. solute molecules pass from solution to solvent

D. solute molecules pass from solvent to

solution

Answer: B

▶ **View Text Solution**

---

36. Which of the following physical properties is

used to determine the molecular mass of a

polymer solution?

    A. Relative lowering of vapour pressure

    B. Elevation in boiling point

C. Depression in freezing point

D. Osmotic pressure

Answer: D

▶ **View Text Solution**

37. When NaCl is added to aqueous solution of glucose

    A. Freezing point is lowered

    B. Freezing point is raised

C. Freezing point does not change

D. Variation is freezing point can't be predicted

Answer: A

▶ **View Text Solution**

38. The relationship between the values of osmotic pressure of 0.1M solutions of $KNO_3(P_1)$ and $CH_3COOH(P_2)$ is

A. $P_1 > P_2$

B. $P_2 > P_1$

C. $P_1 = P_2$

D. $\dfrac{P_1}{P_1 + P_2} = \dfrac{P_2}{P_1 + 2P_2}$

Answer: A

▶ **View Text Solution**

39. Which of the following pairs of solutions can we expect to be isotonic at the same temperature ?

A. 0.1 M NaCl and 0.1 M Na_2SO_4

B. 0.1 M urea and 0.1 M NaCl

C. 0.1 M urea and 0.2 M $MgCl_2$

D. 0.1 M$Ca(NO_3)_2$ and $0.1 M Na_2SO_4$

Answer: D

▶ **Watch Video Solution**

40. Arrange the following aqueous solutions in the order of their increasing boiling points

(i) $10^{-4} M NaCl$

(ii) $10^{-3} M$ urea

(iii) $10^{-3}M MgCl_2$

(iv) $10^{-3}M$ NaCl

A. $(i) < (ii) < (iv) < (iii)$

B. $(ii) < (i) < (iii) < (iv)$

C. $(I) < (ii) < (iii) < (iv)$

D. $(iv) < (iii) < (I) < (ii)$

Answer: A

▶ View Text Solution

41. Which of the following concentration terms is temperture independent

(i) Molarity

(ii) Molallity

(iii) Normality

(iv) Mole frection

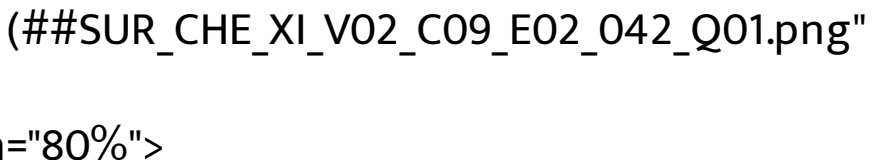   A. I & II

    B. I& III

    C. II only

    D. II & IV

Answer: D

▶ **View Text Solution**

42. Two solution marked as A and B are seprated through semipermeable membrane as below . The phenomenon undergoing

` (##SUR_CHE_XI_V02_C09_E02_042_Q01.png" width="80%">

A. Na^+ moves from solution A to solution B

B. Both Na^+ and Cl^- moves from solution

(A) to solution (B)

C. Both Na^+ and Cl^- moves from solution

(B) to (A)

D. Solvent molecules moves from solution (A)

to (B)

Answer: D

▶ View Text Solution

43. Vapour phase diagram for a solution is given below if doted line represents deviation?

`   (##SUR_CHE_XI_V02_C09_E02_044_Q01.png"

width="80%">

Correct observation for this solution

A. $\Delta H_{mix}: + ve$

B. $\Delta S_{mix}: + ve$

C. $\Delta V_{mix}: + ve$

D. all of these

Answer: D

44. A mixture of two liquids A and B having boiling point of A is $70°C$ and boiling points of B $is 100°C$ distills at $101.2°C$ as single liquids hence this mixture is

    A. Ideal solution

    B. Non ideal solution showing +ve deviation

    C. Non ideal solution showing -ve deviation

    D. Immiscible solution

Answer: C

45. The mixtures are homogeneous irrespective of their physical state and such homogeneous mixtures are called as _____

A. solvent

B. solute

C. solutions

D. mixtures

Answer: C

46. Which is a homogenous mixtures fo copper and Zinc?

A. Brass

B. Gold

C. Silver

D. Steel

Answer: A

▶ View Text Solution

---

47. What is the resultant solution is called if $\mathbb{C}14$ is used?

    A. aqueous solution

    B. non-aqueous solution

    C. chloride solution

    D. carbon solution

Answer: B

48. At the time of experiment how the solution with required concentration is prepared?

   A. By adding the raw salt

   B. By adding the stock solution

   C. By diluting the stock solution

   D. By concentrate the stock solution

Answer: C

49. Assertion (A) : A standard solution of required concentration can be prepared by dissolving a required amount of a solute in a suitable amount of solvent

Reason ® : A standard solution is a solution whose concentration is accurately known.

A. Both (A) and ® are true ® is the correct explanation of (A)

B. Both (A) and ® are ture and ® is not the

correct explanation of (A)

C. (A) true but ® false

D. Both (A) and ® are false

Answer: A

▶ **View Text Solution**

50. What happen in case of gaseous solute in

liquid solvent the solubility with increase in

temperature?

A. increase

B. decrease

C. no change

D. become zero

Answer: B

51. Assertion (A) : If the dissolution process is endothermic , the increase in temperature will shift the equilibrium towards right

Reason ® : This is according to Le-Chatelier princeple.

A. Both (A) and ® are true ® is the correct explanation of (A)

B. Both (A) and ® are ture and ® is not the correct explanation of (A)

C. (A) true but ® false

D. Both (A) and ® are false

Answer: A

▶ View Text Solution

52. Assertion (A) :The increase in kinetic energy breaks the weak intermolecular forces between the gaseous solute and liquid solvent.

Reason ® : Which results in the release of the dissolved gas molecules to the liquid state

   A. Both (A) and ® are true ® is the correct

      explanation of (A)

   B. Both (A) and ® are ture and ® is not the

      correct explanation of (A)

   C. (A) true but ® false

   D. Both (A) and ® are false

Answer: C

53. Assertion (A) : If evaporation is carried out in a closed container then the vapour remains in contact with the surface of the liquid.

Reason ® : During which they collide with each other and also with the walls of the container .As the collision is of the container .As the collision is inelastick ,they lose their energy

A. Both (A) and ® are true ® is the correct

explanation of (A)

B. Both (A) and ® are ture and ® is not the

correct explanation of (A)

C. (A) true but ® false

D. Both (A) and ® are false

Answer: C

54. Match

` (##SUR_CHE_XI_V02_C09_E02_055_Q01.png"

width="80%">

A.
A	B	C	D
1	2	3	4

B.
A	B	C	D
2	1	3	4

C.
A	B	C	D
4	1	3	2

D.
A	B	C	D
4	3	2	1

Answer: A

▶ View Text Solution

55. Match

`   (##SUR_CHE_XI_V02_C09_E02_056_Q01.png"

width="80%">

A.
$\begin{array}{cccc} A & B & C & D \\ 1 & 2 & 3 & 4 \end{array}$

B.
$\begin{array}{cccc} A & B & C & D \\ 2 & 1 & 3 & 4 \end{array}$

C.
$\begin{array}{cccc} A & B & C & D \\ 4 & 1 & 3 & 2 \end{array}$

D.
$\begin{array}{cccc} A & B & C & D \\ 4 & 3 & 2 & 1 \end{array}$

Answer: A

▶ View Text Solution

56. Match

`   (##SUR_CHE_XI_V02_C09_E02_057_Q01.png"

width="80%">

A.
$$\begin{array}{ccc} A & B & C \\ 1 & 2 & 3 \end{array}$$

B.
$$\begin{array}{ccc} A & B & C \\ 2 & 1 & 3 \end{array}$$

C.
$$\begin{array}{ccc} A & B & C \\ 3 & 1 & 2 \end{array}$$

D.
$$\begin{array}{ccc} A & B & C \\ 3 & 2 & 1 \end{array}$$

Answer: C

▶ View Text Solution

57. Which of the following sentence is incorrect?

A. The solubiity of a solute in a liquid solvent

decrease with increase in tempreature

B. When the temperature is increased the

average kinetic energy of the molecules of

the solute and the solvent increases.

C. The increase in kinetic energy faciliates the

solvent molecules to break the

intermolecular attractive forces that keep

the solute molecules together and hence

the solubility increases.

D. All of the above are false

Answer: A

⏵ **View Text Solution**

Short Answers Question

1. Define PPM.

⏵ **Watch Video Solution**

2. List out the factors that influence the solubility

▶ View Text Solution

3. What is K_H in $P_{\text{Solute}} = K_H X_{\text{solute}}$? on what does the value of K_H depends?

▶ View Text Solution

4. Write down the limitation of Henry,s law.

5. Plot a graph with respect to Henry's law stating the solubility of HCl gas in the solution in cyclohexane

6. Define evaporation

7. What is condensation polymerisation? Write with an example.

▶ **Watch Video Solution**

8. Why is the deviation observed in the solution of accetic acid?

▶ **View Text Solution**

9. KCl in water deviates from ideal behaviour - why ?

10. Write a short note , Van't Hoff equation.

  ▶ **Watch Video Solution**

11. Define colligative properties.

  ▶ **View Text Solution**

12. What is obnormal molar mass?

  ▶ **View Text Solution**

13. How will you relate the Van't Hoff factors to association and dissociation?

▶ **View Text Solution**

14. Define Mass percentage?

▶ **Watch Video Solution**

15. Why a person suffering from high blood pressure is advised to take minimum quantity of common salt ?

> ▶ **View Text Solution**

16. Define solution.Explain with an example.

> ▶ **Watch Video Solution**

17. Write a brief (of a component) (x)

18. Enlist the advantage using standard solutions.

19. Write a note on solubility of solute and brief out the formation of a saturated solution with an examples.

20. Explain the above vaiation in solubility with respect to temperature for selective compounds.

▶ View Text Solution

21. With the help of a graph discuss the variation of vapour pressure of benzene in toluence.

▶ View Text Solution

22. Discuss the comparison between Raoult's law and Henry's law.

23. Write a brief note on ideal solutions.

24. Distinguish between ideal and non-ideal solution.

25. How does the change in temperature pressure and concentration causes deviation from ideal behaviour ?

▶ **View Text Solution**

26. Define the Boiling point

▶ **Watch Video Solution**

27. Define the Elevation of boiling point

28. Define the Ebullioscopic constant

29. Write short note an freezing point depression in freezing point and cryoscopic constant.

30. On the account of osmotic pressure 'arive ' at the Van't Hoff equation.

`   (##SUR_CHE_XI_V02_C09_E04_015_Q01.png" width="80%">

▶ View Text Solution

31. Discuss the significances of osmotic-pressure over other colligative properties.

▶ Watch Video Solution

32. Define Van't Hoff factor.

▶ **Watch Video Solution**

33. Write the value for CH_3COOH and $NaCl$.

▶ **View Text Solution**

34. What does the following conditions reval ?

$i = 1, \ < 1$ and $I > 1$.

▶ **View Text Solution**

35. Discuss the process of roasting with suitable example.

▶ **Watch Video Solution**

Long Answers Questions

1. How does the change in temperatue affect the solubility of a solute in a liquid solvent and gaseous solute in liquid solvent ? Explain

▶ **View Text Solution**

2. "Rate of vapourisation is reduced by presence of non-volatile solute "-Explain.

3. Explain the positive deviation exhibited by non-ideal solution with prefernce to a solution of ethyl alcohol and water.

4. When does a non-ideal solution is said to show a negative deviation?

▶ **View Text Solution**

5. Analyse the deviation observed in the solution of phenol and aniline.

▶ **View Text Solution**

6. Explain the factors which are responsible for the deviation of solution from Raoult's law.

7. Prove that relative lowering of vapour pressure is a colligative property.

8. Write down the formula (and expand the terms) used for the determination of molar mass.

9. Write note on reverse osmosis and explain its application in desalination of sea water.

▶ **View Text Solution**

Creative Questions Hots

1. Define solution, solvent and solute.

▶ **Watch Video Solution**

2. What are the non-aqueous solution? Give example.

> ▶ **Watch Video Solution**

3. Define solubility.

> ▶ **Watch Video Solution**

4. Give the expression and illustration for the following concentration terms.

(i) Molarity (ii) Formality (iii) Mass Percentage

(iv) Volume Percentage (v) Mass by volume

▶ View Text Solution

Numerical Problems

1. A solution contians 510 g of of sulphuric acid per litre at $25^\circ C$ Calculated the normality and molarity of the solution.

▶ Watch Video Solution

2. A solution is prepared by dissolving 30g of urea in 120g of water .Calculate the molality of the solution . (Molar mass of urea : 60)

3. A sample of 56g of ethanol is dissolved in 36g of water.of Calculated the mole fraction of ethyl alcohol.

4. What is the mass percentage of each component in a mixture containing 22 g of methanol in 112g of benzene?

▶ Watch Video Solution

5. Calculate the volume of 1.5 N H_2SO_4 is completely neturalized by 35.8 mL of $2.5 N NaOH$

▶ Watch Video Solution

6. Calculate the volume of 1.5 N H_2SO_4 is completely neturalized by 35.8 mL of $2.5M NaOH$

▶ **Watch Video Solution**

7. Calculate the volume of 1.5 N H_2SO_4 completely neturalized by 35.8 mL of $2.5N Ba(OH)_2$

▶ **Watch Video Solution**

8. Calculate the volume of 1.5 N H_2SO_4 completely neturalized by 35.8 mL of $2.5M Ba(OH_2)$

9. Decribe how would yor prepare the following solution from solute and solvent

$1L of 1.5M CoCl_2$ solution

10. Decribe how would yor prepare the following solution from solute and solvent

$566 mL$ of $6.0\% \ (V/V)$ methanol solution

▶ View Text Solution

11. Calculate the present by mass of $NaC1$ if 1.75 g of NaC1 is dissolved in 7.88g of water

▶ Watch Video Solution

12. Calculate the molarity of each of the following solutions

8.82 mol of H_2SO_4 in $3.75L$ of solutions.

13. Calculate the molarity of each of the following solutions

0.611 mol of ethanol in 96.3 mL of solution.

14. NaOH and HCl react to form NaCl and H_2O

what volume of 0.250 M Na OH solution contains

0.110 mol of NaOH

▶ **Watch Video Solution**

15. What of volume of 0.20 M NaOH is required

to exactly react with 0.150 mol HCl

▶ **Watch Video Solution**

16. Explain how would you prepare the following dilute solution from more condentrated solution

(a) $5L$of$6.00MH_2SO_4$ from 18.0 MH_2SO_4

(b) 250 mL of 0.5 M $CaCl_2$ form $3.0MCaCl_2$ solution

© $0.2NH_2SO_4500mL$ from 3.0 M H_2SO_4

> ▶ **Watch Video Solution**

17. What is the molarity of the solutions prepared by diluting 25.0 mL of 0.31 M $MgCl_2$

solution to each of the following volumes (a) 40 mL (b) 100 mL © 350 mL?

18. A sample of drinking water was found to be contaminated with chloroform ($CHCl_3$) which is considered as cercinogen . The level of contamination was 15 ppm (by mass)

(i) Express this in percent (by mass)

(ii) Calculate the molarity of chloroform in the water sample.

19. Calculate the molefraction of each component in a mixture containing 40 mass percent of toluene in $CHCl_3$

20. Calculate the weight of carbon dioxide dissolved in 1 L bottle of carbonated water , If the manufacturer uses a pressure of 2.4 atm in the bottling process at $25°C$.

21. The Henry's Law constant for oxygen dissolved in water is $4.34 \times 10^4 atm$ (mol /L) at $25°C$. If the partial pressure of oxygen in air is 0.2 atm under ordinary atmospheric condition calculate the concentration (in mol/litre) of dissolved oxygen in water equilibrium with air at $25°C$

▶ Watch Video Solution

22. A solution is prepared by dissolving 2.0 g of glucose and 4.0 g urea in 100 g of water at 298 K . Calculate the vapour pressure of the solution ,If the vapour pressure of pure water is 23.756 torr. (Molecular mass of urea = 60 and glucose = 180g mol^{-1})

▶ **Watch Video Solution**

23. A solution of lactose containing 8.45 g of lactose in 100 g of water has a vapour pressure of 4.5 mm of Hg at $0°C$. If the vapour pressure

of pure water is $4.579mm$ of Hg . Calculate the molar mass of lactose.

24. Calculate the boiling point of a solution which is prepared by dissolving 68.4g of solute B in one kilogram of water . (Molar mass of solute B is 342 g $mol^{-1} T_b = 373.1K$ and K_b(water) = 0.52 K $kgmol^{-1}$