Chemistry Study Materials for Class 12
(NCERT Based Questions of Chapter -02)
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Solution

37. The process used for desalination of water is _____ .

Answer: reverse osmosis

38. Vapour pressure is _____ proportional to temperature.

Answer:: directly

39. Ethylene glycol is used as _____ .

Answer: antifreeze

40. All intravenous injections must be isotonic with body fluids. [True/False]

Answer: True.

41. Diabetic patients are likely to have high blood pressure. [True/False]

Answer: True.

42. Common salt is non-electrolyte. [True/False]

Answer: False,

Explaination: common salt is electrolyte.

43. State the main advantage of molality over molarity as the unit of concentration. [DoE]

Answer: Molality is more accurate than molarity because molality does not depend on temperature as mass does not change with temperature.

44. Define molality in terms of elevation in boiling point.

Answer: Molality is defined as the ratio of elevation in boiling point and KA (molal elevation constant).

45. State Raoulf s law for a solution containing volatile components.

Answer: The vapour pressure of each component is directly proportional to the mole fraction of each component.

$$P_A = P_A^0 x_A, P_B = P_B^0 x_B$$

where P_A and P_B = Vapour pressure of components 'A' and 'B'.
p_A° and p_B° = Vapour pressure of pure components 'A' and 'B.
x_A and x_B = Mole fractions of 'A' and 'B'.

46. Two liquids A and 5 boil at 145 °C and 190 °C respectively. Which of them has a higher vapour pressure at 80 °C?

Answer:

'A' because lower the boiling point, higher will be vapour pressure.

47. What are the values of AH and AV for an ideal solution of two liquids?

Answer: $\Delta H = 0$, $\Delta V = 0$ for an ideal solution of two liquids.

48. Give reason when 30 mL of ethyl alcohol and 30 mL of water are mixed, the volume of resulting solution is more than 60 mL.

Answer:

It is because forces of attraction between ethyl alcohol and water are less than ethanol-ethanol and water-water. It shows positive deviation.

49. 10 mL of liquid A was mixed with 10 mL of liquid B. The volume of the resulting solution was found to be 19.9 mL. What do you conclude?

Answer:

It means solution shows -ve deviation from Raoult's law due to increase in force of attraction, volume decreases, e.g. chloroform and acetone.

50. What are azeotropes? Give an example.

Answer: Azeotropes are constant boiling mixtures which distill out unchanged in their composition, e.g. ethanol and water.

51. Define Ebullioscopic constant or molal elevation constant.

Answer: Molal Elevation Constant (Ebullioscopic Constant): It is equal to elevation in boiling point of 1 molal solution, i.e. 1 mole of solute is dissolved in 1 kg of solvent. It is also called ebullioscopic constant. The units of K_b is K/m or °C/m or K kg mol^{-1}, where 'm' is molality.

52. Calculate the freezing point of a solution containing 60 g of glucose (molar mass 180 g mol^{-1}) in 250 g of water. [K_f for water = 1.86 K kg mol^{-1}]

Answer:

Explaination:

$$W_B = 60\text{ g},\ M_B = 180\text{ g mol}^{-1},\ W_A = 250\text{ g},$$
$$K_f = 1.86\text{ K kg mol}^{-1},\ \Delta T_f = ?$$

$$\Delta T_f = K_f \times \frac{W_B}{M_B} \times \frac{1000}{W_A}$$
$$= 1.86 \times \frac{60}{180} \times \frac{1000}{250}$$
$$= \frac{1.86 \times 4}{3}$$
$$= 0.62 \times 4$$
$$= 2.48$$

Freezing point of solution

= Freezing point of solvent

$-\Delta T_f = 2.73.15\text{ K} - 2.48$

$= 270.67\text{ K}$

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