DPP

DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : CHEMISTRY
DPP No. : 8

Topic :- SOLUTIONS

1 **(b)**

Osmotic pressure $\propto$ number of particles.

$\therefore$ Solution with least number of particles will have minimum osmotic pressure.

(i) NaCl $\rightarrow$ $Na^+ + Cl^-$ $(2\ ions)$

$\therefore$ Concentration of particles in

NaCl=2 × 2M =4M

(ii) Glucose does not dissociate

$\therefore$ Concentration of particles

= 1 × 1M= 1M

1. Urea does not dissociate

$\therefore$ Concentration of particles 1 × 2M=2M

$\therefore$ Glucose solution will have minimum osmotic pressure.

2 **(b)**

As concentration of particles is maximum in $FeCl_3$ solution so deviation in boiling point will be maximum. Hence, actual boiling point will be highest

3 **(b)**

An increase in temperature favours backward reaction if,

Solute + Solvent $\longrightarrow$ Solution; $\Delta H = -ve$.

4 **(b)**

n-heptane and ethanol forms non-ideal solution. In pure ethanol, Molecules are hydrogen bonded. On adding *n*-heptane, its molecules get in between the host molecules and break sme of the hydrogen bonds between them. Due to weaking of interactions, the solution shows positive deviation from Raoult's law.

5 **(b)**

$\Delta T_f = i \times K_f \times \text{molality}$

$0.00732 = i \times 1.86 \times 0.002$

$\therefore \quad i = 1.96 = 2$

$\therefore$ $[Co(NH_3)_5 \cdot (NO_2)]Cl \longrightarrow [Co(NH_3)_5NO_2]^+ + Cl^-$

6 **(a)**

Isotonic solutions have same molar concentration of solute particles in solution. Molar concentration of particles in solution are 0.1 M in glucose, 2×0.05 M in NaCl, 3×0.05 in $BasCl_2$ and 4×0.1 in $AlCl_3$. Therefore, 0.1 M glucose and 0.05 in M NaCl solutions are isotonic.

8 **(b)**

$\pi = CRT$

$$\pi = \frac{68.4}{342} \times 0.082 \times 273 = 4.48 \text{ atm}$$

9 **(b)**

$$i \text{ for } AgNO_3 = \frac{\text{normal mol.wt.}}{\text{observed mol.wt.}} = 1 + \alpha,$$

$$\therefore \alpha = \frac{170}{92.64} - 1 = 0.835 = 83.5\%$$

10 **(b)**

On heating solubility of NaCl increases.

11 **(b)**

Molar concentration $[H_2] = \frac{\text{moles}}{V(\text{L})} = \frac{20/2}{5} = 2$

12 **(a)**

Molarity of pure water $= \frac{100}{18} = 55.6$

13 **(c)**

3.50 wt% of aqueous solution of NaCl means 100 g of sea water contains 3.50 g NaCl.

Water in sea water = 100-3.5 = 96.5 g

=0.0965 kg

$$\text{Molality } = \frac{3.5}{58.5 \times 0.0965}$$

= 0.62 m

14 **(d)**

In a, b, c the choices reflect for the validity of law.

16 **(b)**

Colligative properties depend upon number of particles in solution and concentration of solution. Larger the number of particles in solution, higher is the colligative properties. Hence, highest boiling point is found in 0.1 M $BaCl_2$.

$$BaCl_2(aq) \longrightarrow B^{2+} + 2Cl^-$$

17 **(b)**

Hg has higher attractive forces among molecules.

18 **(b)**

$$M = \frac{W}{\text{mol. wt.} \times V(\text{L})} = \frac{5.85}{58.5 \times 0.5} = 0.2 \text{ M}$$

(a)6g of NaOH/100 mL

(b)0.5 M H_2SO_4

$N = M \times \text{basicity} = 0.5 \times 2 = 1.0$

(c)N phosphoric acid Normality=1

(d)8 g of KOH/L

$$\text{Normality} = \frac{\text{strength in g/L}}{\text{equivalent weight}} = \frac{8}{56} = 0.14\ \text{N}$$

20 **(c)**

H_3PO_3 is a dibasic acid (containing two ionisable protons attached to O directly).

$$H_3PO_3 \rightleftharpoons 2H^+ + HPO_3{}^{2-}$$

$\therefore$ $0.1\ M\ \ H_3PO_3 = 0.2\ NH_3\ PO_3$

and $0.1\ \text{M KOH} = 0.1\text{N KOH}$

$$N_1V_1 = N_2V_2$$

$$(\text{KOH})\quad (H_3PO_3)$$

$$0.1V_1 = 0.2 \times 20$$

$$V_1 = 40\text{mL}$$

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	B	B	B	B	B	A	D	B	B	B
Q.	11	12	13	14	15	16	17	18	19	20
A.	B	A	C	D	A	B	B	B	C	C