



TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

I-CHEMISTRY

**DPP**

DAILY PRACTICE PROBLEMS

**DPP NO. 2**

**Physical Chemistry : Solutions and Colligative Properties**

**DPP No. : 2**

- Which of the following statements is correct regarding a solution of two component A and B exhibiting positive deviation from ideal behavior ?
  - (1) Intermolecular attractive force between A-A and B-B are stronger than those between A-B.
  - (2)  $\Delta_{\text{mix}} H = 0$  at constant T and P.
  - (3)  $\Delta_{\text{mix}} V = 0$  at constant . T and P.
  - (4) Intermolecular attractive forces between A-A and B-B are equal to those between A-B.
- The freezing point depression constant ( $K_f$ ) of benzene is  $5.12 \text{ K kg mol}^{-1}$ . The freezing point depression for the solution of molality  $0.078 \text{ m}$  containing a non-electrolyte solute in benzene (rounded off upto two decimal places) :
  - (1)  $0.80 \text{ K}$
  - (2)  $0.40 \text{ K}$
  - (3)  $0.60 \text{ K}$
  - (4)  $0.20 \text{ K}$
- If  $8 \text{ g}$  of a non-electrolyte solute is dissolved in  $114 \text{ g}$  of n-octane to reduce its vapour pressure to  $80\%$  the molar mass (in  $\text{g mol}^{-1}$ ) of the solute is [Given that molar mass of n-octane is  $114 \text{ g mol}^{-1}$ ]
  - (1)  $40$
  - (2)  $60$
  - (3)  $80$
  - (4)  $20$
- Isotonic solutions have same
  - (1) vapour pressure
  - (2) Freezing temperature
  - (3) osmotic pressure
  - (4) boiling temperature
- The following solutions were prepared by dissolving  $10 \text{ g}$  of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) in  $250 \text{ ml}$  of water ( $P_1$ ),  $10 \text{ g}$  of urea ( $\text{NH}_2\text{CONH}_2$ ) in  $250 \text{ ml}$  of water ( $P_2$ ) and  $10 \text{ g}$  of sucrose ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ ) in  $250 \text{ ml}$  of water ( $P_3$ ). The right option for the decreasing order of osmotic pressure of these solutions is :
  - (1)  $P_1 > P_2 > P_3$
  - (2)  $P_2 > P_3 > P_1$
  - (3)  $P_3 > P_1 > P_2$
  - (4)  $P_2 > P_1 > P_3$
- The correct option for the value of vapour pressure of a solution at  $45^\circ\text{C}$  with benzene to octane in molar ratio  $3 : 2$  is :  
[At  $45^\circ\text{C}$  vapour pressure of benzene is  $280 \text{ mm Hg}$  and that of octane is  $420 \text{ mm Hg}$ . Assume Ideal gas]
  - (1)  $168 \text{ mm of Hg}$
  - (2)  $336 \text{ mm of Hg}$
  - (3)  $350 \text{ mm of Hg}$
  - (4)  $160 \text{ mm of Hg}$
- In one molal solution that contains  $0.5$  mole of a solute, there is
  - (1)  $100 \text{ mL}$  of solvent
  - (2)  $1000 \text{ g}$  of solvent
  - (3)  $500 \text{ mL}$  of solvent
  - (4)  $500 \text{ g}$  of solvent
- One mole of sugar is dissolved in three moles of water at  $298 \text{ K}$ . The relative lowering of vapour pressure is
  - (1)  $0.20$
  - (2)  $0.50$
  - (3)  $0.33$
  - (4)  $0.25$

9.  $K_H$  value for some gases at the same temperature 'T' are given:

gas	$K_H$ /k bar
Ar	40.3
CO <sub>2</sub>	1.67
HCHO	$1.83 \times 10^{-5}$
CH <sub>4</sub>	0.413

where  $K_H$  is Henry's Law constant in water. The order of their solubility in water is:

- (1) Ar < CO<sub>2</sub> < CH<sub>4</sub> < HCHO                      (2) Ar < CH<sub>4</sub> < CO<sub>2</sub> < HCHO  
 (3) HCHO < CO<sub>2</sub> < CH<sub>4</sub> < Ar                      (4) HCHO < CH<sub>4</sub> < CO<sub>2</sub> < Ar
10. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**:  
**Assertion A** : Helium is used to dilute oxygen in diving apparatus.  
**Reasons R** : Helium has high solubility in O<sub>2</sub>. In the light of the above statements, choose the **correct** answer from the options given below:
- (1) Both **A** and **R** are true and **R** is **NOT** the correct explanation of **A**.  
 (2) **A** is true but **R** is false.  
 (3) **A** is false but **R** is true.  
 (4) Both **A** and **R** are true and **R** is the correct explanation of **A**.
11. Which amongst the following aqueous solutions electrolytes will have minimum elevation in boiling point? Choose the correct option.
- (1) 0.05 M NaCl            (2) 0.1M KCl            (3) 0.1M MgSO<sub>4</sub>            (4) 1M NaCl

## Answer Key

1. (1)    2. (2)    3. (1)    4. (3)    5. (4)    6. (2)    7. (4)  
 8. (4)    9. (1)    10. (1)    11. (1)