Q1: 24 Feb (Shift 1) - Numerical

When 9.45 g of $ClCH_2COOH$ is added to 500 mL of water, its freezing point drops by $0.5^{\circ}C$. The dissociation constant of $ClCH_2COOH$ is $x \times 10^{-3}$. The value of x is ____ (Rounded off to the nearest integer) $\left[K_{f(H_2O)} = 1.86 \text{ K kg mol}^{-1}\right]$

Q2: 24 Feb (Shift 2) - Numerical

C_6H_6 freezes at $5.5^{\circ}C$. The temperature at which a solution of 10 g of C_4H_{10} in 200 g of C_6H_6 freeze is ____ $^{\circ}C$. (The molal freezing point depression constant of C_6H_6 is) $5.12^{\circ}C/m$)

Q3: 25 Feb (Shift 1) - Numerical

1 molal aqueous solution of an electrolyte A_2B_3 is 60% ionised. The boiling point of the solution at 1 atm is _____ K. (Rounded-off to the nearest integer) [Given K_b for $(H_2O) = 0.52 \text{ K kg mol}^{-1}$]

Q4: 25 Feb (Shift 2) - Numerical

If a compound AB dissociates to the extent of 75% in an aqueous solution, the molality of the solution which shows a 2.5 K rise in the boiling point of the solution is ____ molal.
(Rounded-off to the nearest integer) $\left[K_b = 0.52 \text{ K kg mol}^{-1}\right]$

Q5: 26 Feb (Shift 1) - Numerical

224 mL of $SO_{2(g)}$ at 298 K and 1 atm is passed through 100 mL of 0.1MNaOH solution. The non-volatile solute produced is dissolved in 36 g of water. The lowering of vapour pressure of solution (assuming the solution is dilute) $\left(P^*_{(H_2O)} = 24 \text{ mm of Hg}\right)$ is $x \times 10^{-2}$ mm of Hg, the value of x is (round off to nearest integer)

Q6: 26 Feb (Shift 2) - Numerical

When 12.2 g of benzoic acid is dissolved in 100 g of water, the freezing point of solution was found to be $-0.93^{\circ}C$ $\left(K_f(H_2O) = 1.86 \text{ K kg mol}^{-1}\right)$. The number (n) of benzoic acid molecules associated (assuming

100% association) is

Answer Key

Q1 (35) **Q2** (1) **Q3** (375) **Q4** (3)

Q5 (0) **Q6** (2)