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JEE

Prayas JEE 2026

Chemistry

Solutions

DPP: 4

Q1 Elevation in boiling point was $0.52^\circ C$ when 6 g of a compound X was dissolved in 100 g of water. Molecular weight of X is $\left(K_b = 0.52\,kkgmol^{-1}\right)$
(A) 120   (B) 60
(C) 600   (D) 180

Q2 If 0.15 g of a solute dissolved in 15 g of solvent is boiled at a temperature higher by $0.216^\circ C$ than that of the pure solvent. The molecular weight of the substance (molal elevation constant for the solvent is $2.16^0 C$ kg mol−1) is
(A) 1.01 g/mol
(B) 10 g/mol
(C) 10.1 g/mol
(D) 100 g/mol

Q3 If the elevation in boiling point of a solution of 10 g of solute (mol. wt. $= 100$ g) of 100 g water is ΔT_b, the ebullioscopic constant of water is
(A) 10
(B) $100\Delta T_b$
(C) ΔT_b
(D) $\frac{\Delta T_b}{10}$

Q4 For an aqueous solution, freezing point is $-0.186^\circ C$. Elevation of the boiling point of the same solution is $\left(k_f = 1.86\ K\ kg\ mol^{-1}\right.$ and $K_b = 0.52\ K\ kg\ mol^{-1}\right)$.
(A) $0.186^\circ C$
(B) $0.052^\circ C$
(C) $1.86^\circ C$
(D) $5.12^\circ C$

Q5 The vapour pressure lowering caused by the addition of 100 g of sucrose (molecular mass = 342) to 1000 g of water if the vapour pressure of pure water at 25ºC is 23.8 mmHg, is:

(A) 1.25 mmHg
(B) 0.125 mmHg
(C) 1.15 mmHg
(D) 0.012 mmHg

Q6 When 10 g of a non-volatile solute is dissolved in 100 g of benzene, it raises boiling point by $1^\circ C$ then molecular mass of the solute is (k_b for $C_6H_6 = 2.53\ K\ kg\ mol^{-1}$)
(A) 223 g/mol
(B) 233 g/mol
(C) 243 g/mol
(D) 253 g/mol

Q7 If for a sucrose solution elevation in boiling point is $0.1^\circ C$ then what will be boiling point of $NaCl$ solution for the same molal concentration?
(A) 0.1 (B) 0.2
(C) 0.16 (D) 0.26

Q8 At $100^\circ C$ the vapour pressure of a solution of 6.5 g of a solute in 100 g water is 732 mm. If $k_b = 0.52$, the boiling point of this solution will be
(A) $102^\circ C$
(B) $103^\circ C$
(C) $101^\circ C$
(D) $100^\circ C$

Q9 A solution containing 6 g of a solute dissolved in 250ml of water gave an osmotic pressure of 4.5 atm at $27^\circ C$. Calculate the boiling point of the solution. The molal boiling point elevation constant for water is $0.52\ K\ kg\ mol^{-1}$.
(A) $100.095^\circ C$
(B) $10.095^\circ C$
(C) $1.095^\circ C$
(D) $1000.095^\circ C$

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Q10 Which of the following substances will have the highest boiling point?

(A) Camphor

(B) Cyclohexane

(C) Benzene

(D) Water

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Answer Key

Q1	(B)		Q6	(D)
Q2	(D)		Q7	(B)
Q3	(C)		Q8	(C)
Q4	(B)		Q9	(A)
Q5	(B)		Q10	(D)

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