JEE

Prayas JEE 2026

Chemistry

Solutions

DPP: 2

Q1 What will be the mole fraction of ethanol in a sample of spirit containing 85% ethanol by mass?
(A) 0.69 (B) 0.82
(C) 0.85 (D) 0.60

Q2 A solution is prepared by adding 5 g of a substance x to 18 g of water. Calculate the mass percentage of the solute.
(A) 21.74% (B) 19%
(C) 25% (D) 40%

Q3 300 gm of 25% w/w solution of solute A is mixed with 400 gm of 40% (w/w) solution of another solute B. What is the w/w percentage of the new mixture?
(A) 33.57% (B) 35%
(C) 25% (D) 40%

Q4 The statement "the relative lowering of the vapour pressure is equal to the ratio of moles of the solute to the total number of the moles in the solution" refers to
(A) Hess's law (B) Dalton's law
(C) Raoult's law (D) Charles' law

Q5 The vapour pressure of water at $20^{\circ}\mathrm{C}$ is 17.54 mm. When 20 g of non-ionic substance is dissolved in 100 g of water, the vapour pressure is lowered by 0.30 mm. What is the molecular weight of the substance?
(A) 210.48 (B) 206.88
(C) 215.2 (D) 200.8

Q6 The mass of a non-volatile solute of molar mass $40\ \mathrm{g\ mol^{-1}}$ that should be dissolved in 114 g of Octane to lower its vapour pressure by 20% is
(A) 10 g
(B) 11.4 g
(C) 9.8 g
(D) 12.8 g

Q7 The vapour pressure of pure $CHCl_3$ and CH_2Cl_2 are 200 and 41.5 atm respectively. The weight of $CHCl_3$ and CH_2Cl_2 are 11.9 g and 17 g respectively in a solution. The vapour pressure of solution (in atm) will
(A) 80.5 (B) 79.5
(C) 94.3 (D) 105.5

Q8 The vapour pressure lowering caused by the addition of 342 g of sucrose (molar mass is 342 g mol^{-1}) to 522 g of water if the vapour pressure of pure water at 25°C is 23.8 mm of Hg is:
(A) 1.2 mm of Hg (B) 0.8 mm of Hg
(C) 1.15 mm of Hg (D) 0.012 mm of Hg

Q9 What is molarity of K^+ in aqueous solution that contains 17.4ppm of K_2SO_4 $(174\ \mathrm{g\ mol^{-1}})$?
(A) 2×10^{-2}M
(B) 2×10^{-3}M
(C) 4×10^{-4}M
(D) 2×10^{-4}M

Q10 A solution is prepared by dissolving 24.5 g of sodium hydroxide in distilled water to give 1 L solution. The molarity of NaOH in the solution is (Given, that molar mass of $NaOH = 40.0\mathrm{gmol^{-1}}$)
(A) 1.6326M
(B) 0.9800M
(C) 0.6125M
(D) 0.2450M

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Answer Key

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