



Solutions

Q.No.1: The vapour pressure of acetone at 20°C is 185 torr. When 1.2 g of a non – volatile substance was dissolved in 100 g of acetone at 20°C, its vapour pressure was 183 torr. The molar mass (g mol^{-1}) **JEE 2015**

- A. 32
- B. 64
- C. 128
- D. 488

Q.No.2: For 1 molal aqueous solution of the following compounds, which one will show the highest freezing point? **JEE 2018**

- A. $[\text{Co}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl} \cdot 2\text{H}_2\text{O}$
- B. $[\text{Co}(\text{H}_2\text{O})_3\text{Cl}_3] \cdot 3\text{H}_2\text{O}$
- C. $[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_3$
- D. $[\text{Co}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2 \cdot \text{H}_2\text{O}$

Q.No.3: A solution of sodium sulfate contains 92 g of Na^+ ions per kilogram of water. The molality of Na^+ ions in that solution in mol kg^{-1} is: **JEE 2019**

- A. 12
- B. 4
- C. 8
- D. 16

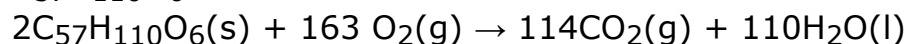
Q.No.4: Which one of the following statements regarding Henry's law is not correct? **JEE 2019**

- A. Higher the value of K_H at a given pressure, higher is the solubility of the gas in the liquids.
- B. Different gases have different K_H (Henry's law constant) values at the

same temperature.

- C. The partial pressure of the gas in vapour phase is proportional to the mole fraction of the gas in the solution.
- D. The value of K_H increases with increase of temperature and K_H is function of the nature of the gas

Q.No.5: For the following reaction, the mass of water produced from 445 g of $C_{57}H_{110}O_6$ is:



JEE 2019

- A. 490 g
- B. 445 g
- C. 495 g
- D. 890 g

Q.No.6: A solution containing 62 g ethylene glycol in 250 g water is cooled to $-10^\circ C$. If K_f for water is $1.86 K kg mol^{-1}$, the amount of water (in g) separated as ice is:

JEE 2019

- A. 48
- B. 32
- C. 64
- D. 16

Q.No.7: Liquids A and B form an ideal solution in the entire composition range. At 350 K, the vapour pressure of pure A and pure B are $7 \times 10^3 Pa$ and $12 \times 10^3 Pa$, respectively. The composition of the vapour in equilibrium with a solution containing 40 mole percent of A at this temperature is:

JEE 2019

- A. $x_A = 0.37$; $x_B = 0.63$
- B. $x_A = 0.28$; $x_B = 0.72$
- C. $x_A = 0.4$; $x_B = 0.6$
- D. $x_A = 0.76$; $x_B = 0.24$

Q.No.8: The amount of sugar ($C_{12}H_{22}O_{11}$) required to prepare 2 L of its 0.1 M aqueous solution is:

JEE 2019

- A. 136.8 g
- B. 17.1 g

C. 68.4 g

D. 34.2 g

Q.No.9: Elevation in the boiling point for 1 molal solution of glucose is 2 K. The depression in the freezing point for 2 molal solution of glucose in the same solvent is 2 K. The relation between K_b and K_f is : **JEE 2019**

A. $K_b = 1.5 K_f$

B. $K_b = K_f$

C. $K_b = 0.5 K_f$

D. $K_b = 2 K_f$

Q.No.10: The freezing point of a diluted milk sample is found to be -0.2°C , while it should have been -0.5°C for pure milk. How much water has been added to pure milk to make the diluted sample? **JEE 2019**

A. 1 cup of water to 2 cups of pure milk

B. 3 cups of water to 2 cups of pure milk

C. 1 cup of water to 3 cups of pure milk

D. 2 cups of water to 3 cups of pure milk