

1. How much oxygen is dissolved in 100ml water at 298K if partial pressure of oxygen is 0.5 atm and $K_H = 1.4 \times 10^{-3} \text{ M/atm}$?
 1. 22.4 mg
 2. 22.4 g
 3. 2.24 g
 4. 2.24 mg
2. The vapour pressure of pure benzene and toluene are 160 and 60 torr respectively. The mole fraction of toluene in vapour pressure in contact with an equimolar solution of benzene and toluene is -
 1. 0.50
 2. 0.6
 3. 0.27
 4. 0.73
3. Which one of the following is incorrect for an ideal solution?
 1. $\Delta H_{\text{mix}} = 0$
 2. $\Delta U_{\text{mix}} = 0$
 3. $\Delta P = P_{\text{obs.}} - P_{\text{calculated by Raoult's Law}} = 0$
 4. $\Delta G_{\text{mix}} = 0$
4. The Henry's law constant for the solubility of N_2 gas in water at 298 K is $1.0 \times 10^5 \text{ atm}$. The mole fraction of N_2 in air is 0.8. The number of moles of N_2 from air dissolved in 10 moles of water at 298 K and 5 atm pressure is-
 1. 4.0×10^{-4}
 2. 4.0×10^{-5}
 3. 5.0×10^{-4}
 4. 4.0×10^{-6}
5. A 500 g toothpaste sample has 0.4 g fluoride concentration. The fluoride concentration in terms of ppm will be
 1. 200
 2. 400
 3. 500
 4. 800
6. An aqueous solution of hydrochloric acid -
 1. Obeys Raoult's law
 2. Shows negative deviations from Raoult's law
 3. Shows positive deviations from Raoult's law
 4. Obeys Henry's law at all compositions
7. Total vapour pressure of mixture of 1 mol X ($P_X^a = 150 \text{ torr}$) and 2 mol Y ($P_Y^a = 300 \text{ torr}$) is 240 torr. In this case:-
 1. There is a negative deviation from Raoult's law
 2. There is a positive deviation from Raoult's law
 3. There is no deviation from Raoult's law
 4. Can not be decided

8. The azeotropic mixture of water and ethanol boils at 78.15°C . When this mixture is distilled, it is possible to obtain
1. pure H_2O
 2. pure $\text{C}_2\text{H}_5\text{OH}$
 3. pure H_2O as well as pure $\text{C}_2\text{H}_5\text{OH}$
 4. neither H_2O nor $\text{C}_2\text{H}_5\text{OH}$ in their pure state
9. Feeling of weakness and discomfort in breathing at high altitudes is based on-
1. Boyle's law
 2. Charles's law
 3. Henry's law
 4. Raoult's law
10. The maximum amount of a solid solute that can be dissolved in a specified amount of a given liquid solvent does not depend upon
1. Temperature
 2. Nature of solute
 3. Pressure
 4. Nature of solvent
11. 4 L of 0.02 M aqueous solution of NaCl was diluted by adding 1 L of water. The molarity of the resultant solution is
1. 0.004
 2. 0.008
 3. 0.012
 4. 0.016
12. The positive deviations from Raoult's law mean the vapour pressure is -
1. Higher than the expected one.
 2. Lower than the expected one.
 3. Equal to the expected.
 4. None of the above
13. If 22g of benzene is dissolved in 122g of CCl_4 , the mass percentage of CCl_4 and benzene respectively are:
1. 15.28 % , 84.72%
 2. 84.72 % , 15.28 %
 3. 8.72 % , 91.28%
 4. 91.28 % , 8.72 %
14. The type of intermolecular interaction present in
- (i) Methanol and acetone
 - (ii) Acetonitrile and acetone-
1. (i) Dipole-dipole interaction; (ii) Ion-dipole interaction
 2. (i) Ion-Dipole interaction; (ii) Ion-dipole interaction
 3. (i) Dipole-dipole interaction; (ii) Dipole-dipole interaction
 4. (i) Dipole-dipole interaction; (ii) Van der waal interaction
15. To make 2.5 kg of 0.25 m aqueous solution, the mass of urea required is:
1. 73 g
 2. 37 g
 3. 48 g
 4. 24 g

16.

The solubility of H_2S in water at STP is 0.195 m, the value of Henry's constant is:

1. 486 bar
2. 123 bar
3. 282 bar
4. 345 bar

19.

The density of 68% nitric acid by mass in an aqueous solution is 1.504 g mL^{-1} . The molarity of the acid solution would be -

1. 15.24 M
2. 16.23 M
3. 14.52 M
4. 13.45 M

17.

The solubility of a gas in a liquid decreases with an increase in temperature because-

1. Dissolution of a gas in a liquid is an endothermic process.
2. Dissolution of a gas in a liquid is an exothermic process.
3. Gases are highly compressible.
4. All of the above.

20.

A solution is obtained by mixing 300 g of 25% solution and 400 g 40% by mass. The mass percentage of solute in the resulting solution is -

1. 33.5 %
2. 36.5 %
3. 37.4 %
4. 32.5 %

18.

solution	Type of	Example
a. Solid in gas	i. Aerated water	
b. Gas in liquid	ii. Smoke	
c. Liquid in solid	iii. Solution of hydrogen in palladium	
d. Gas in solid	iv. Amalgams	

The correct match for the above table is -

1. a-i, b-iii, c-iv, d-ii
2. a-ii, b-i, c-iv, d-iii
3. a-iii, b-i, c-iv, d-ii
4. a-iv, b-i, c-ii, d-iii

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