

Solutions MCQ Chemistry Questions with Solutions

Q1. From the below options, choose the correct example for gaseous solutions.

- (a) Oxygen dissolved in water
- (b) Camphor in nitrogen gas
- (c) Carbon dioxide dissolved in water
- (d) Hydrogen in palladium

Answer: (b)

A gaseous solution is a solution in which the solvent is a gas.

Q2. Which among the following is an example of a solid solution?

- (a) Copper dissolved in gold
- (b) Ethanol dissolved in water
- (c) Glucose dissolved in water
- (d) Sodium chloride dissolved in water

Answer: (a)

Q3. In how many ways can the concentration of a solution be expressed?

- (a) 1
- (b) 3
- (c) 5
- (d) 8

Answer: (d)

The concentration of a solution can be expressed in 5 ways: Mass %, Volume %, Mole fraction, Parts per million, Mass by volume percentage, Molarity, Molality and Normality.

Q4. What is the mole fraction of ethylene glycol in a solution containing 20g by mass?

- (a) 0.022
- (b) 0.054
- (c) 0.068
- (d) 0.090

Answer: (c)

The mole fraction of ethylene glycol is calculated as shown below:

The molecular mass of ethylene glycol ($C_2H_6O_2$) = $24 + 6 + 32 = 62$ g/mol.

The mass of ethylene glycol in solution = 20g.

The mass of water = $100 - 20 = 80$ g.

Thus, number of moles of ethylene glycol = mass of ethylene glycol $\div$ molecular mass of ethylene glycol

Moles of ethylene glycol = $20 \div 62 = 0.322$ moles.

Similarly, the number of moles of water = $80 \div 18 = 4.444$ moles.

The mole fraction of ethylene glycol = $0.322 \div (0.322 + 4.444) = 0.068$

Q5. The solubility of a substance in a solvent depends on

- (a) Temperature
- (b) Pressure
- (c) Nature of solute and solvent
- (d) All of the above

Answer: (d)

Q6. Which of the following does not dissolve in benzene?

- (a) Naphthalene
- (b) Anthracene
- (c) $C_6H_{12}O_6$
- (d) All of the above

Answer: (c)

Glucose does not dissolve in benzene.

Q7. Choose the ideal solution from the following.

- (a) Carbon disulphide and acetone
- (b) Phenol and Aniline
- (c) Chloroform and Acetone
- (d) Ethyl iodide and ethyl bromide

Answer: (d)

Q8. How does the solubility of gases vary with pressure?

- (a) Increases with pressure
- (b) Decreases with pressure
- (c) First increases and then decreases
- (d) No effect

Answer: (a)

The solubility of gases in liquids increases with increase in pressure.

Q9. How does the solubility of gases in a liquid vary with increase in temperature?

- (a) Increases with temperature
- (b) Decreases with temperature
- (c) First increases and then decreases
- (d) No effect

Answer: (b)

Q10. Which law explained solubility of gases in a liquid?

- (a) Charles law
- (b) Henry's law
- (c) Raoult's law
- (d) Boyle's law

Answer: (b)

Q11. Choose the correct example for a non-ideal solution?

- (a) Benzene + Toluene
- (b) Hexane + Heptane
- (c) Chlorobenzene + Bromobenzene
- (d) Ethanol + Hexane

Answer: (d)

Q12. Which condition holds for the ideal solution?

- (a) Change in volume is zero
- (b) Change in volume is non-zero
- (c) Change in enthalpy is non-zero
- (d) None of the above

Answer: (a)

Q13. Which condition holds for a non-ideal solution?

- (a) Change in volume is zero
- (b) Change in volume is non-zero
- (c) Change in enthalpy is zero
- (d) None of the above

Answer: (b)

Q14. What does Henry's constant depend upon?

- (a) Nature of gas
- (b) Nature of solvent
- (c) Temperature
- (d) All of the above

Answer: (d)

Q15. How is Henry's constant dependent on temperature?

- (a) Directly proportional
- (b) Inversely proportional
- (c) Varies exponentially
- (d) None of the above

Answer: (a)

Practice Questions on Solutions

Q1. Dissolution of gas in a liquid is

- (a) Endothermic
- (b) Exothermic
- (c) No heat change
- (d) No change in temperature

Answer: (b)

Q2. Which gas dissolves the most in water?

- (a) Carbon dioxide
- (b) Nitrogen
- (c) Hydrogen
- (d) Ammonia

Answer: (d)

Q3. The pair of miscible liquids among the following is

- (a) Oil and water
- (b) Kerosene and water
- (c) Vegetable oil and corn syrup
- (d) Ethanol and water

Answer: (d)

Q4. The example of a colloidal solution is

- (a) Air
- (b) Milk
- (c) Alcohol
- (d) Urea

Answer: (b)

Q5. The example of a suspension is

- (a) Milk
- (b) Alcohol
- (c) Urea
- (d) Mixture of water and chalk

Answer: (d)