

**PERIODIC TEST-I**

**NAME:**  
**CLASS: XII**

**SUBJECT: CHEMISTRY**  
**M. MARKS: 20**

**General Instructions:**

Read the following instructions carefully.

- a) All questions are compulsory.
- b) Use of calculator is not allowed.

- 1) \_\_\_\_\_ obeys Raoult's law in all stages of concentration. [1]  
 a) Ideal Solution      b) non-ideal solution      c) Real Solution      d) None of the mentioned
- 2) A solution made up of numerous components in which each component's property is the weighted sum of its separate properties. The answer is [1]  
 a) Ideal Solution      b) non-ideal solution      c) Real Solution      d) None of the mentioned
- 3) What is an example of camphor in N<sub>2</sub> gas? [1]  
 a) Solid in gas solution      b) Gas in gas solution  
 c) Solid in liquid solution      d) Liquid in gas solution
- 4) What happens when a solute crystal is added to a supersaturated solution? [1]  
 a) It becomes a colloidal solution      b) The solute dissolves in the solution  
 c) The solution desaturated      d) The solute precipitates out of the solution
- 5) The value of Henry's Law constant is: [1]  
 a) larger for gases with higher solubility      b) larger for gases with lower solubility  
 c) constant for all gases      d) not related to the solubility of gases
- 6) Density of a 2.05 M solution of acetic acid in water is 1.02 g/mL. The molality of the solution is [1]  
 a) 3.28 mol kg<sup>-1</sup>      b) 2.28 mol kg<sup>-1</sup>      c) 0.44 mol kg<sup>-1</sup>      d) 1.14 mol kg<sup>-1</sup>
- 7) K<sub>H</sub> value for Ar(g), CO<sub>2</sub> (g), HCHO (g) and CH<sub>4</sub> (g) are 40.39, 1.67, 1.83×10<sup>-5</sup> and 0.413 respectively. [1]  
 Arrange these gases in the order of their increasing solubility.  
 a) HCHO < CH<sub>4</sub> < CO<sub>2</sub> < Ar      b) HCHO < CO<sub>2</sub> < CH<sub>4</sub> < Ar  
 c) Ar < CO<sub>2</sub> < CH<sub>4</sub> < HCHO      d) Ar < CH<sub>4</sub> < CO<sub>2</sub> < HCHO
- 8) Which of the following is dependent on temperature? [1]  
 a) Molality      b) Molarity      c) Mole Fraction      d) Mass percentage
- 9) Which law explained solubility of gasses in a liquid? [1]  
 a) Charles law      b) Henry's law      c) Raoult's law      d) Boyle's law
- 10) Dissolution of gas in a liquid is [1]  
 a) Endothermic      b) Exothermic      c) No heat change      d) No change in temperature

**Question No. 11 to 13 consist of two statements –**

**Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: [3]**

- a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
- b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
- c) If the Assertion is correct but Reason is incorrect.
- d) If both the Assertion and Reason are incorrect.

11) **Assertion:** Molarity of a solution in liquid state changes with temperature.

**Reason:** The volume of a solution changes with change in temperature.

12) **Assertion:** If a liquid solute more volatile than the solvent is added to the solvent, the vapour pressure of the solution may increase i.e.,  $p_s > p_o$ .

**Reason:** In the presence of a more volatile liquid solute, only the solute will form the vapours and solvent will not.

13) **Assertion:** Azeotropic mixtures are formed only by non-ideal solutions and they may have boiling points either greater than both the components or less than both the components.

**Reason:** The composition of the vapour phase is same as that of the liquid phase of an azeotropic mixture.

14) **Read the passage given below and answer the following questions:** [2]

The properties of the solutions which depend only on the number of solute particles but not on the nature of the solute are called colligative properties. Relative lowering in vapour pressure is also an example of colligative properties.

For an experiment, sugar solution is prepared for which lowering in vapour pressure was found to be 0.061 mm of Hg. (Vapour pressure of water at 20°C is 17.5 mm of Hg.)

The following questions are multiple choice questions. Choose the most appropriate answer:

i) Relative lowering of vapour pressure for the given solution is

- a) 0.00348                      b) 0.061                      c) 0.122                      d) 1.75

ii) The vapour pressure (mm of Hg) of solution will be

- a) 17.5                      b) 0.61                      c) 17.439                      d) 0.00348

15) What is meant by positive deviations from Raoult's law? Give an example. What is the sign of  $\Delta_{\text{mix}}H$  for positive deviation? [2]

16) a) Explain why aquatic species are more comfortable in cold water rather than in warm water. [1]

b) State Henry's law and mention two of its important applications. [2]

**OR**

Define Osmotic pressure. Explain Reverse osmosis with diagram. [3]