SEMESTER–ONE

CHEMISTRY

Class XI

Student Name: ..... **Date:** .....

Period–I : Topic 1

SOLUTION AND SOLUBILITY

Multiple Choice Questions

Select and write one most appropriate option out of the four options given for each of the questions 1 – 5.

1. Which among the following is not affected by temperature?

(a) Normality (b) Fermality

(c) Molarity (d) Molality

2. Which of the following solutions has highest osmotic pressure?

(a) 1 M NaCl (b) 1 M urea

(c) 1 M sucrose (d) 1 M glucose.

3. A 5.2 molal aqueous solution of methyl alcohol is supplied. What is the mole fraction of methyl alcohol in the solution?

(a) 11.0 (b) 0.190

(c) 0.086 (d) 0.050.

4. Which of the following is incorrect for ideal solution?

(a) $\Delta G_{mix} = 0$

(b) $\Delta H_{mix} = 0$

(c) $\Delta U_{mix} = 0$

(d) $\Delta p = p_{obs} - p_{\text{calculated by Raoult's Law}} = 0$

5. If molality of the dilute solutions is doubled, the value of molal depression constant (K_f) will be

(a) halved (b) tripled

(c) unchanged (d) doubled

WORKSHEET — 1

Fill in the Blanks

Fill in the blanks with a suitable word for each of the questions 1 – 5.

1. Molality of the solution is number of moles of the solute in each _____ kg of _____ .
2. If molarity of oxalic acid solution is M/2 then its normality will be _____ .
3. Concentrated solutions which can be diluted are known as _____ solutions.
4. The amount of solute in grams present per dm^3 of solution is known as _____ .
5. Amount of water to be added to 200 cm^3 of 1 M HCl to make it exactly 0.2 M HCl is _____ .

True or False

State whether the following statements are true or false for each of the questions 1–5.

1. A solution that contains relatively small amount of solute dissolved in given amount of solution, is known as dilute solution.
2. In a homogeneous mixture all components of solution exist in same state.
3. A solution that still can dissolved more solute into it for a given amount of solvent and temperature is known as saturated solution.
4. Molarity of a solution may be defined as the number of gram mole of the solute present per kilogram (1000 g) of the solvent.
5. A colloidal solution is homogeneous in nature.

Theoretical and Numerical Type Questions

Answer each of the questions 1 – 5.

1. $\Delta_{Sol}H$ of NH_4Cl is > 0, what is the effect of temperature on its solubility?

_____

_____

_____

_____

_____

_____

Teacher's Signature .....

2. Why lowering of vapour pressure is not a colligative property?

3. Discuss giving examples the terms: (i) mass fraction (ii) parts per million and (iii) mass percentage.

4. What is an ideal solution? What type of solutions are likely to behave as ideal solutions?

5. Boiling point of water at 750 mm Hg is 99.63°C. How much sucrose is to be added to 500 g of water such that it boils at 100°C? K_b for water is 0.52 K kg mol^{-1}.

Teacher's Signature .....