INDIAN SCHOOL SOHAR
UNIT TEST I (2022 – 2023)
CHEMISTRY (043)

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CLASS :	XII		**MAX. MARKS :**	**20**
DATE :	18.05.2022		**TIME :**	**45 MINUTES**

General Instructions:

1. There are **10** questions in this question paper.
2. Section – A consists of 5 Multiple Choice Questions
3. Section – B consists of 2 short answer questions carry 2 marks each.
4. Section – C consists of 2 short answer questions carry 3 marks each.
5. Section – D consists of 1 long answer question carry 5 marks.
6. Use of log table or calculator is not allowed.

SECTION A

1. The lowest freezing point of 0.1 M aqueous solution is of
   (a) K_2SO_4 (b) NaCl   (c) Urea   (d) Glucose

2. The molecular weight of sodium chloride determined by measuring the osmotic pressure of its aqueous solution is
   (a) Double the theoretical value   (c) half the theoretical value
   (b) Same as the theoretical value   (d) three times the theoretical value

3. **Assertion**   :   Molarity of solution in liquid state changes with temperature.
   Reason   :   The volume of solution changes with change in temperature.
   (a) Assertion and reason both are correct and reason is the correct explanation of assertion.
   (b) Assertion and reason both are correct and reason is not the correct explanation of assertion.
   (c) Assertion is true but reason is false
   (d) Assertion is false but reason is true.

4. The increasing order of boiling points of the following compounds is
   (a) Bromobenzene < 1-bromobenzene < 1-bromopropane < 1-bromoethane
   (b) Bromobenzene < 1-bromoethane < 1-bromopropane < 1-bromobutane
   (c) 1-Bromopropane < 1-bromobutane < 1-bromoethane < bromobenzene
   (d) 1-bromoethane < 1-bromopropane < 1-bromobutane < bromobenzene

5. Toluene reacts with a halogen in the presence of iron (III) chloride giving ortho and para halo compounds. The reaction is
   (a) Electrophilic elimination reaction   (c) Free radical addition reaction
   (b) Electrophilic substitution reaction   (d) Nucleophilic substitution reaction

SECTION B

6. Define azeotrope. What type of azeotrope is formed by negative deviation from Raoult's law? Give an example.

7. Draw the structures of the major monohalo product for each of the following reactions:

(i)

(ii)
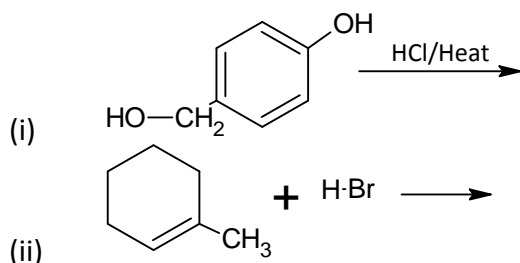
SECTION C

8. 3.9 g of benzoic acid dissolved in 49 g of benzene shows a depression in freezing point of 1.62 K. Calculate the van't Hoff factor and predict the nature of solute (associated or dissociated). (Given Molar mass of benzoic acid = 122 $gmol^{-1}$; K_f for benzene = 4.9 $Kkgmol^{-1}$)

9. How do you convert the following?
    (i)   Ethanol to ethyl iodide
    (ii)   Prop-1-ene to 1-Fluoropropane
    (iii)   Aniline to Fluorobenzene

SECTION D

10. (i)   Two liquid A and B on mixing produce a cold solution. Which type of deviation does this solution show?
    (ii)   Aquatic animals feel comfortable in cold water. Why?
    (iii)   What mass of NaCl must be dissolved in 65 g of water to lower the freezing point of water by 7.5^0C? The K_f of water is 1.86 $KKgmol^{-1}$. Assume van't Hoff factor for NaCl is 1.87. (Molar mass of NaCl = 58.5 $gmol^{-1}$)