REVISION TEST - 1

Class XII **CHEMISTRY** **Time : 1½ hrs.**
SET B **Marks : 35**

SECTION A

The following questions are multiple choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1. Osmotic pressure of a solution is 0.0821 atm at a temperature of 300 K. The concentration in moles/lit will be:

   (a) 0.33 (b) 0.666 (c) 0.0033 (d) 3

2. The value of Henry's Law constant is

   (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

3. Which of the following is a secondary cell?

   (a) Leclanche cell (b) Lead storage battery

   (c) Concentration cell (d) All of these

4. Fused NaCl electrolysis gives ……..on cathode

   (a) Chlroine (b) Sodium (c) Sodium amalgam (d) Hydrogen

Questions 5-6. In the following questions, two statements (Assertion) A and Reason (R) are given.

(a) If A and R both are correct and R is the correct explanation of A

(b) If A and R both are correct but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

5. Assertion: When a blood cell is placed in hypertonic solution, it shrinks.

   Reason: Blood is isotonic with 0.9% NaCl solution

6. Assertion: H+ ion cannot oxidize copper

   Reason: Reduction potential of Cu2+ / Cu is greater than H+ /H

SECTION B

This section contains 4 questions with internal choice in one questions. The following questions are very short answer type and carry 2 marks each.

7. The chemistry of corrosion of iron is essentially an electrochemical phenomenon. Explain the reactions occurring during the corrosion of iron in the atmosphere.

8. (a) State Kohlrausch law of independent migration of ions.

(b) Why does the conductivity of a solution decrease with dilution?

OR

(a) Describe how for weak and strong electrolytes, molar conductivity changes with concentration of solute.

(b) How is such change explained?

9. (i) Painful condition known as bends.

(ii) Feeling of weakness and discomfort in breathing at high altitude

10. A solution is prepared by dissolving 10 g of non-volatile solute in 200 g of water. It has a vapour pressure of 31.84 mm Hg at 308 K. Calculate the molar mass of the solute. (Vapour pressure of pure water at 308 K = 32 mm Hg)

SECTION C

This section contains 4 questions with internal choice in one question. The following questions are very short answer type and carry 3 marks each.

11. (a) Why is the mass determined by measuring a colligative property in case of some solutes is abnormal?

12. (a) (i) On mixing liquid X and liquid Y, volume of the resulting solution decreases. What type of deviation from Raoult law is shown by the resulting solution?

(ii)What change in temperature would you observe after mixing liquids X and Y?

(b)What happens when we place the blood cell in water (hypotonic solution)? Give reason.

OR

a) Calculate the freezing point of solution when 1.9 g of $MgCl_2$ (M = 95 g mol^{-1}) was dissolved in 50 g of water, assuming $MgCl_2$ undergoes complete ionization. (K_f for water = 1.86 K kg mol^{-1})

(b) (i) Out of 1 M glucose and 2 M glucose, which one has a higher boiling point and why?

(ii) What happens when the external pressure applied becomes more than the osmotic pressure of solution?

13. Explain the following:

(a) CO_2 is always present in natural water. Explain its effect (increases, stops or no effect) on rusting of iron.

(b) Rusting of iron is quicker in saline water than in ordinary water. Explain.

(c) Discuss electrical protection for preventing rusting of iron pipes in underground water.

14**.** (a) The cell in which the following reaction occurs :2 Fe^{3+}(aq) + 2I- (aq) $2Fe^{2+}$(aq)+I_2(s) has E_0cell = 0·236 V at 298 K.

Calculate the standard Gibbs energy of the cell reaction. (Given 1 F= 96, 500 C mol^{-1})

(b) How many electrons flow through a metallic wire if a current of 0·5 A is passed for 2 hours ? . (Given 1 F= 96, 500 C mol^{-1})

SECTION D

Read the passage and answer the questions that follow. 4 x 1 =4 marks

15. "Car battery is the most important type of secondary cell having a lead anode and a grid of Lead packed with PbO_2 as cathode. It is also called lead storage battery. It contains 40% solution of sulphuric acid (Density = 1.294 gm^{-1} L) as electrolyte. The battery holds 3.5 L of the acid. During the discharge of the battery, the density of H_2SO_4 falls to 1.139 gmL^{-1} (20% H_2SO_4 by mass)"

i. Write the reaction taking place at the cathode when the battery is in use.

ii. How much electricity in terms of Faraday is required to carry out the reduction of one mole of PbO_2?

iii. What is the molarity of sulphuric acid before discharge?

iv. Why is lead storage battery considered a secondary cell?

OR

Write the products of electrolysis when dilute sulphuric acid is electrolysed using platinum electrodes.

SECTION E

The following questions are long answer type and carry 5 marks each.

16. (i) Arrange the following in the increasing order of freezing point

0.1M $Al_2(SO_4)_3$, 0.1M KCl, 0.1M Glucose, 0.1M K_2SO_4

(ii) The molar mass of Sodium Chloride determined by elevation of boiling point method is found to be abnormal. Why?

(iii) What is the elevation of boiling point of a solution of 13.44g of $CuCl_2$ in 1kg of water? (Kb for water = 0.52Kkg/mol-1 , molar mass of $CuCl_2$ = 134.4g/mol)

(iv) Equimolal solutions of NaCl and $BaCl_2$ are prepared in water. Freezing pint of NaCl is found to be -2^0 C. What freezing point do you expect for $BaCl_2$ solution?

OR

(i) The mole fraction of Ethyl alcohol in its solution with Methyl alcohol is 0.80. The vapour pressure of pure Ethyl alcohol at this temperature is 40mm of Mercury. What is its vapour pressure in the solution if the solution is ideal?

(ii) Why do a solution of Phenol and Aniline exhibit negative deviation from ideal behaviour?

(iii) Write and example for maximum boiling azeotrope.

(iv) Why pure Ethyl alcohol cannot be obtained from rectified spirit even by fractional distillation?

(v) When two liquids A & B are mixed the volume of the resulting solution is found to be slightly greater than sum of the volumes of A & B. Identify the type of deviation exhibited by the solution.