

CBSE EXAMINATION PAPER-2022

CHEMISTRY

(Solved)

Time allowed : 3 hours

Maximum Marks : 11

General Instructions :

Read the following instructions carefully and follow them :

- i. This question paper contains **5 questions**. All questions are **compulsory**.
- ii. This question paper is divided into **3 sections**.
- iii. **Section A** – questions number **1 to 1** are very short answer Each question carries **2 marks**.
- iv. **Section B** – questions number **2 to 4** are short answer Each question carries **3 marks**.
- v. **Section C** – questions number **5 to 5** are case based questions
- vi. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.
- vii. Use of calculator is NOT allowed.

Section A

Question 1.

In a plot of λ_m against the square root of concentration ($C^{1/2}$) for strong and weak electrolyte, the value of limiting molar conductivity of a weak electrolyte cannot be obtained graphically. Suggest a way to obtain this value. Also state the related law, if any.

[2 Marks]

Section B

Question 2.

A compound 'A' (C_2H_4O) on oxidation gives 'B' ($C_2H_4O_2$). 'A' undergoes Iodoform reaction to give yellow precipitate and reacts with HCN to form the compound 'C'. 'C' on hydrolysis gives 2-hydroxypropanoic acid. Identify the compounds 'A', 'B' and 'C'. Write down equations for the reactions involved.

[3 Marks]

Question 3.

Observe the given figure and answer the following questions : (i) (a) Write the expression for adsorption of gases on solids in the form of an equation. (ii) What is the slope of the graph ? (iii) What does the intercept of the line represent ?

[3 Marks]

Question 4.

Answer the following questions on the basis of the figure given below : (i) Which element in 3d series has lowest enthalpy of atomisation ? (ii) Why do metals of the second and third series have greater enthalpies of atomisation ? (iii) Why are enthalpies of atomisation of transition metals quite high ?

[3 Marks]

Section C

Question 5. The rate law for a chemical reaction relates the reaction rate with the concentrations or partial pressures of the reactants. For a general reaction $aA + bB \rightarrow C$ with no intermediate steps in its reaction mechanism, meaning that it is an elementary reaction, the rate law is given by $r = k[A]^x[B]^y$, where $[A]$ and $[B]$ express the concentrations of A and B in moles per litre. Exponents x and y vary for each reaction and are determined experimentally. The value of k varies with conditions that affect reaction rate, such as temperature, pressure, surface area, etc. The sum of these exponents is known as overall reaction order. A zero order reaction has a constant rate that is independent of the concentration of the reactants. A first order reaction depends on the concentration of only one reactant. A reaction is said to be second order when the overall order is two. Once we have determined the order of the reaction, we can go back and plug in one set of our initial values and solve for k .
