

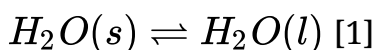
CBSE TEST PAPER 01
CLASS XI CHEMISTRY (Equilibrium)

General Instruction:

- All questions are compulsory.
 - Marks are given alongwith their questions.
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1. Define dynamic equilibrium. [1]
2. Name the three group into which chemical equilibrium can be classified. [3]
3. What is physical equilibrium? Give an example. [1]
4. What is meant by the statement 'Equilibrium is dynamic in nature'? [1]
5. On what factor does the boiling point of the liquid depends? [1]
6. State Henry's law. [1]
7. What happens to the boiling point of water at high altitude? [1]
8. On which factor does the concentration of solute in a saturated solution depends? [1]
9. Mention the general characteristics of equilibria involving physical processes. [2]
10. What conclusion is drawn from the following –

Solid \rightleftharpoons Liquid



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[ANSWERS]

Ans 1. When the reactants in a closed vessel at a particular temperature react to give products, the concentrations of the reactants keep on decreasing, while those of products keep on increasing for sometime after which there is no change in the concentrations of either the reactants or products. This stage of the system is the dynamic equilibrium.

Ans 2. Chemical equilibrium can be classified into three groups –

(i) The reaction that proceeds nearly to completion and only negligible concentrations of the reactants are left.

(ii) The reactions in which only small amounts of products are formed and most of the reactants remain unchanged at equilibrium stage.

(iii) The reactions in which the concentrations of the reactants and products are comparable, when the system is in equilibrium.

Ans 3. Physical equilibrium is an equilibrium between two different physical states of same substance e.g. $H_2O(s) \rightleftharpoons H_2O(l)$

Ans 4. At equilibrium, reaction does not stop rather it still continues, the equilibrium is dynamic in nature. It appears to stop because rate of forward reaction is equal to the rate of backward reaction.

Ans 5. Boiling point depends on the atmospheric pressure.

Ans 6. The mass of a gas dissolved in a given mass of a solvent at any temperature is proportional to the gas above the solvent.

Ans 7. Boiling point of water depends on the altitude of the place. At high altitude atmospheric pressure therefore is less boiling point decreases.

Ans 8. The concentration of solute in a saturated solution depends upon the temperature.
 $\text{Sugar (soln.)} \rightleftharpoons \text{sugar (solid)}$.

Ans 9. (a) For solid \rightleftharpoons liquid equilibrium, there is only one temperature at 1 atm at which two phases can co-exist. If there is no exchange of heat with the surroundings, the mass of the two phases remain constant.

(b) For liquid \rightleftharpoons vapors equilibrium, the vapors pressure is constant at a given temperature.

(c) For dissolution of solids in liquids, the solubility is constant at a given temperature.

(d) For dissolution of gases in liquids, the concentration of a gas in liquid is proportional to pressure of the gas over the liquid.

Ans 10. Melting point is fixed at constant pressure.

