ICSE Board
Class IX Chemistry
Paper - 6

Time: 2 hrs   **Total Marks: 80**

General Instructions:

1. Answers to this paper must be written on the paper provided separately.

*2. You will **not** be allowed to write during the first **15** minutes.*

   This time is to be spent in reading the question paper.

3. The time given at the head of the paper is the time allotted for writing the answers.

*4. Attempt **all** questions from **Section I** and **any four** questions from **Section II**.*

5. The intended marks of questions or parts of questions are given in brackets [ ].

SECTION I (40 Marks)
*Attempt **all** questions from this section.*

Question 1

(a) Deduce the molecular formula of the following conversions:
  i. Potassium dichromate
  ii. Lead chromate
  iii. Calcium silicate
  iv. Sodium hypochlorite
  v. Sodium plumbate [5]

(b) Explain the following
  i. Electrovalent compounds conduct electricity in molten or aqueous state.
  ii. Electrovalent compounds have high melting and boiling points, while covalent compounds have low melting and boiling points.
  iii. Electrovalent compounds dissolve in water, whereas covalent compounds do not.
  iv. Electrovalent compounds are usually hard crystals yet brittle.
  v. Polar covalent compounds conduct electricity. [5]

(c) Write the electronic configuration of element $_{17}T^{35}$.
  i. What is the group number of T?
  ii. What is the period number of T?
  iii. How many valence electrons are there in an atom of T?
  iv. What is the valency of T?
  v. Is it a metal or non-metal?

[5]

(d) Balance the following equations:
   i. $NH_3 + Cl_2 \rightarrow NH_4Cl + N_2$
   ii. $CaOCl_2 + NH_3 \rightarrow CaCl_2 + N_2 + H_2O$
   iii. $PbS + O_2 \rightarrow PbO + SO_2$
   iv. $Fe_2O_3 + CO \rightarrow Fe + CO_2$
   vi. $C + HNO_3 \rightarrow CO_2 + NO_2 + H_2O$ [5]

(e) Give reasons:
   a. Physical properties of isotopes are different.
   b. Argon does not react.
   c. Actual atomic mass is greater than mass number.
   d. $^{35}_{17}Cl$ and $^{37}_{17}Cl$ do not differ in their chemical reactions.

                    [5]

(f) Give the valency and the formula of the following radicals:
   i. Thiosulphate
   ii. Iodide
   iii. Chromate
   iv. Manganate
   v. Hypochlorite   [5]

(g) Convert the following temperature (in °C) to the Kelvin temperature.
   i. −100°C
   ii. 273°C
   iii. 20°C
   iv. 5°C
   v. 10°C   [5]

(h) Fill in the blanks:
   i. Gases have _____ density.
   ii. Nitric oxide is _____ toxic.
   iii. Full form of CFC is _____.
   iv. Ozone absorbs the harmful _____ rays coming from the Sun.
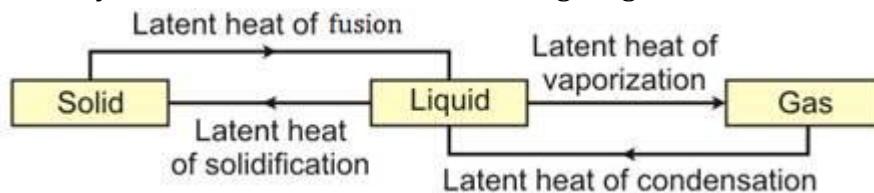   v. The 'K shell' can accommodate a maximum of _____ electrons.   [5]

SECTION II (40 Marks)

*Attempt any **four** questions from this section.*

Question 2

(a) Explain what you understand from the following diagram:

Latent heat of fusion · Solid · Liquid · Latent heat of vaporization · Gas · Latent heat of solidification · Latent heat of condensation

[5]

(b) Explain the permutit method for softening hard water.   [3]

(c) According to the activity series, which of the following can successfully displace hydrogen?

K/Na/Pb/Ag/Pt/Fe/Al   [2]

Question 3

(a) Explain the Bohr's model of an atom. What is the maximum number of electrons which can be accommodated in

  i.   K-shell
  ii. L-shell
  iii. M-shell
  iv. N-shell   [5]

(b) How are the elements with variable valency named? Explain with an example.

[2]

(c) Give two differences between a deliquescent substance and a hygroscopic substance.

[3]

Question 4

(a) Write a brief note on the discovery of cathode rays. Draw a neat labelled diagram of a cathode ray tube.   [5]

(b) Under what conditions can hydrogen be made to combine with

  i.   Nitrogen
  ii. Chlorine
  iii. Sulphur
  iv. Oxygen

Name the products in each case and write the equation for each reaction.

[5]

Question 5

(a)
  i. Define group and period.
  ii. Name the elements present in Group 1 sequentially.
  iii. Name the first and last element present in Group 17.
  iv. Name the first and last element of Period 2.
  v. In the periodic table, the vertical lines are called groups and the horizontal lines are called periods. [5]

(b) Explain the manufacture of hydrogen gas by electrolysis of water. [5]

Question 6

(a) What are the merits of Mendeleev's periodic table? [5]

(b) Give reasons.
  i. An atom is electrically neutral.
  ii. Mass of an atom is concentrated inside the nucleus of an atom.
  iii. Atom as a whole is an empty space.
  iv. Hydrogen was previously used in meteorological balloons.
  v. Hydrogen is no longer used in meteorological balloons. [5]

Question 7

(a) Moist nitrogen at a pressure of 700 mmHg and a temperature of 27°C is found to occupy a volume of 100 cm^3. Find the volume of dry nitrogen gas at STP (Aqueous tension at 27°C is 15 mmHg). [3]

(b) At a constant temperature, a gas at a pressure of 750 mm of mercury occupies a volume of 100cm^3. If the volume is decreased by 40%, find the new pressure. [2]

(c) State the law of conservation of mass. Describe its experimental verification. [5]