ICSE Board Class IX Chemistry Paper - 8

Time: 2 hrs

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) Draw the orbit structure and electron dot diagrams of NaCl, MgCl₂ and CaO. [5]

- (b) State whether the underlined substance is getting oxidised or reduced.
 - i. $\underline{Cu} + 2H_2SO_4 \rightarrow CuSO_4 + 2H_2O + SO_2$
 - ii. $\underline{2Mg} + CO_2 \rightarrow 2MgO + C$
- iii. <u>Fe₂O₃</u> + 3CO \rightarrow 2Fe + 3CO₂
- iv. $\underline{3CuO} + 2NH_3 \rightarrow 3Cu + N_2 + 3H_2O$
- v. $\underline{2FeCl_2} + Cl_2 \rightarrow 2FeCl_3$

(c) An element 'M' has three electrons more than the noble gas. Give the formula of its

- i. Chloride
- ii. Sulphate
- iii. Hydroxide
- iv. Phosphate
- v. Oxide

(d) Give the valency and the formula of the following radicals:

- i. Silicate
- ii. Hydroxide
- iii. Acetate
- iv. Bisulphite
- v. Bisulphate

[5]

[5]

[5]

(e) Fill in the blanks.

- i. Hydrogen is _____ soluble in water.
- ii. Hydrogen gas when passed through molten sulphur reacts to give _____ gas.
- iii. Atomic number of magnesium is 12. Thus, the electronic distribution of Mg atom is
- iv. According to Charles' law, volume is _____ proportional to temperature at constant pressure.
- v. Ethane molecule has ____ double bond and ____ single bond.

[5]

(f) Explain exothermic and endothermic reactions with suitable examples. [5]

(g) Name the gas evolved in the following reactions:

- i. Steam is passed over red hot iron.
- ii. Hydrogen is passed through boiling sulphur.
- iii. Sodium nitrate is heated.
- iv. Zinc carbonate is heated.
- v. Red lead is heated.

[5]

| (h) | Match | the | fol | lowing: |
|-----|-------|-----|-----|---------|
|-----|-------|-----|-----|---------|

| Column I | Column II | |
|------------------|---------------------|--|
| 1. Carbonic acid | (a) 2, 8, 8 | |
| 2. Argon | (b) Haber's process | |
| 3. Ammonia | (c) Air conditioner | |
| 4. Stratosphere | (d) Carbon dioxide | |
| 5. CFC | (e) Oxygen | |

[5]

Section II [40 Marks]

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

Question 2

(a) Define:

i. Photochemical reaction ii. Electrochemical reaction

Give one example in each case.

(b) When 8.4 g of potassium bicarbonate is added to a dilute solution of hydrochloric acid weighed as 20 g, it is observed that 4.4 g of CO₂ is released into the atmosphere. The residue left behind is 24 g. Show that these observations are in accordance with law of conservation of mass. [3]

[2]

[3]

- (c) Give an example of each of the following chemical changes.
 - i. A reaction involving
 - (a) Change of state
 - (b) Formation of precipitate
 - ii. An exothermic and endothermic reaction involving carbon as one of the reactants.
- iii. A reaction where colour change is noticed.
- (d) What is decomposition? Support your answer by an example. [2]

Question 3

(a) State and explain Boyle's law with the help of graphical verification. [5]

(b) Name the following:

- i. Two metallic oxides decompose on heating.
- ii. An oxidising agent which does not contain oxygen.
- iii. A gas acting as both oxidising as well as reducing agent.
- iv. Two metals which do not react with water.
- v. A metallic carbonate which on heating forms its respective metal. [5]

Question 4

(a) Write the chemical formula of the sulphates of aluminium, ammonium and zinc. [3]

(b) Why does the salt content in cooked vegetable remain the same, irrespective of whether the cooked food is hot or cold? [2]

(c) Name the following salts:

- i. A decahydrated crystalline salt.
- ii. Anhydrous crystalline salt of potassium which is purple in colour.
- iii. A hydrated crystalline salt which is green in colour.
- iv. A pentahydrated crystalline salt which is blue in colour.
- v. A salt which is commonly called sal ammoniac.

[5]

Question 5

(a) The table given below shows the mass number and atomic number of five elements A, B, C, D and E.

| Element | Mass number | Atomic number |
|---------|-------------|---------------|
| А | 35 | 17 |
| В | 23 | 11 |
| С | 12 | 6 |
| D | 16 | 8 |
| Е | 40 | 18 |

- i. To which group and period does element A belong?
- ii. Choose from A, B, C, D and E, metal, non-metal and inert gas.
- iii. Give the electronic configuration of elements A, B, C, D and E. [5]

(b) Describe Bohr's atomic model of an atom.

[5]

Question 6

(a) Write the electronic configuration, number of valence electrons and classify the following as metals, non-metals and inert gases.

| i. | $^{24}_{12}P$ | |
|------|---------------|-----|
| ii. | $^{39}_{19}Q$ | |
| iii. | $^{14}_{7}R$ | |
| iv. | $^{40}_{18}S$ | |
| v. | $^{16}_{8}T$ | [5] |
| | | |

(b) How are chlorofluorocarbons decomposed?

[5]

Question 7

- (a) The volume occupied by a certain gas was found to be 5.6 dm³ at 2 atmospheric pressure. If the pressure is increased by 20%, find the new volume of the gas. [3]
- (b) 100 cm³ of a gas at 27°C is cooled to 20°C at constant pressure. Calculate the volume of gas at 20°C.
 [2]
- (c) Write the main causes of acid rain. [5]