# ICSE Board Class IX Chemistry Sample Paper - 5

#### 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) Fill in the blanks:

- i. Dalton used symbol \_\_\_\_\_ for oxygen and symbol \_\_\_\_\_ for hydrogen.
- ii. Symbol represents \_\_\_\_\_ atom(s) of an element.
- iii. Symbolic expression for a molecule is called \_\_\_\_\_.
- iv. Sodium chloride has two radicals. Sodium is a \_\_\_\_\_ radical, while chloride is \_\_\_\_\_ radical.
- v. Valency of carbon in  $CH_4$  is \_\_\_\_\_, in  $C_2H_6$  is \_\_\_\_\_, in  $C_2H_4$  is \_\_\_\_ and in  $C_2H_2$  is \_\_\_\_.

### **(b)** State the type of reaction.

- i. NaOH + HCl  $\rightarrow$  NaCl + H<sub>2</sub>O
- ii.  $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + 2HCl$
- iii. 2Fe +  $3Cl_2 \rightarrow 2FeCl_3$
- iv.  $2PbO_2 \xrightarrow{\Delta} 2PbO + O_2$
- v.  $PbCl_5 \xrightarrow{heat then cool} PCl_3 + Cl_2$

[5]

(c)	Write the	formula a	and balance	the follow	ing chemica	l equations:
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- i. Manganese (IV) oxide + Concentrated hydrochloric acid  $\rightarrow$  Manganese (II) chloride + Water + Chlorine
- ii. Potassium dichromate + Concentrated hydrochloric acid  $\rightarrow$  Potassium chloride + Chromium chloride + Water + Chlorine
- iii. Sulphur dioxide + Oxygen  $\rightarrow$  Sulphur trioxide
- iv. Zinc + Water  $\rightarrow$  Zinc oxide + Hydrogen
- v. Aluminium + Dilute hydrochloric acid  $\rightarrow$  Aluminium chloride + Hydrogen [5]

[5]

[5]

[5]

- (d) Identify the cationic (basic radical) and anionic (acidic radical) parts in the following compounds and then write their chemical formulae.
  - i. Nickel sulphate
  - ii. Sodium silicate
  - iii. Ferrous sulphate
  - iv. Calcium fluoride
  - v. Sodium nitrate
- (e) State the valency and formula of the following ions:
  - i. Ammonium ion
  - ii. Cupric ion
  - iii. Ferric ion
  - iv. Plumbous ion
  - v. Nitrate ion

(f) Name the following:

- i. Gas liberated when ammonium nitrate is heated.
- ii. Two stable metallic hydroxides.
- iii. Two metals which do not react with oxygen.
- iv. Two metals which directly combine with sulphur on heating.
- v. Two metals which directly combine with nitrogen on heating. [5]

### (g) Compare:

- i. Sodium atom and sodium ion
- ii. Chlorine atom and chloride ion, with respect to
  - a) Atomic structure
  - b) Electrical state
  - c) Chemical action

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(h) Elements of the periodic table with atomic numbers from 3 to 18 are shown in the table below. Some elements are shown by letters even though the letters are not the usual symbols of the elements.

3	4	5	6	7	8	9	10
А	В	С	D	Е	F	G	Н
11	12	13	14	15	16	17	18
Ι	J	К	L	М	N	0	Р

Which of these is

- i. A noble gas
- ii. A halogen
- iii. An alkali metal
- iv. An element with valency 4

#### **SECTION II (40 Marks)**

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

[2]

[3]

### **Question 2**

(a) Correct the following statements:

- i. Hydrogen is used as a fuel for rocket propulsion.
- ii. All metals react with acids to give hydrogen.
- iii. Metals adsorb hydrogen.
- iv. The reaction between hydrogen and oxygen is exothermic.
- v. Conc. H<sub>2</sub>SO<sub>4</sub> reacts with zinc to liberate hydrogen.
- **(b)** How will you incorporate the following information into an equation?
  - i. Presence of catalyst
  - ii. Temperature and pressure conditions
  - iii. Evolution of a gas
  - iv. Formation of precipitate
  - v. Evolution of heat
  - vi. Physical state of the reactants and products

#### (c) Give reason.

- i. An atom is electrically neutral.
- ii. The mass of an atom is concentrated in the nucleus of an atom.
- iii. The Rutherford model of an atom could not provide stability to the nucleus. [5]

## **Question 3**

(a) Two neutral gases 'A' and 'B' undergo a synthesis reaction to form a gas 'C'.

- i. Identify 'A', 'B' and 'C'.
- ii. Name the process by which gas 'C' is manufactured. Give the balanced chemical equation along with the conditions.
- iii. What do you observe when gas 'C' comes in contact with1.Moist red litmus paper; 2. Concentrated hydrochloric acid [5]

(b) What do you understand by the combining capacity of atoms? Explain with examples.

(c) What is meant by (i) electronic configuration, (ii) atomic number and atomic mass number? [2]

### **Question 4**

(a) How do fish and aquatic animals survive when a pond is covered with thick ice?

[2]

[3]

- (b) Classify solutions on the basis of solubility. [3]
- (c) Name two elements whose properties were correctly predicted by Mendeleev. Mention their present-day name.
- (d) Explain endothermic and exothermic reactions with the help of an example. [3]

### **Question 5**

(a)

- i. Define group and period.
- ii. How many elements are present in the first, second and third periods?
- iii. Name all the elements present in Groups 1 and 17. [5]
- (b) What is the significance of the word 'latent' in latent heat? Define the two types of latent heat.
  [5]

# **Question 6**

(a)

- i. Name the process in which water gas is used for the manufacture of hydrogen.
- ii. Give the balanced chemical equation for the large-scale preparation of hydrogen from water gas.
- iii. How are carbon dioxide and carbon monoxide removed from hydrogen produced?

[5]

# (b)

- i. What is a redox reaction? Explain with the help of an example.
- ii. In the equations given below, state whether the substance underlined is oxidised or reduced?
  - 1.  $\underline{S} + O_2 \rightarrow SO_2$
  - 2.  $\underline{C} + H_2O \rightarrow CO + H_2$
  - 3.  $H_2S + \underline{Cl_2} \rightarrow 2HCl + S$
  - 4. <u>Pb0</u> + C  $\rightarrow$  Pb + CO
  - 5. <u>Fe<sub>2</sub>O<sub>3</sub></u> + 3CO  $\rightarrow$  2Fe + 3CO<sub>2</sub>

[5]

# **Question 7**

- (a) 20 dm<sup>3</sup> of oxygen is contained in a vessel at a pressure of 200 atmosphere. Another empty vessel of similar capacity is connected to it. Calculate the common pressure of gas in both vessels.
- (b) A gas occupies 200 cm<sup>3</sup> at a temperature of 27°C and 720 mm of Hg. Find its volume at 3°C and 740 mm of Hg. [5]
- (c) Explain the terms:

i.Solution

ii. Solute

iii. Solvent

[3]