Grade- IX | CHEMISTRY

Time: 2 Hours | ASSESSMENT- I | M.M. 80

Answers to this Paper must be written on the paper provided separately. You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper. The time given at the head of this Paper is the time allowed for writing the answers.

Section A is compulsory. Attempt any five questions from Section B. The intended marks for questions or parts of questions are given in brackets.

SECTION A (40 Marks)

(Attempt **all** questions from this section)

I. Choose the correct answers from the given options: [15]

1. The molecular formula of ammonium phosphate is:
   (a) $(NH_4)_3PO_4$ (b) $[(NH_4)_2PO_4]$
   (c) NH_4PO_4 (d) NH_3PO_4
2. The valency of nitrogen in nitrogen dioxide (NO_2) is
   (a) one (b) two
   (c) three (d) four
3. In water, the hydrogen-to-oxygen mass ratio is:
   (a) 1:8 (b) 1:16
   (c) 1:32 (d) 1:64
4. The reaction of neutralisation is a :
   (a) displacement reaction (b) decomposition reaction
   (c) combination reaction (d) double decomposition reaction
5. The crystalline substance that does not contain water of crystallisation is:
   (a) potash alum (b) epsom salt
   (c) plaster of paris (d) potassium permaganate
6. The number of valence electron in O^{2-} is:
   (a) 6 (b) 8
   (c)10 (d) 4
7. Ionic compounds are generally :
   (a) liquids (b) solids
   (c) gases (d) liquid of very low boiling points
8. The correct atomic symbols for carbon, calcium, copper, and cadmium respectively are :
   (a) Ca, C, Cu, Cd (b) Ca, C, CO, Cd
   (c) C, Ca, Cu, Cd (d) Ca, Cl, Co, Cd
9. Heating of zinc nitrate is a _____ reaction :
   (a) displacement (b) combination
   (c) decomposition (d) redox
10. The characteristics of an electrovalent compound is that:
    (a) they are formed by sharing of electrons.
    (b) they are formed between metals and non-metals.
    (c) they are formed between two non-metals.
    (d) they often exist as a liquid.
11. Rutherford's alpha-particle scattering experiment discovered
    (a) electron (b) proton
    (c) atomic nucleus (d) neutron
12. Water acts as a universal solvent because :
    (a) it is an organic compound (b) it is polar and has a high dielectric constant

(c) it is liquid at room temperature (d) it boils at 100°C

13. With rise in temperature, the solubility of sodium chloride will :
    (a) increase rapidly (b) decrease
    (c) remains same (d) increase slightly
14. Which of the following is not a non-polar molecule?
    (a) chlorine (b) methane
    (c) hydrogen chloride (d) carbon tetra chloride
15. Which one of these is a chemical change ?
    (a) water change to steam (b) dissolution of sugar in water
    (c) combustion of LPG (d) liquefying ammonia

II. Fill in the blanks: [5]

1. Sodium chloride has two radicals. Sodium is a _____ radical while chloride is a _____ radical.
2. In the type of reaction called _____, two compounds exchange their positive and negative radicals.
3. _____ is a gas having a triple bond.
4. The sub-atomic particle with charge -1 is _____.

III. Name or state the following: - [5]

1. Bond formed by transfer of electron
2. A liquid drying agent
3. The formula of baking soda
4. The substance which increase or decrease the rate of the reaction
5. Elements having same mass number but different atomic number

IV. Match the following: - [5]

1. Hygroscopic substance	a) nitric acid
2. Element with atomic number 9	b) glauber's salt
3. Efflorescent substance	c) metal carbonate
4. HNO_3	d) Silica gel
5. $CaCO_3$	e) fluorine

V. Balance the following equations: [5]

1. $PbO + HNO_3 \rightarrow Pb(NO_3)_2 + H_2O$
2. $NH_3 + Cl_2 \rightarrow N_2 + HCl$
3. $FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$
4. $Zn(NO_3)_2 \rightarrow ZnO + NO_2 + O_2$
5. $Al + H_2O \rightarrow Al_2O_3 + H_2$

VI. Give a reason for each of the following: [5]

1. Colourless concentrated sulphuric acid in a test tube changes to blue on adding a small piece of copper to it.
2. If distilled water is kept in a sealed bottle for a long time, it leaves etchings on the surface of the glass.
3. Water is an excellent liquid to use in cooling system.
4. Physical properties of isotopes are different.
5. Carbon-12 and Carbon-14 both shows similar chemical properties.

SECTION B (40 Marks)

(Attempt any **four** questions from this sections)

VII. 1. What do you observe in the following cases? [2]

i. Hydrogen peroxide is exposed to sunlight.

ii. Water is added to quick lime.

2. Give an example of- [2]

i. Two gases combine to form white solid.

ii. A reaction where colour changes is noticed.

3. State three characteristics of chemical reaction. Give at least one example in each case. [3]

4. Metal X was placed in lead nitrate solution. A thin layer of lead metal deposits on metal X. Which is more reactive, metal X or lead? State the type of reaction and give an example of this type. [3]

VIII. 1. Calculate the relative molecular mass of CH_3COONa [2]

[**At. Mass**: C = 12, H = 1, Na = 23, O = 16]

2. What is the valency of- [2]

i. Carbon in CH_4

ii. Phosphorous in PH_3

3. Explain the term valency and variable valency. [3]

4. Write the chemical formulae of nitrates of aluminium, zinc, calcium (II) [3]

IX. 1. Define : (i) cation (ii) covalent bond [2]

2. Explain the rule according to which electrons are filled in various energy levels. [2]

3. Explain fractional atomic mass. What is the fractional mass of chlorine ? [3]

4. Compare chlorine atom and chlorine ion, with respect to atomic structure and electrical state. [3]

X. 1. Define henry's law. [2]

2. How do fishes and aquatic animals survive in winters when the pond gets covered with thick ice. [2]

3. Name three methods by which hydrous substances can be made anhydrous. [3]

4. Explain with equation, what is noticed when permanent hard water is treated with ~~slaked lime and~~ washing soda. [3]

XI. 1. What are synthesis reactions. Give one example. [2]

2. Write electronic configuration of sulphur and potassium. [2]

3. What are your observations and conclusion when tap water is boiled and evaporated in watch glass. [3]

4. Calculate the percentage of phosphorus in Calcium phosphate $Ca_3(PO_4)_2$ [3]

XII. 1. What is an alpha particle? [2]

2. Define effervescence. [2]

3. Name and state the fundamental law that every equation must fulfil. [3]

4. Draw the orbital structure for each of the following compounds: [3]

(i) Methane [H = 1, C = 6]

(ii) Magnesium chloride [Mg = 12, Cl = 17]