

Std. IX

Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time.

Answer any four questions from 1 to 5. Each carries 1 score. (4 × 1 = 4)

1. Which element among the following has the highest electronegativity? (1)
(Hydrogen, Oxygen, Fluorine, Nitrogen)
2. Identify the isotope which is used to calculate the age of fossils and prehistoric objects (1)
(Deuterium, Carbon -14, Carbon -13, Iodine - 131)
3. Which is the fundamental particle of an atom that can be displaced when atoms rub against each other or when they undergo a chemical reaction? (1)
4. 4g Hydrogen reacts with 32g of oxygen to form 36g water. Which is the law related to this? (1)
5. Electronic configuration of magnesium is 2, 8, 2. What is the valency of magnesium? (1)

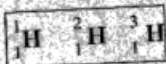
Answer any four questions from 6 to 10. Each carries 2 scores. (4 × 2 = 8)

6. Certain statements regarding Dalton's atomic theory are given. Find out the wrong statements and correct them. (2)
 - a) The smallest particle that can take part in chemical reaction is molecule.
 - b) Matter is made up of minute particles called atoms.
 - c) Atoms of the same elements are not identical in properties, such as size and mass.
 - d) Compounds are formed when atoms of two or more elements combine in a fixed simple ratio.
7. Some elements and their electronic configuration are given in the table (Hint: Symbols are not real)

| Element | Electronic configuration |
|---------|--------------------------|
| A | 2, 8, 1 |
| B | 2, 8 |
| C | 2, 8, 7 |

- a) Among these elements, which has the highest stability? Give reason. (2)
8. The chemical equation of a reaction is given below
$$\text{Zn} + x \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$$
 - a) Find the value of 'x' and then balance the chemical equation. (1)
 - b) Which are the reactants of this reaction? (1)

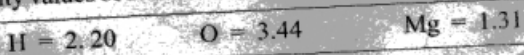
9. The isotopes of Hydrogen are given in the box.



- a) Write the name of the isotope ${}^3_1\text{H}$ (1)
 b) Identify the particle whose number is different in these isotopes. (1)
10. From the following statements, write those applicable to ionic compounds. (2)
- a) Usually do not dissolve in water.
 b) Conduct electricity in the molten state and aqueous solution.
 c) Generally not a conductor of electricity.
 d) Exists in the solid state.
- Answer any four questions from 11 to 15. Each carries 3 scores. (4 × 3 = 12)** (3)
11. Match suitably.

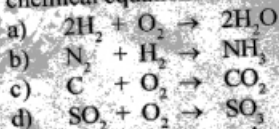
| Name of scientist | Name of particles | Charge of particles |
|-------------------|-------------------|---------------------|
| James Chadwick | Proton | Negative charge |
| J. J Thomson | Neutron | Positive charge |
| Rutherford | Electron | Chargeless |

12. Electronic configuration of Nitrogen is 2, 5.
 a) How many electrons are required by nitrogen to attain octet electronic configuration? (1)
 b) Draw the electron dot diagram of the formation of nitrogen (N_2) molecule. (2)
13. Atomic numbers of the elements X and Y are 13 and 16 respectively. (1)
- a) Write the electronic configuration of X and Y (1)
 b) Write the valency of X and Y (1)
 c) Write the molecular formula of the compound formed by the combination of X and Y. (1)
14. Electronegativity values of some elements are given.



On the basis of electronegativity values, identify the type of chemical bond in H_2O and MgO . Give reasons. (3)

15. Certain chemical equations are given below. From these find out the unbalanced chemical equations and balance them. (3)



- Answer any four questions from 16 to 20. Each carries 4 scores. (4 × 4 = 16)**
16. The third shell (M shell) of an element X contains 7 electrons. Its mass number is 35. (1)
- a) Write the electronic configuration of the element. (1)
 b) What is the atomic number of the element? (1)
 c) Write the number of neutrons in this element. (1)
 d) Write the symbol of the ion of this element. (1)

17. Electron dot diagram of the formation of sodium oxide is given below.



(Hint: Atomic number Na = 11 and O = 8)

- Which atom donates electron in this reaction? (1)
 - Write the electronic configuration of oxide ion (O^{2-}). (1)
 - Write the name of cation? (1)
 - Which type of chemical bonding is present in sodium oxide? (1)
18. The symbol of Argon atom is ${}^{40}_{18}\text{Ar}$
- How many electrons are there in an Argon atom? (1)
 - Draw the Bohr model of this atom? (2)
 - Which shell of Argon atom has the highest energy? (1)
19. Molecular formula of Carbon tetrachloride is CCl_4
[Hint: Electronegativity C = 2.55 and Cl = 3.16 ; Atomic number C = 6 and Cl = 17]
- How many electrons are present in the outermost shell of carbon. (1)
 - Which type of chemical bonding is present in CCl_4 ? (1)
 - Draw the electron dot diagram of the formation of CCl_4 . (2)
20. Certain findings and ideas related to atom model are given below. From the box identify the name of scientists related to these.

| |
|----------------------------------------------------------------------------------|
| John Dalton, Michael Faraday, JJ Thomson Rutherford, Niels Bohr, Humphry Davy |
|----------------------------------------------------------------------------------|

- Some substances can be separated into their components by the process of electrolysis. (1)
- Identified the presence of two types of electric charges in substances. (1)
- The whole positive charge of an atom is concentrated in the nucleus. (1)
- As long as an electron revolves in a particular orbit, its energy remains constant. (1)