ICSE CLASS 10 EXAMINATION

PRACTICE QUESTION PAPER

CHEMISTRY (SCIENCE PAPER – 2)

Chapter 1: Periodic Table, Periodic Properties and Variations of Properties

Maximum Marks: 40 ***Time allowed: One hour***

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first **10** minutes. This time is to be spent in reading the question paper.*
3. ***The time given at the head of this Paper is the time allowed for writing the answers.***
4. ***Section A** is compulsory. Attempt **any two** questions from **Section B**.*
5. *The intended marks for questions or parts of questions are given in brackets [ ].*

SECTION A (20 Marks)

*(Attempt **all** questions from this Section.)*

Question 1

Choose the correct answers to the questions from the given options. [8]
(Do not copy the question, write the correct answers only.)

(i) An element X has the electronic configuration 2, 8, 3. Which of the following correctly gives its group number, period number and nature?

(a) Group 3, Period 3, metal

(b) Group 13, Period 3, metal

(c) Group 13, Period 2, metalloid

(d) Group 3, Period 13, non-metal

(ii) Which one of the following sets of elements is arranged in the correct **decreasing** order of atomic size?

(a) Na > Mg > Al > Si

(b) F > O > N > C

(c) Cl > S > P > Si

(d) Li > Na > K > Rb

(iii) The atomic numbers of some elements are given below. Which pair of elements will show similar chemical properties?

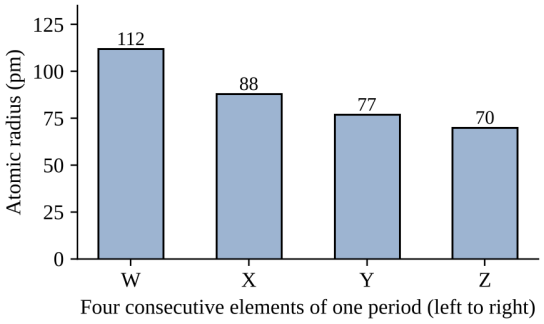
(a) 6 and 8

(b) 12 and 13

(c) 9 and 17

(d) 10 and 11

(iv) The bar graph shows the atomic radii of four consecutive elements W, X, Y and Z of the same period, arranged from left to right in the periodic table.



Which of these elements has the **highest** electronegativity?

(a) W

(b) X

(c) Y

(d) Z

(v) Which one of the following elements has the highest ionisation energy?

(a) Na

(b) Cl

(c) K

(d) Mg

(vi) **Assertion (A):** The atomic size of the elements decreases from left to right across a period.
Reason (R): The number of shells in the atoms increases across a period.

(a) (A) is true but (R) is false.

(b) (A) is false but (R) is true.

(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(vii) The electronic configuration of an element T is 2, 8, 8, 2. Which statement about T is correct?

(a) T is in Period 3 and Group 2, and is less reactive than magnesium.

(b) T is in Period 2 and Group 4, and is a non-metal.

(c) T is in Period 4 and Group 18, and is an inert gas.

(d) T is in Period 4 and Group 2, and is more reactive than magnesium.

(viii) The valency of the elements of the second period, from lithium to neon, shows which of the following pattern?

(a) 1, 2, 3, 4, 5, 6, 7, 0

(b) 1, 2, 3, 4, 4, 3, 2, 1

(c) 1, 2, 3, 4, 3, 2, 1, 0

(d) 1, 2, 3, 4, 3, 2, 1, 1

Question 2

(i) Complete the following sentences by choosing the correct option from the brackets: [3]

(a) The period number of an element is equal to the number of _____ present in its atom. (shells / valence electrons)

(b) On moving from left to right in a period, the electronegativity of the elements _____. (increases / decreases)

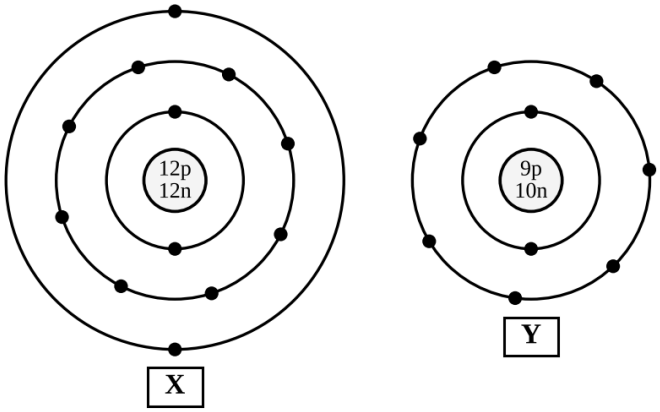
(c) The oxide of aluminium is _____ in nature. (acidic / amphoteric)

(ii) Match Column A with Column B. (Write the answers as (a)–(number), and so on.) [3]

Column A	**Column B**
(a) Energy released when a neutral gaseous atom accepts an electron	1. Electronegativity
(b) Tendency of an atom in a molecule to attract the shared pair of electrons towards itself	2. Electron affinity
(c) Energy required to remove an electron from a neutral isolated gaseous atom	3. Ionisation potential
	4. Atomic radius

Question 3

(i) The diagram below shows the structure of two atoms X and Y. (The numbers of protons and neutrons are shown in the nucleus.) [3]



(a) State the group number and the period number of the element X.

(b) Calculate the mass number of the element Y.

(c) Write the formula of the compound formed when X and Y combine.

(ii) Give reasons for the following: [3]

(a) The size of an anion is greater than the size of its parent atom.

(b) Alkali metals are strong reducing agents.

(c) Elements of group 1 as well as elements of group 17 have valency 1.

SECTION B (20 Marks)

*(Attempt **any two** questions from this Section.)*

Question 4

The table below is a part of the modern periodic table. The letters in the table are **not** the usual symbols of the elements. Study the table and answer the questions that follow.

	Group number →							
	1	**2**	**13**	**14**	**15**	**16**	**17**	**18**
Period 2	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Period 3	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
Period 4	**Q**							

(i) Identify the letter of the element which: [4]

(a) is the most electronegative element in the table.

(b) has the lowest ionisation energy in period 3.

(c) belongs to group 15 and has three shells.

(d) forms an amphoteric oxide.

(ii) Answer the following questions: [3]

(a) Write the formula of the compound formed when I reacts with O. State the type of bond present in it.

(b) Arrange A, B and I in the increasing order of their metallic character.

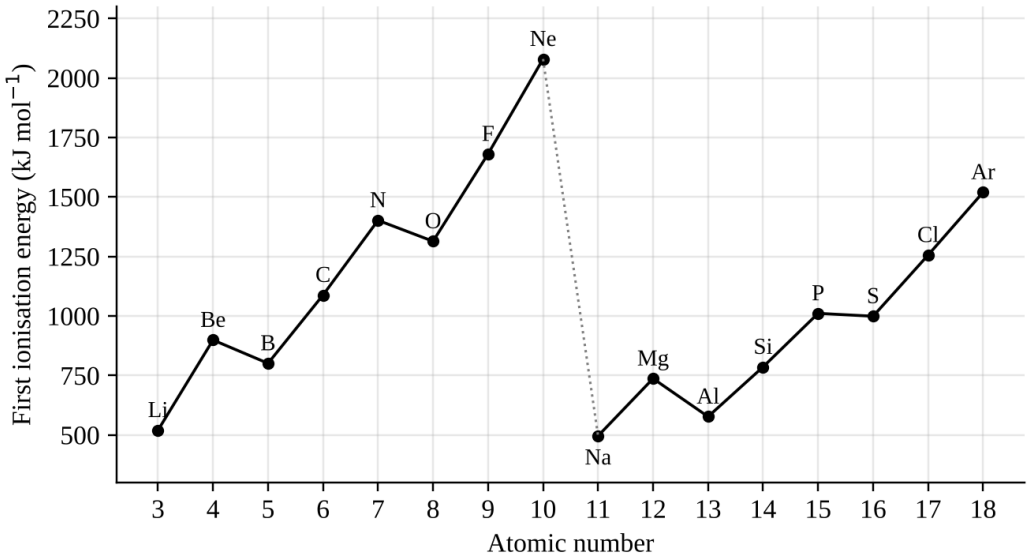
(iii) Answer the following questions: [3]

(a) Which of the elements I and Q will react more vigorously with water? Give a reason for your answer.

(b) State the number of valence electrons in the element N and write its valency.

Question 5

The graph below shows the first ionisation energy of the elements of the second and the third periods (atomic numbers 3 to 18). Study the graph and answer the questions that follow.



(i) Answer the following questions using the graph: [4]

(a) Name the element which has the highest ionisation energy among the elements shown.

(b) Name the element which has the lowest ionisation energy in the third period.

(c) The ionisation energy drops sharply from neon to sodium. Give a reason for this.

(ii) Answer the following questions: [3]

(a) Define the term *ionisation potential*.

(b) Write an equation to represent the first ionisation of sodium.

(c) State the S.I. unit in which ionisation energy is expressed.

(iii) Answer the following questions: [3]

(a) Using the graph, arrange the elements Na, Si, Cl and Ar in the increasing order of their ionisation energy.

(b) State the two factors on which the ionisation energy of an element depends and how each factor affects it.

Question 6

(i) The atomic numbers of two elements X and Y are 19 and 35 respectively. [4]

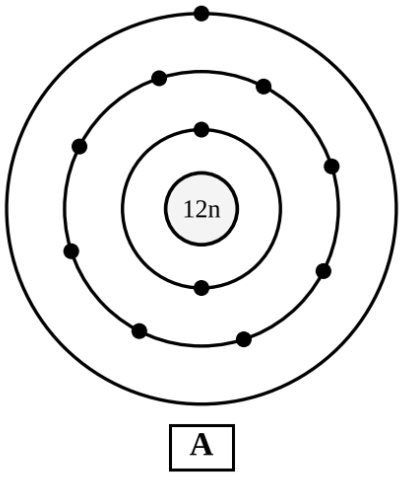
(a) Write the electronic configuration of X and Y.

(b) State the group number and the period number of X and Y.

(c) Write the formula of the compound formed between X and Y. State the type of bond present in it.

(d) Which of the two elements has the larger atomic size? Give a reason.

(ii) The diagram below represents an atom of an element A. The nucleus contains 12 neutrons. [3]



A

(a) What is the atomic number of A?

(b) What is the mass number of A?

(c) State the group number and the period number of A.

(iii) State **three** differences between the alkali metals (group 1) and the halogens (group 17) with reference to: [3]

(a) the nature of the elements (metal / non-metal).

(b) the tendency to lose or gain electrons, and the resulting behaviour (reducing / oxidising agent).

(c) the trend in chemical reactivity on moving down the group.

****** END OF PAPER ******