



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

**Class- X
Chemistry**

**Ch-5: Periodic Classification of Elements
Revision Assignment**

Week- 23rd Nov to 27th Nov'20

No. of blocks- 1 or 2

Guidelines

Dear Students,

- Refer to the Science NCERT book before you begin to answer the questions.
- The assignment is to be done in the Chemistry notebook.
- Link for the chapter is :
<https://ncert.nic.in/ncerts/l/jesc105.pdf>

Instructional Aids /Resources:

- Class 10 Science NCERT textbook.

Learning Outcomes

Each student will be able to:

- state Mendeleev's Periodic Table and the Modern Periodic Table
- discuss the limitations of Mendeleev's Periodic Table
- describe the periodicity in properties of elements
- define the term valency
- differentiate between metallic and non-metallic character
- find the position of an element in the Modern Periodic Table

Lesson Development

1. Recapitulation

S. No.	Property	Variation across period	Reason	Variation along group	Reason
1.	Atomic size	Decreases	Due to increase in nuclear charge	Increase	Due to addition of new shells, distance between outermost electrons and nucleus increases due to addition of new shells.

2.	Metallic Character	Decreases	Due to increase In effective nuclear charge, tendency to lose valence electrons decreases.	Increases	Decrease in effective nuclear charge experienced by valence electrons, tendency to lose electrons (metallic character) increases.
3.	Non-Metallic Character (electro-negativity)	Increase	Due to increase in effective nuclear charge, tendency to gain electrons increases	Decreases	Due to decrease in effective nuclear charge experienced by valence electron (due to addition of new shell), tendency to gain electrons decreases.

Assignment Questions (To be done in the Chemistry Notebook)

1. Consider two elements 'A' (Atomic number 17) and 'B' (Atomic number 19).

(i) Write the positions of these elements in the Modern Periodic Table giving justification.

(ii) Write the formula of the compound formed when 'A' combines with 'B'.

(iii) Draw the electron- dot structure of the compound and state the nature of the bond formed between the two elements.

2. The element Be, Mg, Ca are placed in the second group of the periodic table. Their atomic numbers are 4, 12, and 20 respectively.

(a) Write the electronic configuration of these elements.

(b) Write the valency exhibited by them.

(c) Which of the three elements will be the most reactive.

3. An element 'X' has same number of electrons in the first and the fourth shell as well as in the second and the third shell.

a) Write down the electronic configuration of the element.

b) Write down the group number and the period number to which it belongs.

c) What is the valency of the element?

d) Will it form ionic or covalent compound with the element Y (2, 8, 6)?

e) What is the nature of the oxide of X and Y?

4. The following table shows the position of six elements A, B, C, D, E and F in the periodic table.

Group Period	1	2	3 to 12	13	14	15	16	17	18
2					A			B	
3	C			D			E	F	

Using the above table, answer the following questions:

- Which element will form only covalent compounds?
- Which element is a non-metal with valency 2?
- Identify the most electronegative element.
- Out of D, E and F which element is used for making electrical wires?

5. Read the given passage and answer the questions that follow:

Elements are arranged in the Modern Periodic Table in the increasing order of their atomic numbers. Metals are on the left hand side and middle of the periodic table mainly and non-metals are on the right hand side. A zig-zag diagonal line divides metals and non-metals. Elements near the zig-zag line are called metalloids. Elements of the same group have same number of valence electrons but different number of shells. Elements of the same period have different number of valence electrons but same number of shells. Elements in the middle of the periodic table are called transition elements.

a) Which of the following statement is correct?

- All groups contain both metals and non-metals.
- In group 17, reactivity decreases down the group.
- In group 1, reactivity decreases down the group.
- Atoms of the same group have the same number of electrons.

b) Which of the following is the correct formula of hydrides of phosphorus?

- PH_2
- PH_3
- PH_4
- PH_6

c) Which group elements are smallest in size in respective periods?

- Group 1
- Group 2
- Group 17
- Group 18

d) Identify two metals, two non-metals and one metalloid in the third period.

6. Atomic number is considered to be a more appropriate parameter than atomic mass for classification of elements in a periodic table. Why?

7. How does atomic size vary on moving from:

- i) left to right in a period
- ii) top to bottom in a group

Give reasons for your answer.

8. Lithium, sodium and potassium have been put in the same group on the basis of their similar chemical properties:

- i) What are those similar chemical properties?
- ii) What is the name given to this group of elements?

9. A metal M forms an oxide having a formula M_2O_3 . It belongs to the third period of the Modern Periodic Table. Write the atomic number and valency of the metal M.

10. Which group of elements was missing from Mendeleev's original periodic table?

11. Three elements A, B and C have 3, 4 and 2 electrons respectively in their outermost shell. Give the group number to which they belong in the Modern Periodic Table. Also, give their valencies.
