CLASS X PERIODIC CLASSIFICATION OF ELEMENTS

Question.1The elements of the second period of the Periodic Table are given below:

Li Be B C N O F

(a) Give reason to explain why atomic radii decrease from Li to F.

(b) Identify the most

(i) metallic and

(ii)non-metallic element.

Question.2 The elements of the third period of the Periodic Table are given below:

Group	I	II	III	IV	V	VI	VII
Period 3	Na	Mg	Al	Si	P	S	Cl

(a) Which atom is bigger, Na or Mg? Why?

(6) Identify the most (i) metallic and (ii) non-metallic element in Period 3.

Question.3 The position of three elements A, B and C in the Periodic Table is shown below:

Group 16	Group 17
–	–
–	A
–	–
B	C

Giving reasons, explain the following:

(a) Element A is a non-metal.

(b) Element B has a larger atomic size than element C.

(c) Element C has a valency of 1

Question.4 The position of three elements A, B and C in the Periodic Table is shown below:

Group / Period	1	2	13	14	15	16	17
1	B						
2							A
3						C	

Giving reasons, explain the following:

(a) Element A is non-metal.

(b) Atoms of element C have a larger size than atoms of element A.

(c) Element B has a valency of 1.

Question.5 What physical and chemical properties of elements were used by Mendeleev in creating his periodic table? List two observations which posed a challenge to Mendeleev's Periodic Law.

Question.6 Table given below shows a part of the Periodic Table.

H							He
Li	Be	B	C	N	O	F	Ne
Na	Mg	Al	Si	P	S	Cl	Ar

(b) Atomic size of Mg is less than that of Na.

(c) Fluorine is more reactive than Chlorine.

Question.7(a) Why do we classify elements?

(b) What were the two criteria used by Mendeleev in creating his Periodic Table?

(c) Why did Mendeleev leave some gaps in his Periodic Table?

(d) In Mendeleev's Periodic Table, why was there no mention of Noble gases like Helium, Neon and Argon?

(e) Would you place the two isotopes ' of chlorine, Cl-35 and Cl-37 in

different slots because of their different atomic masses or in the same slot because their chemical properties are the same? Justify your answer.

Question.8 Lithium, sodium and potassium form a Dobereiner's triad. The atomic masses of lithium and potassium are 7 and 39 respectively. Predict the atomic mass of sodium.

Question.9 Chlorine, bromine and iodine form a Dobereiner's triad. The atomic masses of chlorine and iodine are 35.5 and 126.9 respectively. Predict the atomic mass of bromine.

Question.10 Why was the system of classification of elements into triads not found suitable?

Question.11 State Mendeleev's periodic law. Write two achievements of Mendeleev's periodic table

Question.12 (a) What is meant by periodicity in properties of elements with reference to the periodic table?

(b) Why do all the elements of the same group have similar properties?

(c) How will the tendency to gain electrons change as we go from left to right across a period? Why?

Question.13 (a) What are 'groups' and 'periods' in the 'periodic table'?

(b) Two elements M and N belong to group I and II respectively and are in the same period of the periodic table. How do the following properties of M and N vary?

1. **Sizes of their atoms**
2. **Their metallic characters**
3. **Their valencies in forming oxides**
4. **Molecular formulae of their chlorides**

Question.14 (a) Which two criteria did Mendeleev use to classify the elements in his Periodic Table?

(b) State Mendeleev's periodic law.

(c) Why could no fixed position be given to hydrogen in Mendeleev's Periodic Table?

(i) Sizes of their atoms

(ii) Their metallic characters

(iii) Their valencies in forming oxides

(iv) Molecular formulae of their chlorides

(a) The vertical columns in the periodic table are called 'groups'. The horizontal rows in the periodic table are called 'periods'.

(b) (i) 'M' and 'N' belong to the same period but group I and II. Therefore, 'N' will be smaller than 'M' as atomic size goes on decreasing from left to right.

(ii) ‘M’ is more metallic than ‘N’. Metallic character goes on decreasing from left to right as tendency to lose electrons decreases due to decrease in atomic size.

(iii) Their valencies are 1 and 2 respectively in forming oxides. Valency goes on increasing first and then decreases.

(iv) MCl, NCl2 are molecular formulae of their chlorides.

(d) How and why does the atomic size vary as you go

(i) from left to right along a period?

(ii) down a group?

Question.15 (a) did Mendeleev have gaps in his periodic table?

(b) any three limitations of Mendeleev’s classification.

(c) does electronic configurations of atoms change in a period with increase in atomic number?