Periodic Classification of Elements Important Questions with Answers of Class 10 Science Chapter 5

Class 10 Science Periodic Classification of Elements MCQs (1 Marks)

1. An atom of an element has the electronic configuration 2,8,2. To which group does it belong?
(a) 4th group
(b) 6th group
(c) 3rd group
(d) 2nd group
Answer – d

2. Where would you locate the element with electronic configuration 2, 8 in the Modern Periodic Table?
Group 8
Group 2
Group 18
Group 10
Answer – c

3. Element 'X' forms a chloride with the formula XCl_2, which is a solid with high melting point. X would most likely be in the same group of the periodic table as:
(a) Si
(b) Mg
(c) Al
(d) Na
Answer – b

4. Which of these belong to the same period?
(a) A, B
(b) B, C
(c) C, A
(d) A, B and C

Answer – b

Element	A	B	C

Atomic Number	2	10	5

Explanation: Reason. B = 10 (2, 8), C = 5 (2, 3) Both have 2 periods

Class 10 Science Periodic Classification of Elements Very Short Answer Type

1. The atomic numbers of three elements X, Y and Z are 3, 11 and 17 respectively.
State giving reason which two elements will show similar chemical properties.

Answer – X & Y will show similar chemical properties as both elements have the same number of valence electrons, i.e., 1.

2. How many vertical columns are there in the modern periodic table and what are they called?

Answer – There are 18 vertical columns in the modern periodic table and they are called groups.

3. How many horizontal rows are there in the modern periodic table and what are they called?

Answer – There are seven horizontal rows in the modern periodic table. The horizontal rows in a periodic table are called periods.

4. Write two reasons responsible for late discovery of noble gases?

Answer – The noble gases were discovered very late because they are very unreactive and present in extremely low concentrations in the atmosphere.

5. State the modern periodic law of classification of elements.

Answer – Modem periodic law states “that the properties of elements are a periodic function of their atomic numbers”.

Class 10 Science Periodic Classification of Elements Short Answer Type I

1. An element ‘X’ has atomic number 13:
(a) Write its electron configuration.
(b) State the group to which ‘X’ belongs?
(c) Is ‘X’ a metal or a non-metal?
(d) Write the formula of its bromide.

Answer –
Element 'X' that has atomic number = 13
(a) Electronic configuration =
(b) 'X' belongs to the 13th group.
(c) 'X' is a metal as its valence electrons are 3.

2. An element 'M' has atomic number 11:
(a) Write its electron configuration.
(b) State the group to which 'M' belongs?
(c) Is 'M' a metal or a non-metal?
(d) Write the formula of its chloride

Answer
(a) Element 'M', atomic number = 11
(b) Electronic configuration =
(c) 'M' belongs to 1st group as it has one valence electron.
'M' is a metal as atoms with valence electron 1, 2, 3 are metals.

3. Choose from the following:
20Ca, 3Li, 11Na, 10Ne
(i) An element having two shells completely filled with electrons.
(ii) Two elements belonging to the same group of the periodic table.

Answer –
(i) Ne has two completely filled shells.
(ii) Li and Na belong to the same group as both have same number of valence electrons (1).

Class 10 Science Periodic Classification of Elements Short Answer Type II

Q1. The atomic number of an element is 16. Predict (2011 OD)
(i) the number of valence electrons in its atom;
(ii) its valencies;
(iii) its group number;
(iv) whether it is a metal or a non-metal;
(v) the nature of oxide formed by it;
(vii) the formula of its chloride.

Answer –
The atomic number, Z = 16

Electronic Configuration:

(i) Number of valence electrons in its atom = 6
(ii) Valency = 2
(iii) Group number = 16

(iv) It is a non-metal.
(v) The nature of oxide formed by it would be acidic.

(vi) Let this element be represented by the symbol 'X'. Formula of its chloride is XCl_2.

Q2. Explain the variation of the following properties of the element in the periodic table.
(i) Atomic radius in a period.
(ii) Metallic character in a period.
(iii) Valency in a group.

Answer –
(i) On moving from left to right in a period of the periodic table, the atomic radius of elements decreases.
(ii) On moving from left to right in a period, the metallic character of elements decreases and non- metallic character increases.
(iii) As the number of valance electrons in a group is the same, all the elements in a group have the same valency.

Class 10 Science Periodic Classification of Elements Long Type Questions

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

Study the following table in which positions of six elements A, B, C, D, E and F are shown as they are in the modern periodic table:
(i) On the basis of the above table, answer the following questions:

Q1. (i) Atomic radius in a period.
(ii) Name the element which is a metal with valency three.
(iii) Name the element which is a non-metal with valency three.
(iv) Out of D and E, which is bigger in size and why?
(v) Write the common name for the family to which the elements C and F belong.

Answer –
(i) E
(ii) D
(iii) B

(iv) D is bigger in size because as we move from left to right in a period, the size of the atom decreases as positive charge increases but the number of shells remains the same. Thus the electrons are pulled in more close to the nucleus.
(v) Noble gases.

Q2. The atomic number of an element 'X' is 20. Write
(a) its valency,
(b) whether it is a metal or non-metal,
(c) the formula of compound formed when the element 'X' reacts with an element 'Y' of atomic number 8.
Justify your answer in each case.

Answer –
(a) Valency of X is 2 as it loses two electrons to acquire nearest inert gas configuration.
(b) X is a metal as it loses electrons to acquire inert gas configuration and an element which loses electrons for acquiring inert gas configuration is a metal.

(c)

Element	Atomic number	Electronic configuration	Valance electrons
X	20	2, 8, 8, 2	2

Element	Atomic number	Electronic configuration	Valance electrons
Y	8	2, 6	2