

Periodic Classification of Elements

Long Answer Type Questions

Q1. An element is placed in 2nd Group and 3rd period of the periodic table, burns in presence of oxygen to form a basic oxide.

- Identify the element.
- Write the electronic configuration.
- Write the balanced equation when it burns in the presence of air.
- Write a balanced equation when this oxide is dissolved in water.
- Draw the electron dot structure for the formation of this oxide.

Q2. Explain giving justification the trends in the following properties of elements, on moving from left to right in a period, in the Modern Periodic Table.

- Variation of valency.
- Change of atomic radius.
- Metallic to non-metallic character.
- Electronegative character.
- Nature of oxides.

Q3. An element 'X' which is a yellow solid at room temperature shows catenation and allotropy. X forms two oxides which are also formed during the thermal decomposition of ferrous sulphate crystals and are major air pollutants.

- Identify the element 'X'
- Write the electronic configuration of X
- Write the balance chemical equation for the thermal decomposition of ferrous sulphate crystals.
- What would be the nature (acidic/basic) of oxides formed ?
- Locate the position of the element in the Modern Periodic Table.

Q4. Give a brief discussion of the Mendeleev's classification of the elements.

Q5. How does the electronegativity of elements relate to their metallic or non- metallic character?

Q6. Discuss salient feature of Modern Periodic Table.

Q7. How could the Modern Periodic Law remove various anomalies of Mendeleev's Periodic Table?

Q8. What are the Periods and Groups in a Periodic table? Give two characteristics of each.

Q9. What are the limitations of Mendeleev's Periodic Table?

Q10. Give a brief description of Long Form of Periodic Table.

Q11. What are noble gases? Why are they so called?

Q12. How does the reactivity of metals and non metals vary in a group?

Very Short Answer Type Questions

- Q1. Why noble gases are placed in a separate group?
- Q2. An element 'A' has atomic number 16. To which group and period does it belong ?
- Q3. The atomic numbers of three elements A, B and C are 12,18 and 20 respectively. State, giving reasons, which two elements will show similar properties.
- Q4. Name the scientist who proposed the Modern Periodic Law.
- Q5. Write two reasons responsible for late discovery of noble gases.
- Q6. Name any two pairs of elements which were adjusted by Newlands in the same slot.
- Q7. Define Modern Periodic Law
- Q8. What is Newland's law of Octaves ?
- Q9. In how many Groups and Periods, the Modern Periodic Table of elements is divided?
- Q10. Why did Mendeleev leave some gaps in his Periodic Table?
- Q11. What does each Group in the Periodic table signify?
- Q12. Why do Group 1 elements form unipositive ions?
- Q13. Explain why sodium is more reactive than Lithium.

Multiple Choice Question

- Q1. Which of the following has largest atomic radius ?
- K
 - Rb
 - Li
 - Na
- Q2. Element R belongs to Group IIA. The formula of its oxide is
- RO
 - RO₂
 - R₂O
 - R₂O₃
- Q3. The number of elements present in the third period of Periodic table is
- 3
 - 8
 - 18
 - 32
- Q4. The number of elements classified by Mendeleev are
- 63
 - 53
 - 104
 - 108

Q5. The number of Groups in the Modern Periodic Table is

- a) 18
- b) 19
- c) 20
- d) 21

Q6. The law of Triads was given by

- a) Newland
- b) Mendeleev
- c) Dobereiner
- d) Moseley

Q7. Halogen lie in the Modern Periodic Table in

- a) Group 17
- b) Group 7
- c) Group 16
- d) Group 18

Q8. Upto which element, the law of Octaves was found applicable?

- a) Oxygen
- b) Calcium
- c) Cobalt
- d) Potassium

Q9. Which of the following forms the basis of the Modern Periodic Table.

- a) Atomic Mass
- b) Atomic Number
- c) Molecular Weight
- d) All of these

Q10. What is the other name for Group 18th elements?

- a) Noble gases
- b) Alkali metals
- c) Alkaline earth metals
- d) Halogens

Q11. Which group elements are called transitions ?

- a) Group number 1 to 2
- b) Group number 13 to 18
- c) Group number 3 to 12
- d) Group number 1 to 8

Q12. Which of the following is the least reactive metal ?

- a) Li
- b) K
- c) Na
- d) Rb

Assertions (A) and Reasoning (R) Type Questions

Two statements (Assertion-A and Reason-R) are given. Select the correct answer to these questions from codes a,b,c and d are given below

- a) Both A and R are true, and R is the correct explanation of the assertion.
- b) Both A and R are True, but R is not the correct explanation of the assertion.
- c) A is true but R is false.
- d) A is false but R is true.

1. Assertion : Mendeleev arranged the elements in increasing order of their atomic masses and according to their chemical properties.

Reason: Mendeleev even predicted the existence of some yet to be discovered elements on the basis of gaps in his Periodic Table



2. Assertion : Elements in the Modern Periodic Table are arranged in 18 vertical columns called groups and 7 horizontal rows called Periods.

Reason: Elements thus arranged show periodicity of properties including atomic size, valency or combining capacity and metallic and non-metallic character.

3. Assertion : Atomic size decreases along the period in Modern Periodic Table.

Reason: It occurs due to increase in the nuclear charge.

Read the following and answer any four questions. The position of some elements A,B,C,D,E,F,G in the Modern Periodic Table is given as under:-

Group 	16	17	18
Period 			
1			A
2	B	C	D
3	E	F	G

- a) In which group are inert elements placed ?
- b) What type of ions would B,C,E and F form ?
- c) Which element would have chemical properties similar to C?
- d) How many shells would A have ?
- e) What is the similarity between A and D ?

According to Modern Periodic Law, two properties of the elements are periodic function of their atomic numbers.

- a) Why do all the elements of the same group have similar properties ?
- b) How does the tendency of elements to gain electron change as we move from left to right in a period ?
- c) How many vertical columns are there in the modern periodic table and what are they called?
- d) How many horizontal rows are there in the modern periodic table and what are they called ?
- e) Write the group number & period of Lanthanides and Actinides.