Q1. Rearrange the column 2 and 3 so as to match with column 1.

1	2	3
1.Triad	c.Average of the first and the third atomic mass	5.Dobereiner
2.Octave	d. Properties of the eighth element similar to the first	3. Newlands

Q1. Rearrange the column 2 and 3 so as to match with column 1.

1	2	3
3. Atomic number	e. Positive charge on the nucleus.	6. Moseley
4. Period	f. sequential change in molecular formulae	1.Mendeleev

Q1. Rearrange the column 2 and 3 so as to match with column 1.

1	2	3
5.Nucleus	b. Concentrated mass and positive charge	4.Rutherford
6.Electron	a.Lightest and negatively charged particle in all the atoms	2.Thomson

Q2. Choose the correct option and rewrite the statement.

a) The number of electrons in the outermost shell was alkali metal is.....1.....

b) Alkaline earth metals have valency 2. This means that their position in the modern periodic table is in.....Group 2.....

Q2. Choose the correct option and rewrite the statement.

c) Molecular formula of the chloride of an element X is XCI. This compound is a solid having high melting point Which of the following elements be present in the same group as X. **Na**

Q2. Choose the correct option and rewrite the statement.

d) In which block of the modern periodic table are the nonmetals found?

p - block

Q3. An element has its electron configuration as 2,8,2. Now answer the following questions.

a) What is the atomic number of this element?

$$2 + 8 + 2 = 12$$

Q3. An element has its electron configuration as 2,8,2. Now answer the following questions.

b) What is the group of this element?

The element belongs to group 2 as it has two valence electrons.

Q3. An element has its electron configuration as 2,8,2. Now answer the following questions.

c) To which period does this element belong?

The element belongs to period 3 as three shells are occupied by electrons.
shells (K, L, M)

Q3. An element has its electron configuration as 2,8,2. Now answer the following questions.

d) With which of the following elements would this element resemble?

The element would resemble beryllium(Be) with electron configuration(2, 2). As both posses same number of valence electrons, both would lie in the same group and display similar chemical properties.

Q4. Write down the electronic configuration of the following elements from the given atomic numbers. Answer the following question with explanation.

Which of these elements belong to be period 3?

Element	Electronic configuration
$_{3}Li$	2, 1
✓ $_{14}Si$	2, 8, 4
$_{2}He$	2
✓ $_{11}Na$	2, 8, 1
✓ $_{15}P$	2, 8, 5

Which of these elements belong to the second group?

Element	Electronic configuration
$_{1}H$	1
$_{7}N$	2, 5
$_{20}Ca$	2, 8, 8, 2
$_{16}S$	2, 8, 6
$_{4}Be$	2, 2
$_{18}Ar$	2, 8, 8

Which of the most electronegative element among these?

Element	Electronic configuration
$_{7}N$	2, 5
$_{6}C$	2, 4
$_{8}O$	2, 6
$_{5}B$	2, 3
$_{13}Al$	2, 8, 3

Which is the most electropositive element among these?

Element	Electronic configuration
$_{4}Be$	2, 2
$_{6}C$	2, 4
$_{8}O$	2, 6
$_{5}B$	2, 3
$_{13}Al$	2, 8, 3

Which of these has the largest atoms?

Element	Electronic configuration
$_{11}Na$	2, 8, 1
$_{15}P$	2, 8, 5
$_{17}Cl$	2, 8, 7
$_{14}Si$	2, 8, 4
$_{12}Mg$	2, 8, 2

Which of these atoms has the smallest atomic radius?

Element	Electronic configuration
$_{19}K$	2, 8, 8, 1
$_{3}Li$	2, 1
$_{11}Na$	2, 8, 1
$_{4}Be$	2, 2

Which of the above elements has the highest metallic character?

Element	Electronic configuration
$_{13}Al$	2, 8, 3
$_{14}Si$	2, 8, 4
$_{11}Na$	2, 8, 1
$_{12}Mg$	2, 8, 2
$_{16}S$	2, 8, 6

Which of the below elements has the highest non metallic character?

Element	Electronic configuration
$_{6}C$	2, 4
$_{3}Li$	2, 1
$_{9}F$	2, 7
$_{7}N$	2, 5
$_{8}O$	2, 6

Q5. Write the name and symbol of the element from the description.

a) The atom having the smallest size.

HELIUM (He)

Q5. Write the name and symbol of the element from the description.

b) The atom having the smallest atomic mass.

Hydrogen(H)

Q5. Write the name and symbol of the element from the description.

c) The most electronegative atom.

Fluorine (F)

Q5. Write the name and symbol of the element from the description.

d) The noble gas with the smallest atomic radius.

Helium (He)

Q5. Write the name and symbol of the element from the description.

e) The most reactive nonmetal.

Fluorine (F)

a) Mendeleev's periodic law.

Mendeleev organised the periodic table on the basis of the chemical and physical properties of the elements.For this purpose he considered the molecular formulae of hydrides and oxides of the elements, melting points, boiling points and densities of the elements and their hydrides and oxides.when he arranged the 63 elements known at that time in the increasing order of their atomic masses, he found that the chemical

a) Mendeleev's periodic law.

and physical properties of elements showed repetition after certain fixed interval.On the basis of this finding, he state that 'properties of elements are a periodic function of their atomic masses.' This is known as mendeleev's periodic law.

b) Structure of the modern periodic table

The modern periodic table consists of seven horizontal rows called the periods and 18 vertical columns called the groups. The arrangement of the periods and groups results in the formation of boxes, where each box corresponds to the position of an element.In addition to these 7 rows, lanthanide and actinide series are shown separately at the bottom of the periodic table.

The entire periodic table is divided into four blocks 1. s - block 2. p - block 3. d - block and 4.f - block.A zig-zag line is drawn in the p - block of the periodic table. Metals lie on the left side while nonmetals lie on the right side of this line. Metalloids lie along the border of this line.

c) Position of isotopes in the Mendeleev's and the modern periodic table.

Isotopes were discovered long time after Mendeleev developed the periodic table.All isotopes of the same element have different atomic masses but same atomic number. They also have the same chemical properties. In periodic table elements are arranged in increasing order of their atomic masses such that chemically similar elements are placed together in a group.

So, it was difficult to place them in Mendeleev's periodic table.In modern periodic table elements are arranged in increasing order of their atomic numbers. Hence, all the isotopes of an element occupy the same position in the modern periodic table.

a) Atomic radius goes on decreasing while going from left to right in a period.

For an isolated atom, atomic radius is the distance between the centre of the nucleus of the atom and the outermost shell. As we move from top to bottom in a group number of shells increases.The outermost electrons go further and farther from the nucleus extending the radius and ultimately increasing the size of the atom even though the nuclear charge increases.Hence, atomic radius goes on increasing down a group.

b) Metallic character goes on decreasing while going from left to right in a period.

Metallic character of an atom is its tendency to lose electrons.While going from left to right in a period electrons are added to the same outermost shell. At the same time protons get added in the nucleus increasing the nuclear charge. Hence, these electrons experience greater pull from the nucleus due to increased effective nuclear charge.Hence, metallic character goes on decreasing while going from left to right in a period.

c) Atomic radius goes on increasing down a group.

While going from left to right in a period atomic number increases. So, positive charge on the nucleus increases at the same time electrons get added in the same outermost shell. This increases effective nuclear charge. As a result, electrons are attracted closer to the nucleus decreasing the size of the atom.Thus, atomic radius goes on decreasing while going from left to right in a period.

d) Elements belonging to the same group have the same valency.

The electron configuration of the outermost shell is same for all the elements belonging to the same group. So, the number of valence electrons for all the elements in a group is the same. The valency of an element is determined by the valence electrons. Hence, elements belonging to the same group have the same valency.

e) The third period contains only 8 elements even though the electron capacity of the third shell is 18.

The number of elements in the first three periods depends on the electron capacity of the shell and the law of electron octet. The electron capacity of third shell is 18. So the third period actually contain 18 elements. But it contains only 8 elements due to the law of electron octet.

Q8. Write the names from the description.

a) The period with electrons in the shells K, L and M.

Period 3

Q8. Write the names from the description.

b) The group with valency zero.

Group 18

Q8. Write the names from the description.

c) The family of non metals having valency one.

Halogens

Q8. Write the names from the description.

d) The family of metals having valency one.

Alkali metals

Q8. Write the names from the description.

e) The family of metals having valency two.

Alkaline earth metals

Q8. Write the names from the description.

f) The metalloids in the second and third periods.

Boron and silicon

Q8. Write the names from the description.

g) Non metals in the third period.

Phosphorus , sulphur and chlorine

Q8. Write the names from the description.

h) Two elements having valency four.

Carbon and silicon