



Question-1

Did Dobereiner's triads also exist in the columns of Newlands Octaves? Compare and find out.

Solution:

Yes, Dobereiner's triads also exist in the columns of Newlands Octaves. For example, the second column of Newlands classification has the elements lithium (Li), sodium (Na) and Potassium (K), which constitute a Dobereiner's triad.

Question-2

What were the limitations of Dobereiner's classification?

Solution:

All the known elements could not be arranged in the form of triads. For very low mass or for very high mass elements, the Dobereiner's triads are not applicable. Take the example of F, Cl and Br. Atomic mass of Cl is not an arithmetic mean of atomic masses of F and Br. As the techniques for measuring atomic masses accurately, improved, the Dobereiner's triad was unable to remain strictly valid.

Question-3

What were the limitations of Newland's Law of Octaves?

Solution:

It was not valid for elements that had atomic masses higher than Ca. When more elements were discovered, such as elements from the noble gases such as He, Ne, Ar, they could not be accommodated in his table.

Question-4

Use Mendeleev's periodic table to predict the formulae for the oxides of the following elements: K, C, Al, Si, Ba.

Solution:

K_2O – Potassium Oxide

CaO – Calcium Oxide

Al_2O_3 – Aluminium Oxide

SiO_2 – Silicon dioxide

BaO – Barium Oxide.

Question-5

Besides gallium, which other elements have been left by Mendeleev in his periodic table, since the time they were discovered? (Any two)

Solution:

Scandium and Germanium.

Question-6

What were the criteria used by Mendeleev in creating his periodic table?

Solution:

He observed the relationship between the atomic masses of the elements and their physical properties. Among chemical properties, he concentrated on the compounds formed by elements with oxygen and hydrogen.

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