

CLASS 10

SCIENCE

EXTRA QUESTIONS

Extra Questions: Class 10 Science Periodic Classification of Elements (Supplementary)

Genuinely harder, HOTS-level practice for Class 10 Science Chapter 5 (Periodic Classification of Elements), going beyond the standard exercise. These Class 10 Science Chapter 5 important questions are handy for last-minute exam practice.

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Class 10 Science Chapter 5 – Solutions and Notes

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Q1 (Periodic table fragment reasoning). In a periodic table fragment, element A sits in Group 17 (upper period), element B is directly below-left of A in Group 16 of the next period, and element C sits in Group 17 of the same period as B (i.e. below A). (a) Is A a metal or non-metal? (b) Is C more or less reactive than A? (c) Is C larger or smaller in atomic size than B? (d) Does A form a cation or an anion?

Solution: (a) Non-metal — group 17 elements have 7 valence electrons and gain one electron to complete the octet. (b) C is less reactive than A — for non-metals (like halogens), reactivity decreases going down a group, since the added electron is captured less strongly as atomic size increases. (c) C is smaller than B — atomic size decreases left-to-right across a period due to increasing nuclear charge pulling the same-shell electrons in tighter. (d) A forms an anion, since non-metals gain electrons to achieve a stable octet.

Q2 (Assertion-Reason). Assertion (A): Mendeleev left gaps in his periodic table for elements not yet discovered.

Reason (R): Mendeleev arranged elements strictly by increasing atomic number.

Solution: A is true, but R is false — Mendeleev arranged elements by increasing **atomic mass**, not atomic number (atomic number as an ordering principle came later, with Moseley's work, and forms the basis of the Modern Periodic Table). **Answer: A is true, R is false.**

Q3 (Comparison). Compare Mendeleev's Periodic Table with the Modern Periodic Table on: basis of arrangement, number of groups, and treatment of isotopes.

Solution: Mendeleev arranged elements by increasing atomic mass into 8 groups (most split into sub-groups A and B); the Modern Table arranges elements by increasing atomic number into 18 groups with no sub-groups. Isotopes had no logical, single position in Mendeleev's table (same element, different mass), while in the Modern Table all isotopes of an element share one position, since they have the same atomic number.

Q4 (Application). An element M has the electronic configuration 2, 8, 3. Without naming the element, state its group, period, valency, and whether it is a metal or non-metal, and justify each.

Solution: 3 shells → period 3. 3 valence electrons → group 13. Valency = 3 (number of valence electrons, since it is fewer than 4). Metal — elements with only 1-3 valence electrons tend to lose them and behave as metals (this configuration matches aluminium).

Class 10 Science Chapter 5 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the [Class 10 Science Chapter 5 Solutions](#) and [Class 10 Science Chapter 5 Revision Notes](#).