

Question 1 (Periodicity)

Explain the trend in atomic and ionic radius down group 1 of the periodic table.

Down group 1, atomic radius _____ because number of shell _____,

Shielding effect _____,

Therefore attraction of nucleus to the valence electron _____.

Size of atom _____.

Down group 1, ionic radii _____ because number of shell increases,

Shielding effect _____.

Therefore attraction of nucleus to the remaining electron _____.

_____energy needed to remove the remaining electrons down the group 1.

Size of ion _____.

Question 2(Periodicity)

- a) Write the spdf notation of sodium and chlorine atom and its ions

Spdf notation of $_{11}\text{Na}$:

Spdf notation of $_{17}\text{Cl}$:

Spdf notation of $_{11}\text{Na}^+$:

Spdf notation of $_{17}\text{Cl}^-$:

- b) Removal and addition of electron(s) to an atom results in changes of atomic radii.

| Species | Na | Na ⁺ | Cl | Cl ⁻ |
|-------------|-------|-----------------|-------|-----------------|
| Radius (nm) | 0.156 | 0.095 | 0.099 | 0.181 |

Explain the difference in radius between the ions and their respective neutral atoms.



Size of Na⁺ vs Na.

- When electron is _____, the mutual electron repulsion _____ but nuclear charge remained the same.
- The attraction between nucleus towards remaining electron _____.
- Size of Na⁺ _____ Na.



Size of Cl⁻ vs Cl.

- When electron is _____, the mutual electron repulsion _____.
- Domain of electron cloud _____.
- The attraction between nucleus towards remaining electron _____.
- Size of Cl⁻ _____ Cl.