

### 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 <sup>+</sup>	Cl	Cl <sup>-</sup>
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<sup>+</sup> 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<sup>+</sup> \_\_\_\_\_ Na.

**Size of Cl<sup>-</sup> vs Cl.**



- When electron is \_\_\_\_\_, the mutual electron repulsion \_\_\_\_\_.
- Domain of electron cloud \_\_\_\_\_.
- The attraction between nucleus towards remaining electron \_\_\_\_\_.
- Size of Cl<sup>-</sup> \_\_\_\_\_ Cl.