



Raffles Institution
Year 5 H2 Chemistry 2025
Tutorial 2 – Atomic Structure

Answers to Self – check Questions

1.

Particle	No. of protons	No. of neutrons	No. of electrons
^{14}C	6	8	6
$^{14}\text{N}^{3-}$	7	7	10
$^{15}\text{O}^{+}$	8	7	7
$^{31}\text{P}^{3-}$	15	16	18
^{14}N	7	7	7

2. (a) Ion that would be deflected the most: $^{31}_{15}\text{V}^{3-}$

Note: $^{31}_{15}\text{V}^{3-}$ is the ion with highest $\left|\frac{\text{charge}}{\text{mass}}\right|$ ratio (or the lightest ion with the highest charge).

(b) Ion that would be deflected the least: $^{35}_{17}\text{Z}^{-}$

Note: $^{35}_{17}\text{Z}^{-}$ is the ion with the lowest $\left|\frac{\text{charge}}{\text{mass}}\right|$ ratio (or the heaviest ion with the smallest charge).

3.

(a) Cl $1s^2 2s^2 2p^6 3s^2 3p^5$ (b) Si $1s^2 2s^2 2p^6 3s^2 3p^2$ (c) Cr $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$

4. Biggest jump in IE occurs between 3rd and 4th electron => in Group 13 => $1s^2 2s^2 2p^1$