



ATOMIC STRUCTURE

- 1 a Identify the particle that contains two more protons, two fewer neutrons and the same number of electrons as an atom of ${}_{24}^{54}\text{Cr}$.



- b What difference, if any, is there in the chemical properties of the isotopes ${}_{35}^{79}\text{Br}$ and ${}_{35}^{81}\text{Br}$. Explain your answer.

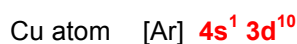
no difference

same electron configuration / number of electrons

- 2 a Give the full electron configuration of the following atoms and ions.



- b Complete electron configuration of the following atoms and ions.



- 3 a Find the mass of one atom of ${}^{19}\text{F}$ in kg given the following data. Give your answer to the appropriate number of significant figures.

$$\text{mass of electron} = 9.1094 \times 10^{-31} \text{ kg}$$

$$\text{mass of proton} = 1.6726 \times 10^{-27} \text{ kg}$$

$$\text{mass of neutron} = 1.6749 \times 10^{-27} \text{ kg}$$

$$[9 \times 9.1094 \times 10^{-31}] + [9 \times 1.6726 \times 10^{-27}] + [10 \times 1.6749 \times 10^{-27}] = 3.1811 \times 10^{-26} \text{ kg (5sf)}$$

- b Find the mass of one mole of atoms of ${}^{19}\text{F}$ in kg. Give your answer to the appropriate number of significant figures.

$$\text{Avogadro constant (L)} = 6.022 \times 10^{23}$$

$$3.1811 \times 10^{-26} \times 6.022 \times 10^{23} = 0.01916 \text{ kg (4sf)}$$