

2 Atoms are made of electrons, neutrons and protons.

(a) State which of these particles are found in the nucleus of an atom.

..... [1]

(b) Atoms of the same element are known as isotopes.

$^{32}_{16}\text{S}$ and $^{34}_{16}\text{S}$ are isotopes of sulfur.

(i) Complete Table 2.1 to show the number of electrons, neutrons and protons in one atom or ion of these isotopes.

Table 2.1

isotope	electrons	neutrons	protons
$^{34}_{16}\text{S}$			
$^{32}_{16}\text{S}^{2-}$			

[3]

(ii) Table 2.2 shows the relative masses and the percentage abundances of the two isotopes in a sample of sulfur.

Table 2.2

relative mass of isotope	percentage abundance of isotope
32	95
34	5

Calculate the relative atomic mass of this sample of sulfur to **one** decimal place.

relative atomic mass = [2]

(iii) The relative atomic masses of all elements are compared to one atom of an isotope.

Identify this isotope.

..... [1]

(c) Ions are atoms or groups of atoms that have gained or lost one or more electrons.

An oxygen atom has the electronic configuration of 2,6.

Give the formula of **one** atom and **one** positive ion that has the same electronic configuration as O^{2-} .

• atom

• positive ion

[2]

[Total: 9]