

1. Atomic Structure

1.2 Isotopes

Paper 1

Question Paper

- 1** Compound X contains two elements, Y and Z.

Element Y is in Period 2 of the Periodic Table. In one atom of element Y, the p sub-shell has all three orbitals occupied; only one of these three orbitals is fully occupied.

Element Z is in Period 3 of the Periodic Table. In one atom of element Z, the p sub-shell has only two orbitals occupied.

What is the formula of compound X?

- A** CCl_4 **B** SiCl_4 **C** SiO_2 **D** SO_2

- 2** When chlorine gas is analysed in a mass spectrometer $^{35}\text{Cl}^+$ ions are detected.

Which row is correct?

	number of neutrons in $^{35}\text{Cl}^+$	electronic configuration of $^{35}\text{Cl}^+$
A	17	$1s^2 2s^2 2p^6 3s^2 3p^4$
B	17	$1s^2 2s^2 2p^6 3s^2 3p^6$
C	18	$1s^2 2s^2 2p^6 3s^2 3p^4$
D	18	$1s^2 2s^2 2p^6 3s^2 3p^6$

- 3** Technetium (Tc) is a second row transition element that does not occur naturally on Earth. One of its isotopes has 56 neutrons.

What is the nucleon number of this isotope?

- A** 43 **B** 56 **C** 99 **D** 112