1 Sample X is added to water and made up to a total volume of 200 cm^3. This gives a solution of 0.100 mol dm^{-3} HC*l*.

What is X?

A 10 cm^3 of 1.00 mol dm^{-3} HC*l*

B 30 cm^3 of 0.90 mol dm^{-3} HC*l*

C 50 cm^3 of 0.40 mol dm^{-3} HC*l*

D 100 cm^3 of 0.30 mol dm^{-3} HC*l*

2 A mixture of 10 cm^3 of methane and 10 cm^3 of ethane was sparked with an excess of oxygen. After cooling, the residual gas was passed through aqueous potassium hydroxide.

All gas volumes were measured at the same temperature and pressure.

Which volume of gas was absorbed by the alkali?

A 15 cm^3 **B** 20 cm^3 **C** 30 cm^3 **D** 40 cm^3

3 Z is a compound of two elements, X and Y.

Element X shows a very large increase between its 5th and 6th ionisation energies. It has the second largest 1st ionisation energy in its group.

Element Y shows a very large increase between its 6th and 7th ionisation energies. It has the largest 1st ionisation energy in its group.

What is compound Z?

A NO_2 **B** PCl_5 **C** P_4O_{10} **D** SF_6

4 Which statement about $^{131}_{53}I$ is correct?

A A negative ion of $^{131}_{53}I$ contains 53 neutrons and 52 electrons.

B A negative ion of $^{131}_{53}I$ contains 53 neutrons and 54 electrons.

C A negative ion of $^{131}_{53}I$ contains 78 neutrons and 52 electrons.

D A negative ion of $^{131}_{53}I$ contains 78 neutrons and 54 electrons.