

1 The boiling temperatures of fluorine and two of its compounds are given below.

Substance	F ₂	CH ₃ F	HF
T _b /K	85	195	293

(a) A molecule of F₂ has 18 electrons.

Which intermolecular force depends to a large extent on the number of electrons in the molecule?

(1)

(b) Calculate the number of electrons in a molecule of CH₃F.

(1)

(c) Explain why the boiling temperature of CH₃F is greater than that of F₂, referring to the intermolecular forces present.

(1)

(d) Explain why the boiling temperature of HF is the highest in the series.

(2)

(e) Explain why the values of the boiling temperatures for Cl_2 , CH_3Cl and HCl do not follow the same trend as F_2 , CH_3F and HF .

(1)

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(Total for Question = 6 marks)