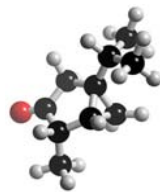


1.3 – STRUCTURE & BONDING – PPO2

Name Form



- 2) The table below shows some values of melting points and some heat energies needed for melting.

Substance	I ₂	NaCl	HF	HCl	HI
Melting point/K	387	1074	190	158	222
Heat energy for melting /kJ mol ⁻¹	7.9	28.9	3.9	2.0	2.9

- a) Name **three** types of intermolecular force.

Force 1

Force 2

Force 3 (3)

- b) i) Describe the bonding in a crystal of iodine.

ii) Name the crystal type which describes an iodine crystal.
.....

iii) Explain why heat energy is required to melt an iodine crystal.
.....
..... (4)

- c) In terms of the intermolecular forces involved, suggest why

i) hydrogen fluoride requires more heat energy for melting than does hydrogen chloride,
.....
.....

.....
.....

- ii) hydrogen iodide requires more heat energy for melting than does hydrogen chloride.
.....
.....

.....
..... (5)

- d) i) Explain why the heat energy required to melt sodium chloride is large.
.....
.....

ii) The heat energy needed to vaporise one mole of sodium chloride (171 kJ mol⁻¹) is much greater than the heat energy required to melt one mole of sodium chloride. Explain why this is so.
.....
..... (3)

- e) In terms of its structure and bonding, suggest why graphite has a very high melting point.
.....
.....
..... (2)