STRUCTURE & BONDING (C)

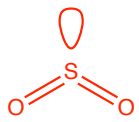
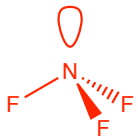
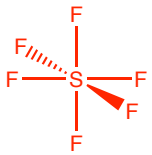
1 Give the formula and structure type of the following substances. (5)

Name	Formula	Structure type				
		Monatomic	Molecular	Giant covalent	Ionic	metallic
graphite	**C**			✓		
calcium hydroxide	**$Ca(OH)_2$**				✓	
potassium	**K**					✓
carbon monoxide	**CO**		✓			
aluminium nitrate	**$Al(NO_3)_3$**				✓	

2 The ammonium ion (NH_4^+) is formed when ammonia reacts with hydrogen ions. Name the type of bond formed when the ammonium ion is formed in this way and describe how it forms.

co-ordinate bond (or dative covalent bond)
lone pair of electrons donated from N
to H^+ (3)

3 Complete the table about the following molecules and ions. (6)

Molecule / ion	SO_2	NF_3	SF_6
Sketch of shape (including lone pairs)			
Name of shape	**bent (or V shape)**	**trigonal pyramidal**	**octahedral**
Bond angles	**allow 117-119°**	**107°**	**90°**
Does the molecule contain polar bonds?	**yes**	**yes**	**yes**
Is the molecule polar?	**yes**	**yes**	**no**

4 Define electronegativity and explain why fluorine atoms are more electronegative than oxygen atoms

power/ability of an atom to attract the <u>two</u> electrons in a covalent bond
fluorine has more protons
fluorine atom is smaller
stronger attraction from nucleus to bonding pair of electrons in fluorine than oxygen (4)