Exercises 7

Exercise 7.1

Predict the VSEPR geometry and polarity for the following molecules:

a) BeH ₂	b) BrF ₃	c) SeBr ₂	d) BrF2 ⁻
e) IF ₅	f) SO ₂	g) SiCl ₄	h) O ₃
i) PCl ₃	j) SBr ₄	k) ICl ₃	l) SbF5
m) SeCl ₆	n) XeF4	o) AlBr ₃	

Exercise 7.2

Place the following molecules or ions in order of *decreasing* bond length:

- (a) the CO bond in CO, CO₂, CO₃²-
- (b) the SO bond in SO₂, SO₃, SO₃²-
- (c) the CN bond in HCN, CH₂NH, CH₃NH₂.

Explain your reasoning.

Exercise 7.3

What geometry can we expect for the following molecules: BeCl₂, BF₃, ClF₃, XeF₄ and SF₆?

Exercise 7.4

Which do you predict to have the strongest CX bond, where X is a halogen: (a) CF_4 , (b) CCl_4 , or (c) CBr_4 ? Explain.

Exercise 7.5

Which do you predict to have the strongest CN bond: (a) NHCH₂, (b) NH₂CH₃, or (c) HCN? Explain.