

2. An electron drops from the fifth energy level to the second energy level in a Be^{3+} ion.

a. Calculate the **wavelength** of the light emitted in nm.

b. Calculate the **frequency** of the light in Hz.

3. a. Draw the **molecular orbital energy level diagram** for N_2^{2-} .

b. Calculate the **bond order**.

c. Is the ion diamagnetic or paramagnetic?

4. For each compound shown, write everything you know about it.

a. CO

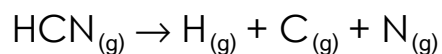
b. PCl_4^-

5. For each of the atoms listed, write the **electron configuration** (use the noble gas shorthand) and the **orbital diagram**.

a. Platinum

b. Molybdenum

6. Calculate the enthalpy of reaction for



from enthalpies of formation. Given that the C—H bond energy is 411 kJ/mol, obtain a value for the C≡N bond energy. Compare your result with the value given on the back of the periodic table (i.e., find the %error).

Substance	HCN _(g)	H _(g)	C _(g)	N _(g)
ΔH _f ^o (kJ/mol)	135.1	218.0	716.7	472.7