

Marks
7

Explain in terms of bond order why the upper state of the violet system exhibits a shorter bond length (1.15\AA) than the ground state (1.17\AA).

Also indicated in Huggin's spectrum are the Fraunhofer absorption features labelled K, H and G, which arise from calcium. Explain the appearance of these features. (Hint: they would also appear in the spectrum of moonlight.)

The Fraunhofer feature labelled 'h' is due to atomic hydrogen. What is the electronic transition responsible for this absorption feature? (Hint: one of the energy levels involved is $n = 2$.)