Ex. 1 Ex. 12.4
Ex. 2 Ex. 12.6
Ex. 3 (a) 7% Consider the transition of the hydrogen atom in the strong magnetic field case (the Paschen-Bark effect) from \( l = 2 \) to \( l = 1 \). Plot a diagram showing possible transitions and thus find number of lines in spectrum. (b) 8% Consider the weak field case, plot a diagram showing possible transitions from \( l = 1 \) to \( l = 0 \). (Labelling states by the spectroscopic notations.)
Ex. 4 7% Given that the energy needed to remove the two electrons from the ground state of the helium atom is 79eV, find the energy needed to remove just one electron from the ground state of the helium atom.