

Hints: Assignment 5

1. (a) You will need to go to second order – see (5.1.42). (b) To get the exact energies, complete the square in the potential.

6. The perturbation comes from two sources: the anisotropy and the magnetic field. The magnetic field can be handled using the analysis resulting in (5.3.27), but you get to ignore the spin.

17. This problem can be solved exactly! Find the exact eigenvalues and compare to your perturbation theory computation. To find the exact eigenvalues note that a linear combination of angular momentum operators can be viewed as a (multiple of) a component in some direction.

28. Choose your z -axis along \mathbf{E}_0 , then the perturbation is a function of time multiplied by Z . You can use the selection rules derived in class (see page 338 in the text).