

Things You Should Know

Chapters 4: Three Dimensional Systems

Be able to define the following terms (using words, equations, or figures):

Degeneracy

Laplacian Operator

Legendre polynomials

Separable Hamiltonian

Rigid rotor

Spherical Harmonics

Concepts and Exercises:

1. Know how to apply the technique of the separation of variables to solve simple differential equations. Know the special properties of the energy eigenvalues and wave functions when the Hamiltonian is separable.
2. Be familiar with the general procedure of solving differential equations by the power series method. You do not need to reproduce the solution, but be able to describe the steps.
3. Be familiar with the rigid rotor energy levels and wave functions.
4. Be able to do all the exercises