

Write a report on one of the following
Please use your lecture notes and other sources
(from 6 to 20 pages)

- 1- The definition of wave function, its physical meaning and quantum postulates. Time dependent and time independent Schrödinger equations. The time evolution of a wavefunction. Position, time, momentum, energy operators.
- 2- The energy and wave function of a free particle in infinite space, The energy and wave function of a free particle in finite space, the degeneracy definition. The energy spectrum and a schematic of energy levels.
- 3- Heisenberg's Principle, the angular momentum, the eigenvalues and eigenfunctions of angular momentum in z direction, the orbital quantum and magnetized quantum numbers. Zeeman effect.
- 4- Hydrogen atom, separate Schrödinger's equation in spherical coordinate into three independent equations. Discuss the solution of the radial part of Schrödinger's equation for Hydrogen atom. Discuss the solution of the angular part of Schrödinger's equation for Hydrogen atom. Four quantum numbers, Stern-Gerlach experiments.