The postulates of Quantum Mechanics

1-Postulate 1

The state of a system is described by a function (Ψ) of the coordinates and the time . this function called the state function or wave function .contains all the information that can be determined about the system .we further postulate that .

1-Ψ is single –valued
2- Must be a continuous function
3-quadratically integrable .
4- Must be normalized so that the probability integrated over all space is equal to one.

$$P = \int \Psi \Psi * d\tau = 1$$

$$P = \int \psi 2 \, d\tau = 1$$

order to use the wavefunction calculated from the Schrodinger equation to determine the value of any physical observable, it must be normalized so that the probability integrated over all space is equal to one.

Or Othagonal so that the probability integrated over all space is equal to zero

$$P = \int \Psi \Psi * d\tau = 0$$

Postulate 2

To every physically observable property there corresponds a linear Hermitian operator .

To find this operator , write down the classical mechanical expression for the observable in terms of Cartesian coordinates and corresponding linear –momentum components , and then replace each coordinate x by the operator (x) and each momentum component (p_x) by the operator

(-i h^ d/dx)

-i h^ d/dq , q= x, y, z, t , $\not{h} = h/2\pi$