Planck's Quantum Theory: Max Planck in 1900 forwarded a theory regarding black body radiations which later amended by Einstein. The amended theory are following.

1. Black body radiates energy discontinuously.
2. The emission or absorption of energy takes place in the form of small packets.
3. These small energy packets are called 'quanta'.
4. Each quantum is associated with a fixed amount of energy.
5. The energy associated with one quantum is given as:

$$E = h\nu$$

where,   *E = Energy associated with one quantum*

ν = Frequency of radiation

h = Planck's constant

= 6.625 x 10^{-27} erg.sec

= 6.625 x 10^{-34} J.sec

From wave motion we have,

$$\nu = f\lambda$$

where,   *v = Velocity of the wave*

f = Frequency of the wave

λ = Wave length

For electromagnetic radiations we can have,

$$c = \nu\lambda$$

or, $$\nu = \frac{c}{\lambda}$$

Therefore, $$E = \frac{hc}{\lambda}$$

Also, the energy associated with *'n'* quanta can be given as:

$$E = nh\nu$$

$$E = \frac{nhc}{\lambda}$$

Bohr's Atomic Model: In order to overcome the limitations of Rutherford's atomic model, Bohr forwarded his model of atom in 1913 making use of plank's quantum theory. According to his model of atom:

1. Electron revolve around the nucleus in certain selected fixed circular orbits only.
2. During revolution in these fixed orbits, electrons neither emit nor absorb energy.
3. These circular orbits are called stationary states.
4. Stationary does not mean that the electrons are stationary rather the orbits are stationary.
5. These circular orbits are represented by *K, L, M, N* ----- or by numerals *1, 2, 3, 4,----*.
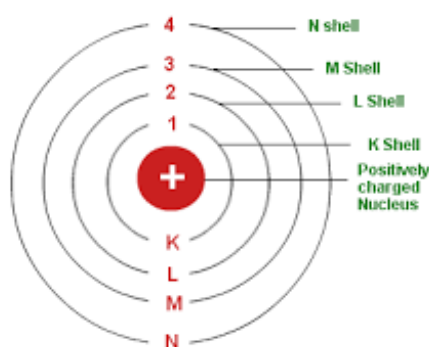
6. Only those orbits are permissible for which the angular momentum of the electron is an integral multiple of $h/_{2\pi}$.

i.e., $mvr = \dfrac{nh}{2\pi}$

where,   *m = Mass of electron*
v = Velocity of electron
r = Radius of orbit
h = Planck's constant
n = Orbit number such as 1, 2, 3, 4, ----

7. These circular orbits are quantized i.e. associated with a fixed amount of energy and are called as energy states or quantum states.
8. The electrons can jump from one energy state to another.
9. During these jumping energy is either released or absorbed.
10. The amount of energy absorbed or released during these jumping can be given from Planck's quantum theory as:

$$E_2 \sim E_1 = h\nu$$

where,   *E_2 = Energy of orbit where the electron jumps.*

E_1 = Energy of orbit from where the electron jumps.

h = Planck's constant

ν = Frequency of radiation