Class XI

Chemistry

Structure Of Atom

Q . What is electromagnetic spectrum?

Ans:- The arrangement of different types of electromagnetic radiation in the order of increasing wavelength is known as electromagnetic spectrum.

Q. What is black body radiation?

Ans:- An ideal body which emits and absorbs radiations of all wavelengths is called black body and the radiation emitted by this body is called black body radiation.

Q. What is photo electric effect?

Ans:- The phenomenon of ejection of electron from the surface of a metal when light of suitable frequency strikes on it is called photo electric effect.

Q. State Planck's quantum theory of radiation.

Ans:- The main features of Planck's quantum theory are-

1) Radiant energy is not emitted or absorbed continuously but discontinuously in the form of a small packets of energy call quanta.
2) The amount of energy associated with a quantum of radiation is proportional to the frequency of the light, i.e, $E \propto \nu$ or, $E=h\nu$
3) The total amount of energy emitted or absorbed by a body will be some whole number multiple of quantum, i.e, $E=nh\nu$.

Q. State Heisenberg uncertainty principle.

Ans:- It is not possible to measure simultaneously both the position and momentum of a microscopic particle with absolute accuracy.

Mathematically expressed as, $\Delta x \cdot \Delta p \geq \frac{h}{4\pi}$

Here, Δx= uncertainty in position

Δp= uncertainty in momentum.

Q. What is orbital?

Ans:- An orbital is defined as the region in space around the nucleus where the probability of finding the electron is maximum.

Q. State pauli's exclusion principle.

Ans:- No two electrons in an atom can have same values for all the four quantum numbers.

Q. State Aufbau's principle.

Ans:- In the ground state of an atom an electron enter the orbital of lowest energy first and subsequent electrons are fed in the order of increasing energies, such as 1s 2s 2p 3s 3p 4s 3d 4p 5s 4d 5p 6s 4f 5d 6p 7s.

Q. State Hund's rule of maximum multiplicity.

Ans:- electron pairing will not take place in orbitals of Same energy until each orbital is singly occupied.

Q. Which shell would be the first to have a g subshell?

Ans:- 5^{th} energy shell.

Q. How many nodes are present in 3p orbital?

Ans:- no of nodes in an orbital= (n-l-1)

∴ no of nodes present in 3p orbital= (3-1-1)

=1

Q. Which quantum number does not follow Schrodinger wave eqation?

Ans:- Spin quantum number.

Q. What is the lowest shell which has an f subshell?

Ans:- Fourth shell.

Q. What is the number of orbitals in third principle shell?

Ans:- no of orbitals in third principle shell are= 3s(one)+3p(three)+3d(five) = 9

Q. What are the values of n,l m_l for 3p orbitals?

Ans:- For 3p orbital, value of n=3, l=1, m_l= -1,0,+1

Q. Explain the symbol $4d^6$.

Ans:- It means that 4d subshell have 6 electrons.