Date Planned : __ / __ / __	Daily Tutorial Sheet - 9	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration :_____

***106.** Select the correct statement(s) regarding $3p_y$ orbital:

(A) Total number of nodes are 2

(B) number of maxima in the curve $4\pi r^2\psi^2$ vs r are two

(C) Quantum number n, l and m for an orbital may be 3, 1, –1 respectively

(D) the magnetic quantum number may have a positive value

***107.** Choose the correct statements among the following:

(A) A node is a point in space where the wave-function Ψ has zero amplitude

(B) The number of maxima (peaks) in radial probability distribution function is $(n - l)$

(C) Radial probability is $4\pi r^2 R^2_{n,l}(r)$

(D) Ψ^2 represents probability density of finding electron

***108.** Select the correct statement(s):

(A) Heisenberg's principle is applicable to stationary electron

(B) Pauli's exclusion principle is not applicable to photons

(C) For an electron the product of velocity and principal quantum number will be independent to principal quantum number

(D) quantum numbers l and m determine the value of angular wave function

***109.** Select the correct statement (s):

(A) Lower value of quantum number l indicates that there is a higher probability of finding the 3s electron close to the nucleus than those of 3p and 3d electrons

(B) energy of 3s orbital is less than for the 3p and 3d orbitals

(C) At the node, the value of the radial function changes from positive to negative

(D) The radial function depends upon the quantum numbers n and l

***110.** For radial probability curves, which of the following is/are correct?

(A) The number of maxima in 2s orbital are two

(B) The number of spherical or radial nodes is equal to $n - l - 1$

(C) The number of angular nodes are 'l'

(D) $3d_z^2$ has 3 angular nodes

***111.** Choose the correct statement (s):

(A) The shape of an atomic orbital depends upon azimuthal quantum number

(B) The orientation of an atomic orbital depends upon the magnetic quantum number

(C) The energy of an electron in an atomic orbital of multi-electron atom depends upon principal quantum number only

(D) The number of degenerate atomic orbitals of one type depends upon the value of azimuthal quantum number

***112.** Select the correct statement(s):

(A) An electron near the nucleus is more attracted by the nucleus and has a low potential energy

(B) According to Bohr's theory, an electron continuously radiate energy if it stays in one orbit

(C) Bohr's model could not explain the spectra of multielectron atoms

(D) Bohr's model was the first atomic model based on quantisation of energy

***113.** Select incorrect statement(s):

(A) Only three quantum numbers *n*, *l* and *m* are needed to define an orbital

(B) Four quantum numbers are needed for complete description of an electron

(C) Two quantum numbers *n* and *l* are needed to identify subshell and shape of orbital

(D) Splitting of spectrum lines in presence of electric field is known as Zeeman effect

***114.** The angular momentum of electron can have the value(s):

(A) $0.5\frac{h}{\pi}$ **(B)** $\frac{h}{\pi}$ **(C)** $\frac{h}{0.5\pi}$ **(D)** $2.5\frac{h}{2\pi}$

115. The de-broglie wavelength of neutron at 27°C is λ. The wavelength at 927°C will be

(A) $\frac{\lambda}{9}$ **(B)** $\frac{\lambda}{4}$ **(C)** $\frac{\lambda}{2}$ **(D)** $\frac{\lambda}{3}$