Daily Tutorial Sheet 9	Level – 2

106.(ABCD)(A) $\rightarrow$ correct $3p_y \rightarrow 2$ nodes Total nodes $= n-1$

$n = 3$

(C) 'ℓ' is p-orbital has value 1

(D) Magnetic quantum number may positive as well as negative value

(B) Self explanatory

107.(ABD) C $\rightarrow$ incorrect

Radial probability density $= 4\pi r^2 \varphi^2$

108.(BCD) **(A)** Heisenberg's principle is applicable for non-stationary electron having certain velocity.

$$\Delta p \, \Delta x \geq \frac{h}{4\pi}$$

109.(ABCD) All are facts

(B) Energy order $\rightarrow$ $3s < 3p < 3d < 3f$

3s is closer to nucleus $\therefore$ is most stable.

Whereas 3f is farthest from nucleus and hence has maximum energy and is least stable.

110.(ABC) D $\rightarrow$ incorrect

$3d^2z$ has 2 angular nodes angular nodes $= \ell = 2$

111.(ABD) C $\rightarrow$ incorrect

Energy of electron in an atomic orbital of multi electron atom depends on 'n', 'ℓ', 'm_ℓ'.

112.(ACD) B $\rightarrow$ incorrect

According to Bohr's theory, an electron continuously moves in fixed energy having quantized energy.

113.(D) A, B, facts

D splitting of spectrum lines in presence of electric field is known as stark effect.

114.(ABC) $mvr = n\dfrac{h}{2\pi}$ n = integer value = 1, 2, 3, 4,...

D $\rightarrow$ incorrect

$mvr = \dfrac{nh}{2\pi}$; n = 1, 2, 3,....., 4

115.(C) $\lambda \propto \dfrac{1}{V} \propto \dfrac{1}{\sqrt{T}}$

$$\frac{\lambda_1}{\lambda_2} = \sqrt{\frac{T_2}{T_1}} \qquad \Rightarrow \qquad \frac{\lambda'}{\lambda} = \sqrt{\frac{300}{1200}}$$

$$\Rightarrow \qquad \lambda' = \frac{\lambda}{2}$$