Daily Tutorial Sheet-13	Level - 3

148.(A) ψ_{321} $\begin{matrix} n = 3 \\ \ell = 2 \end{matrix}$ 3d orbital

Orbital angular momentum $= \sqrt{(\ell+1)\ell}\,\frac{h}{2\pi} = \sqrt{2(3)}\,\frac{h}{2\pi} = \frac{\sqrt{6}h}{2\pi}$

Spherical nodes $= n - \ell - 1 = 3 - 2 - 1 = 0$

Angular nodes $= \ell = 2$

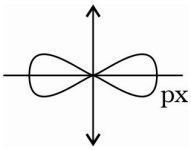
Sum $= \frac{\sqrt{6}h}{2\pi} + 0 + 2 = \frac{\sqrt{6}h + 4\pi}{2\pi}$

149.(ABD) C incorrect since l = 2 'm' can vary from –2 to 2 i.e –2, –1, 0, 1, 2

$\therefore \quad m \neq -3$

150.(C) $E = \frac{4c}{\lambda} \quad \Rightarrow \quad \frac{E_1}{E_2} = \frac{\lambda_2}{\lambda_1} \quad \Rightarrow \quad \frac{25eV}{50eV} = \frac{\lambda_2}{\lambda_1} \quad \Rightarrow \quad \lambda_1 = 2\lambda_2$

151.(ABD) C → incorrect



Probability of finding electron in px orbital is not same in all sides around nucleus but maximum at two opposite sides of nucleus along x-axis.

152.(AD) (B) Incorrect → light is E.M wave i.e electric and magnetic fields are independent of each other. Therefore presence of magnetic field does not deflect light.
(C) Incorrect → Photon contain different amount of energy.

153.(BCD) (A) Incorrect → Bohr's model comments about energy of e^- which is fixed and as one moves away from nucleus energy of state increases.