Daily Tutorial Sheet 5	Level – 1

61.(A) $\lambda = \dfrac{h}{mv} \Rightarrow 6.62 \times 10^{-35} = \dfrac{6.63 \times 10^{-34}\,J\sec}{100x} \quad \Rightarrow \quad x = 0.1\,kg$

62.(A) Valence electron is $4s^1$, so it is K.

63.(A) For d orbital $\ell = 2$, $L = \sqrt{\ell(\ell+1)}\,\dfrac{h}{2\pi} = \dfrac{\sqrt{6}h}{2\pi}$ where l = orbital angular momentum.

64.(D) $r \propto \dfrac{n^2}{Z} \Rightarrow \quad r_o = k \times \dfrac{1^2}{1} \Rightarrow k = r_o$

$r_3 = k \times \dfrac{3^2}{1} = 9k = 9r_o$ (2^{nd} excited state means n = 3)

If de-Broglie wavelength is λ then $3\lambda = 2\pi r_3 = 18\pi r_o \Rightarrow \lambda = 6\pi r_o$

65.(D) In H- spectrum, quantized energy levels are present.

66.(C) When '$n + l$' values are same we look for value of n and smaller the value of n more is the stability.

67.(A) Hund's rule is violated in 1^{st} case.

68.(D) m values can be between "$-\ell$ to $+\ell$" and the value of ℓ goes from 0 to $(n-1)$.

69.(C) m values can be between "$-\ell$ to $+\ell$" and the value of ℓ goes from 0 to $(n-1)$.

70.(C) $\lambda = \dfrac{6.63 \times 10^{-34}}{0.5 \times 100} = 1.3 \times 10^{-35} m$

71.(A) $0 \le \ell \le n-1$

72.(B) The given element is Scandium

Electronic configuration is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^1$

Element = 2K, 8L, 9M and 2N

$h_1 = 2\ (1s^2)$

$h_2 = 8\ (2s^2 + 2p^6)$

$h_3 = 9\ (3s^2 + 3p^6 + 3d^1)$

$h_4 = 2\ (4s^2)$

Total number of electrons = 21

73.(A) Total number of 's' electrons = 8

74.(B) Total number of 'p' electrons = 12

75.(A) Total number of 'd' electrons = 1