| Daily Tutorial Sheet 3 | Level – 1 |
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**31.(A)** In case of (A), each ion contains $18\,e^{-}s$ .

**32.(D)** Statement (D) is Heisenberg uncertainty principle.

**33.(B)** $\alpha$ – particles are $^{4}_{2}He^{2+}$ .

**34.(A)** Use $\Delta E \propto \left[\frac{1}{(n_1)^2} - \frac{1}{(n_2)^2}\right]$ On increasing n, energy difference between successive orbits decreases.

**35.(C)** $\Delta E = 1312\left(1 - \frac{1}{4}\right) = 984 \text{ kJ / mol}$

**36.(C)** Use $K.E_{max} = h\nu - W_0$

$K.E_{max}\left(\text{in ev}\right) = \frac{12400}{2000} - 4.2 = 2eV = 2 \times 1.6 \times 10^{-19} = 3.2 \times 10^{-19} J$

**37.(C)** $r_n \propto n^2 \Rightarrow r_1 : r_2 : r_3 = 1 : 4 : 9$

**38.(C)** $\phi = \frac{hc}{\lambda_0} = \frac{6.63 \times 10^{-34} \times 3 \times 10^{8}}{330 \times 10^{-9}} = 6 \times 10^{-19} J$

**39.(A)** These emissions belong to Lyman series

$\therefore$ UV rays

**40.(C)** In Bohr's model of atom,

- Electrons revolve around the nucleus in fixed energy paths called orbits.
- They do not emit radiations while revolving and their energy remains constant
- Angular momentum, $mvr = \frac{nh}{2\pi}$ where, n = number of orbit

**41.(A)** $\lambda = \frac{h}{mv} = \frac{6.63 \times 10^{-34} \text{ Js}}{\left(\frac{2.016}{N_A} \times 10^{-3} \text{ kg}\right) \times 2.4 \times 10^{5} \text{cm / s}} = 0.824 \times 10^{-12} \approx 1\text{Å}$

**42.(C)** $r_2 = 0.053 \times \frac{n^2}{Z} = 0.053 \times 4 \text{ nm}$

**43.(A)** $r_n = 0.529 \frac{n^2}{Z}\text{Å} = 0.529 \times \frac{4}{3}\text{Å}$

**44.(A)** $v_n \propto \frac{Z}{n} \Rightarrow v = k\frac{1}{1}$

For $Li^{2+}$, $v_3 = k \times \frac{3}{3} = v$

**45.(A)** M-shell: (n = 3) $\Rightarrow$ No. of orbital's = $n^2 = 9$