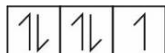
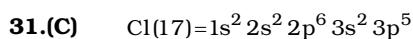


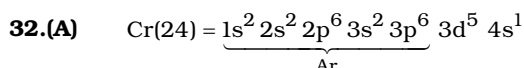
Daily Tutorial Sheet 3

JEE Advanced (Archive)

30.(C) Transition energy $(\Delta E) = kZ^2 \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right) = \frac{hc}{\lambda}$ i.e., $\Delta E \propto \frac{1}{\lambda}$



The last, unpaired electron has, $n = 3, l = 1(p)$ and m can have any of the three value $(-1, 0, +1)$



The above configuration is exception to Aufbau's principle.

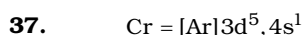
33.(C) X-rays is electrically neutral, not deflected in electric or magnetic fields.

34. Orbital

35. **(Orientation in space)**

$2p_x, 2p_y$ and $2p_z$ have different orientation in space.

36.(True) Very large mass of alpha particles than beta particles is responsible for less deflection in former case.



38.(C) Total number of nodes $= (n - 1)$

For $3p$ orbital, total nodes $= 3 - 1 = 2$

Number of radial nodes $= n - l - 1$

For $3p$ orbital, radial nodes $= 3 - 1 - 1 = 1$

Number of angular nodes $= l$

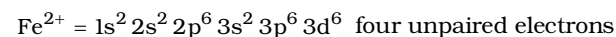
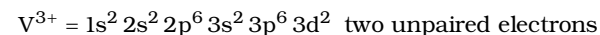
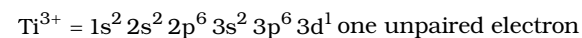
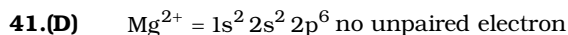
For $3p$ orbital number of angular nodes $= 1$

[For $3p$ orbital, $n = 3, l = 1$].

39.(D) Diffraction is property of wave, $E = mc^2$ determine energy of particle and $E = h\nu$ determine energy of photon.

40.(B) Expression for orbital angular momentum (L) is $L = \sqrt{l(l+1)} \frac{h}{2\pi} = 0$ for $3s$ -electrons

\therefore For s -orbital, $l = 0$

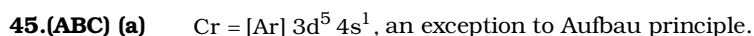


42.(A) The orbital angular momentum (L) $= \sqrt{l(l+1)} \frac{h}{2\pi} = \sqrt{6} \frac{h}{2\pi}$ ($l = 2$ for d -orbital)

43.(B) Bohr first made use of quantum theory to explain the structure of atom and proposed that energy of electron in an atom is quantised.

44. **(Heisenberg, de-Broglie)**

Heisenberg proposed uncertainty principle and de-Broglie proposed wave nature of electron.



(b) For a given value of l , m can have any value from $(-l$ to $+l)$, so can have negative value.

(c) Ag is in copper group with $d^{10}s^1$ configuration, i.e. 46 electrons are spin paired.