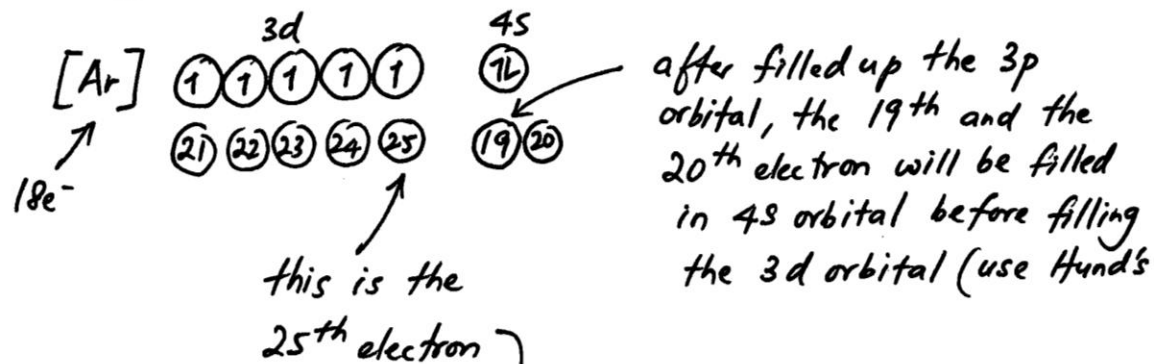
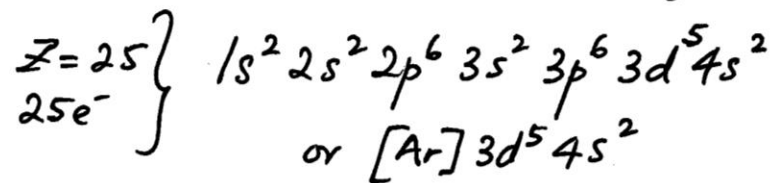


Specify the quantum numbers ( $n$ ,  $l$ ,  $m_l$  and  $m_s$ ) for the 25th electron at ground-state of manganese atom, Mn ( $Z = 25$ )  
(Use conventional where for  $m_l$  and  $m_s$  values, use negative number first before using the positive integers)

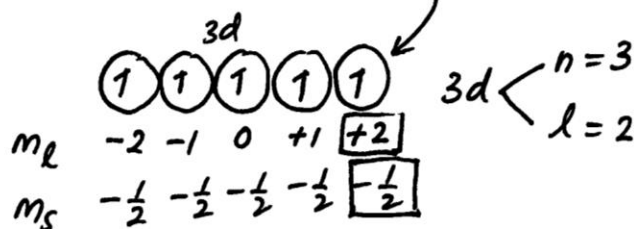
**Solution**



Ground-state electronic configuration of Mn atom is :



after filled up the 3p orbital, the 19<sup>th</sup> and the 20<sup>th</sup> electron will be filled in 4s orbital before filling the 3d orbital (use Hund's



So 25<sup>th</sup> electron of Mn ( $Z=25$ ) has quantum numbers as follows :

$$n = 3 ; l = 2 ; m_l = +2 ; m_s = -\frac{1}{2} \text{ (Ans)}$$