B. M. A. College Baheri Darbhanga.
CHEMISTRY. C. CHAUDHARY.
Mobile No:- 9006605185

Topic: Halogen Group:- Members of Halogen groups are F9, Cl17, Br35, I53 At85 their electronic configuration are written as.

F(9) $1s^2 2s^2 2p^5$

Cl 17 $1s^2 2s^2 2p^6 3s^2 3p^5$

Br 35 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$

I 53 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^5$

At 85 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^5$

From above configuration we see that all members of this group possess seven electron in their outermost orbit.

Exceptional Behaviour of F:-

As per trend of electron affinity Value Variation in a particular group of Periodic Table, it decrease from top to bottom, accordingly Florine should have higher electron affinity value

than Cl but exceptionally Cl has higher electron affinity value than F. The reason behind low electron affinity value of F is its smaller size and electronic repulsion is greater in it and due to this it has not lower electron affinity than Chlorine.

Since florine is most electronegative atom therefore it shows (-1) oxidation state. Since vacant d orbital is not available in case of "F" therefore it can not show higher oxidation state.

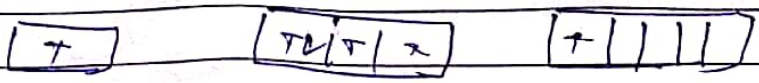
Contrary to florine other halogen can promote p electron to d orbital.

This can be represented in orbital box diagram as follows.

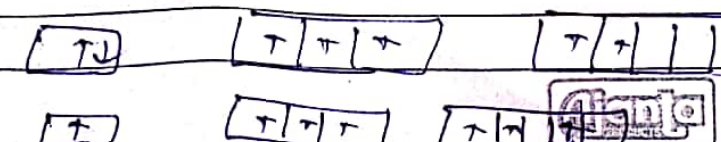
The common electronic configuration in orbital box diagram is as

Ground state

excited state



Due to this +3, +5, and +7 oxidation state possible.



Officer