*Question#47208 – Chemistry – Other*

**Question:**

How to draw and properly label the electronic configuration of Si (14),Ca (20) and Al (13). Also, specify the numbers of electrons and protons in the cores of these atoms?

**Answer:**

The atomic numbers of elements are listed in parentheses. The atomic number of an element refers to its proton number, therefore, the number of protons for each element:

$N_p$ (Si) = 14

$N_p$ (Ca) = 20

$N_p$ (Al) = 13

The number of electrons of the neutral atoms is the same as number of protons (negative charges of electrons compensate positive charges of protons).

$N_e$ (Si) = $N_p$ (Si) = 14

$N_e$ (Ca) = $N_p$ (Ca) = 20

$N_e$ (Al) = $N_p$ (Al) = 13

The electronic configuration shows the distributions of electrons on energy levels of atom. First the number of the level is noted, than the initial of sublevel (s, p, d, f…) with the superscript number of electrons on current subshell. The total sum of subshell superscripts produces the total number of electrons in atom.

For Si (14):

**$1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^2$**

For Ca (20):

**$1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^6$ $4s^2$**

For Al (13):

**$1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^1$**