Introduction to Chemistry II

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| **Atoms and Its Structure** |
| Atom are made up of these three subatomic particles: Protons, Neutrons and Electrons   |  |  |  | | --- | --- | --- | |  | Relative Mass | Relative Electric Charge | | Proton | 1 | +1 | | Electron | Negligible | -1 | | Neutron | 1 | 0 |   **An Atom is electrically neutral because the number of protons is equal to the number of electrons**  Important: Not all atom have neutron, as 1-H Only have one proton and one electron    Important: All atom are electrically neutral |

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| **Atomic Number and Mass Number** |
| Atomic Number of an atom = Number of Protons  Atomic Number is unique for each atom/element in the periodic table  Mass number of an atom = Number of protons + Number of Neutron |

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| **Full Atomic Symbol** |
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| **Full Atomic Symbol Ex.** |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Element | Number of Protons | Number of Neutron | Number of Electron | Full Atomic Symbol | | Ca |  | 26 |  |  | | K |  |  | 19 |  | | Al |  |  |  |  | | H |  |  | 1 |  | | C |  | 7 |  |  |   #: The Number of Proton is not necessary to be equal to the Number of Neutron |

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| **Introduction to the Periodic Table and Elements** |
| The Element in Periods N (指第N行) = That Element has N electrons shells  The Element in Group X (指第X列) = That Element has X number of electrons in the outermost electron shell  **Remark: Group 0 has 8 Electrons in the Outermost Electron Shell**  **Important: The Element has same number of electrons in the outermost electron shell have similar chemical property.** |

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| **Isotopes, Relative Isotopic Mass and Relative Atomic Mass** |
| Isotopes are different atoms of the same element, with the same number of protons but different number of neutrons |
| Relative Isotopic Mass = Mass Number |
| The Relative atomic mass of an element is the weighted average of the relative isotopic masses of the naturally occurring isotopes of the element on the 12-C scale |

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| **Arrangement of electrons in atoms** |
| Each Shell can hold up to a certain **maximum** number of electrons, where nth shell can hold up to 2n2   |  |  | | --- | --- | | nth Shell | Maximum Number of Electrons can be hold | | 1st |  | | 2nd |  | | 3rd |  | | 4th |  |   Electronic Arrangement:  *The way in which electrons are arranged in different electron shells*     |  |  |  |  |  | | --- | --- | --- | --- | --- | | Element | Atomic Number | Number of e- | Group | Number of Electronic Arrangement | | K | 19 |  | I |  | | Li |  | 3 |  |  | | Al |  | 13 |  |  | | Ca | 20 |  | II |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Ba | 56 |  | II | ， ， ， ， ， | | Te | 52 |  | VI |  | | Kr | 36 |  | 0 |  | |

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| **Electron Diagram** | |
| Mg | P |
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