

## ***TOPICS ON CHEMISTRY FOR ADMISSION TEST***

### **GENERAL CHEMISTRY**

Chemical reactions, types of chemical reactions

The structure of the atom

The composition of nucleus

Isotopes

Electronic structure of the elements (quantum numbers, orbital, electronic configuration)

Periodic table, periodic perspective: atomic and ionic radii, ionization energy, electron affinity electro negativity

Chemical bonds, the metallic, ionic and covalent bonds

Intermolecular forces

Changes of state of the matter. gaseous, liquid and solid states, relationship between phase phase diagrams

Aqueous solutions, electrolytes and nonelectrolytes, acids and bases

### **INORGANIC CHEMISTRY**

Hydrogen and oxygen, oxidation state, oxidation and reduction

Properties and reactions hydrogen and oxygen, compounds of hydrogen and oxygen

The halogens, compounds of the halogens

Noble gases, sources and uses of noble gases

Nitrogen, phosphorous, and sulfur

Industrial acids, compounds of nitrogen, phosphorus, and sulfur

Carbon, allotropic forms of carbon, inorganic compounds of carbon

Metals and metallurgy

The s- and p-block metals, transition metals

## **ORGANIC CHEMISTRY**

Covalent bonds of carbon, multiple covalent bonds in carbon compounds

Hydrocarbons, alkenes and cycloalkenes alkenes and alkynes

Aromatic hydrocarbons, heteroaromatic compounds

Alcohols and ethers aldehydes and ketones

Carboxylic acids, calculation of acidity

Salts, detergents

Esters and anhydrides

Amines and amides, calculation of basicity

Halogen, sulfur, phosphorus containing compounds

Isomerism in organic chemistry, structural, geometrical and optical isomers

### **Textbooks:**

- **McMurry, J., Fay, R.C.: Chemistry, 4th edition; New Jersey: Prentice-Hall, [2004], cop. 2004**
- **McMurry, J., Fay, R.C., Robinson J.K.: Chemistry, 7<sup>th</sup>, global edition; Harlow: Pearson, [2016], cop. 2016**