

Tolc-F CHEMISTRY syllabus

The constitution of matter. The structure of the atom. The periodic system of the elements

The structure of the atom: elementary particles; atomic number and mass number, isotopes, electronic structure of the atoms of the various elements.

The periodic system of the elements: groups and periods; transition elements; periodic properties of the elements: atomic radius, ionization potential, electron affinity; metals and non-metals; relationships between electronic structures, position in the periodic system and properties. Chemical bonds: ionic and covalent bonds; polarity of bonds; electronegativity.

The basics of general and inorganic chemistry. Inorganic compounds

The basics of inorganic chemistry. Nomenclature and main properties of inorganic compounds: oxides, hydroxides, acids, salts; position in the periodic system.

Chemical reactions. Oxide-reduction

Chemical reactions and stoichiometry: atomic and molecular weight, Avogadro number, mole concept, grams to moles conversion and vice versa, simple stoichiometric calculations, balance of simple reactions, various types of chemical reactions. Oxidation and reduction: number of oxidation, notion of oxidant and reducing agent.

Solutions. Acids and bases

Solvent properties of water; solubility; main ways of expressing the concentration of solutions. Acids and bases: concepts of acid and base; acidity, neutrality, basicity of aqueous solutions; pH.

Organic chemistry

The basics of organic chemistry: the chemistry of living things; bonds between carbon atoms; rough, structural and rational formulas; concept of isomerism; aliphatic, alicyclic and aromatic hydrocarbons; functional groups: alcohols, ethers, amines, aldehydes, ketones, carboxylic acids, esters, amides.