СТОМ-21ИН

Abstract of the work program of the discipline " Chemistry"

The main professional educational program of higher education is the specialty program in the specialty 31.05.03 Dentistry, approved on 24.05.2023.

• Form of study- full-time

• The period of development of OPOP IN -5 years

• Department- Chemistry and Physics

Discipline chemistry refers to the basic part of the Bloc 1 of the Federal State Educational Standard of Higher Education in the specialty **31.05.03 Dentistry**

The process of studying the discipline is directed to formation and development of **GPC-8 General professional competences**.

As a result of studying discipline the student should **Know**:

safety rules and work in chemical and physical laboratories with reagents and devices

the main types of chemical equilibrium and vital processes: protolytic, heterogeneous, ligand- exchange, red/ox, in life processes;

the main provisions of Werner's coordination theory, the role of metal biocomplexes in living organisms;

the definition and classification of buffer systems;

basic buffer systems of living organisms;

the definition and classification of buffer systems;

basic buffer systems of living organisms;

basic concepts of chemical kinetics;

factors affecting the reaction rate;

the reaction rate constant; law of the acting masses Rule of Van't Hoff;

the Arrhenius equation;

molecularity of the reaction;

Basic concepts and laws of thermodynamics;

Determination of adsorption, surface tension. The Langmuir theory. Shilov's rule;

Role of colloidal surfactants in the assimilation and transport of low-polar substances in the living body;

Basic principles of the theory of the structure of organic compounds;

Classification of organic compounds, nomenclature

Chemical properties o biologically active high-molecular substances

To be able to:

write of reaction equations and expressions for the constants of equilibrium processes;

explain the rules for the displacement of equilibrium;

determine the degree of oxidation, the coordination of the complexing ion;

write the equations of reactions of primary and secondary dissociation of complex compounds;

explain the mechanism of the action of buffer mixtures;

describe the kinetics of absorption processes, distribution of metabolites;

determine the surface tension and adsorption on the moving interface;

determine the influence of the specific surface of the adsorbent, the nature of the adsorbent, adsorbent;

apply the basic laws of organic chemistry to biological systems;

classify organic compounds taking into account the structure of the chain of carbon atoms and the functional groups present in the molecule;

write reaction equations that confirm the properties of biologically important compounds;

use knowledge to explain the biological functions of carbohydrates;

confirm the chemistry of biological processes with reaction equations.

To possess:

to search for and draw general conclusions;

basic concepts and laws of equilibrium processes;

the skills of a chemical experiment;

the technique of preparation buffer solutions, the technique of determining the buffer capacity

basic concepts and laws of kinetics;

The fundamentals of abstract thinking and analysis;

Physical and chemical aspects of surface phenomena, terminology and basic lawrs of surface

processes;

The main methods of obtaining and purifying colloidal solutions;

Methods of writing organic reactions, determining electronic effects;

Physico-chemical methods of studying the properties of organic substances.

The total complexity of discipline is 3 credit units (108 hours).

The main sections of discipline:

Fundamentals of General Chemistry, Buffer solutions, Fundamentals of Physical Chemistry, Fundamentals of colloid chemistry, Organic chemistry: biologically active high-molecular substances

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