## MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

## **Pirogov Russion National Research Medical University**

**Medical Faculty** 

**Depatment of chemistry** 

Discipline Chemistry

For 1st year students of the dental and international faculties studying in the specialty 31.05.03 "Dentistry"

7. II3 Buffer systems  8. II3 Electrode, redox and membrane potentials. The direction of a redox process  9. II3 Heterogeneous equilibria precipitate-solution and Activity  Activity  Online test «Buffer systems»  Activity  Online test «Redox processes»	ear	ies in the first semester 2022-2023 academic year	and international facult	dental a	"CHEMISTRY" curriculum for 1st year students o		
lesso   n   Quantitative description for the content of a solute in a solution. Colligative properties of solutions. Osmosis   Standard enthalpy of neutralization   Activity   Online test «Solutions and osmosis»	Points	P l a n			Topic	Type	#
1   113   Quantitative description for the content of a solute in a solution. Colligative properties of solutions. Osmosis		Assessment	Lab work			of the	week
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in a solution. Colligative properties of solutions. Osmosis    2 Jiii		L				n	
Osmosis    2	10	Activity	1		Quantitative description for the content of a solute	П3	1
3   II3   Chemical equilibrium   Chemical equilibrium   Chemical equilibrium   Chemical kinetics   Chemi				ises			
3   II3   Chemical equilibrium   Chemical equilibrium   Chemical equilibrium   Chemical kinetics   Chemi	10		Standard enthalpy of	erc	Fundamentals of chemical thermodynamics	ЛП3	2
4 II3 Chemical kinetics  Chemical kinetics  Online test «Chemical kinetics». «Chemical cequilibrium»  5 II3 Strong and weak electrolytes. Protolytic equilibria. pH of solution of strong and weak acids and bases  6. JIII3 Hydrolysis of salts. pH of solution of salts  Identification of solutions of electrolytes  7. II3 Buffer systems  Activity Online test «Strong and weak electrolytes»  Activity Online test «Buffer systems»  8. II3 Electrode, redox and membrane potentials. The direction of a redox process  9. II3 Heterogeneous equilibria precipitate-solution and  Activity	10 10	Online test «Solutions and osmosis»	neutralization				
4 II3 Chemical kinetics  Strong and weak electrolytes. Protolytic equilibrium.  5 II3 Strong and weak electrolytes. Protolytic equilibria. pH of solution of strong and weak acids and bases  6. JIII3 Hydrolysis of salts. pH of solution of salts  The direction of a redox process  9. II3 Heterogeneous equilibria procipitate-solution and  Activity  Online test «Chemical kinetics». «Chemical equilibrium»  Activity  Online test «Strong and weak electrolytes»  Identification of solutions of electrolytes  Online test «Strong and weak electrolytes»  Online test «Buffer systems»  Activity Online test «Redox processes»				as	Chemical equilibrium	П3	3
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6. JIII3 Hydrolysis of salts. pH of solution of salts    Identification of solutions of electrolytes   Identification of solutions of electrolytes   Online test «Strong and weak electrolytes»			1		nU of colution of strong and week saids and bases		
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8. II3 Electrode, redox and membrane potentials. The direction of a redox process Online test «Redox process»  9. II3 Heterogeneous equilibria precipitate-solution and Activity	10		electrolytes				
8. Π3 Electrode, redox and membrane potentials. The direction of a redox process Online test «Redox process»  9. Π3 Heterogeneous equilibria precipitate-solution and Activity	10	Activity			Buffer systems	ПЗ	7.
9. Transfer direction of a redox process and the direction of a redox processes and the directio	10	Online test «Buffer systems»					
9. Transfer direction of a redox process and the direction of a redox processes and the directio	10	Activity			Electrode, redox and membrane potentials. The	П3	8.
9. Π3 Heterogeneous equilibria precipitate-solution and Activity	10	<b>-</b>					
9. Heterogeneous equilibria precipitate-solution and Activity		•			•		
	10		1		Heterogeneous equilibria precipitate-solution and	113	9.
	ds» 10	Online test «Ksp and complex compounds»	1		gas-solution. Equilibria in solutions of complex		
compounds			1		compounds		

10.	К	Unit 1«General chemistry» (30 — online test, 20 – written control)					
11.	ПЗ	Classification and nomenclature of organic compounds	S		Activity Online test «Classification and nomenclature of organic compounds»	10 10	
12.	ПЗ	Electron structure of organic compounds	exercise		Activity Online test «Electron structure of organic compounds. Acidity and basicity of organic compounds»	10 10	
13.	П3	Free-radical and electrophilic reactions	1-class		Activity Online test «Free-radical and electrophilic reactions» Paper test «Free-radical and electrophilic reactions»	10 10 10	
14.	ПЗ	Reactivity of organic compounds with σ-bond carbon–heteroatom	In		Activity Online test «Reactivity of organic compounds with σ-bond carbon–heteroatom»	10 10	
15.	ПЗ	Reactivity of organic compounds with carbonyl group. Aldehydes and ketones			Activity Paper test «Reactivity of organic compounds with σ-bond carbon–heteroatom»	10 10	
16.	ПЗ	Carboxylic acids and their derivates			Activity Online test «Reactivity of organic compounds with carbonyl group » Paper test «Reactivity of organic compounds with carbonyl group »	10 10 10	
17.	ЛПЗ	Qualitative tests for organic compounds		Reactivity of organic compounds	Activity	10 10	
18	К	Unit 2«Organic chemistry» (30 — online test, 20 – paper test)					

## Video lectures

- 1. Fundamentals of chemical thermodynamics. Colligative properties of solutions. Osmosis.
- 2. Chemical equilibrium. Chemical kinetics
- 3 . Strong and weak electrolytes. Protoltic equilibria. Calculation of pH for electrolytes solutions. Buffer systems
- 4. Redox and membrane potentials. The direction of a redox process. Heterogeneous equilibria precipitate-solution. Equilibria in solutions of complex compounds.
- 5. Electron structure of organic compounds. Acidity and basicity of organic compounds
- **6** . Reactivity of organic compounds. Radical reactions. Electrophilic reactions
- 7. Reactivity of organic compounds with  $\sigma$ -bond carbon–heteroatom.
- **8.** Reactivity of organic compounds with carbonyl group

## The structure of mastering the discipline "Chemistry" for 1st year students of dental and international faculties studying in the specialty 31.05.03 Dentistry

						1 semester		
№	Forms of ongoing academic monitoring and intermediate certification of students (ФТКУ)	Technical and abbreviated name		Types of work of students (BPO)	Control types	Plan %	Coefficient for 1 point	
1	Monitoring for the presence (ΚΠ)	Presence	КП	Presence	Presence	5	0,19	
2	Account of activity (A)	Activity	A	In-class exercises	Participation	5	0,03	
3	Paper test (ΟΠ)	Paper test curren	<u>t</u> ОП	Completing a task in writing	Implementation is mandatory	12	0,4	
4	Online test (T9)	Online test currer	<u>nt</u> ТЭ	Completing a test task in electronic form	Implementation is mandatory	20	0,17	
5	Checking the lab (ЛР)	Lab	ЛР	Performance of lab	Implementation is mandatory	8	0,27	
6	Paper test (OK)	Paper test <u>unit</u>	ОК	Completing a task in writing	Implementation is mandatory	25	0,42	
7	Online test (T9)	Online test <u>unit</u>	ТЭ	Completing a test task in electronic form	Implementation is mandatory	25	0,63	