



MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of Higher Education
"Far Eastern Federal University"
(FEFU)
INSTITUTE OF LIFE SCIENCES AND BIOMEDICINE (SCHOOL)

APPRAISAL FUND
in the discipline of Clinical Pharmacology
Direction of training: 33.05.01 Pharmacy

Vladivostok
2023

The list of forms of assessment used at various stages of the formation of competencies in the course of mastering the discipline (module)
"Clinical pharmacology"

No p/n	Supervised sections/topics of the discipline	Code and the name of the indicator accomplishments	Learning Outcomes	Evaluation tools *	
				Current control	Intermediate certification
1	Section 1. General issues of clinical pharmacology	PC-1.1. Conducts a study of pharmacological activity and other types of activity of various compounds in laboratory animals	Knows the theoretical foundations of the study of pharmacological activity and other types of activity of various compounds in laboratory animals Able to study the pharmacological activity and other types of activity of various compounds in laboratory animals He is proficient in methods of studying pharmacological activity and other types of activity of various compounds on laboratory animals	UO-1, UO-2, PR-1, PR-4, UO-3	Questions to Exam 1-22, PR-1
		PC-1.2. Determines the pharmacokinetic parameters of substances in laboratory animals	Knows the theoretical foundations for determining the pharmacokinetic parameters of substances in laboratory animals Able to determine the pharmacokinetic parameters of substances in laboratory animals He is proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals	UO-1, UO-2, PR-1, PR-4, UO-3	Questions to Exam 1-22, PR-1
		PC-1.3. Conducts a study of the bioavailability of substances on various models in vitro and in vivo	Knows the theoretical foundations of studying the bioavailability of substances in various models in vitro and in vivo Able to study the bioavailability of substances in various models in vitro and in vivo	UO-1, UO-2, PR-1, PR-4, UO-3	Questions to Exam 1-22, PR-1

			He is proficient in methods of studying the bioavailability of substances on various models in vitro and in vivo		
		PC-1.5. Conducts the development of methods and the study of pharmacokinetics at the preclinical and clinical level	<p>Knows the theoretical foundations of the development of methods and the study of pharmacokinetics at the preclinical and clinical level</p> <p>Able to carry out the development of methods and the study of pharmacokinetics at the preclinical and clinical level</p> <p>He is proficient in methods for the development of methods and the study of pharmacokinetics at the preclinical and clinical levels</p>	UO-1, UO-2, PR-1, PR-4, UO-3	Questions to Exam 1-22, PR-1
2	Section 2. Private Clinical Pharmacology	PC-7.1. Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms	<p>Knows the theoretical foundations of information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other products of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>Is able to provide information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>He is proficient in methods of information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms</p>	UO-1, UO-2, PR-1, PR-4, UO-3	Questions to Exam 23-81, PR-1

		<p>PC-7.2. Informs medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms</p>	<p>Knows the theoretical foundations of informing medical workers about drugs, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>Knows how to inform medical professionals about drugs, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>Owns methods of informing medical workers about drugs, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms</p>	<p>UO-1, UO-2, PR-1, PR-4, UO-3</p>	<p>Questions to Exam 23-81, PR-1</p>
		<p>PC-7.3. Decides on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and prices for them, taking into account the biopharmaceutical characteristics of dosage forms</p>	<p>Knows the theoretical basis for making a decision on replacing a prescribed drug with synonymous or similar drugs in the prescribed manner on the basis of information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>Is able to make a decision on the replacement of the prescribed drug with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>Possesses methods for making a decision on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one</p>	<p>UO-1, UO-2, PR-1, PR-4, UO-3</p>	<p>Questions to Exam 23-81, PR-1</p>

			international nonproprietary name and prices for them, taking into account the biopharmaceutical characteristics of dosage forms		
	Test/Exam	PC-1, PC-7		–	UO-1, PR-1

*Recommended forms of evaluation tools:

- 1) interview (MA-1), colloquium (MA-2); report, report (MA-3); round table, discussion, controversy, dispute, debate (MA-4); etc.
- 2) tests (PR-1); tests (PR-2), essays (PR-3), essays (PR-4), term papers (PR-5), scientific and educational reports on practices (PR-6); laboratory work (PR-7); portfolio (PR-8); project (WP-9); business and/or role-playing game (PR-10); case problem (PR-11); workbook (PR-12), etc.
- 3) simulator (TS-1), etc.

Scale for assessing the level of achievement of learning outcomes for current and intermediate certification *in the discipline*

"Clinical pharmacology"

<i>Points (rating score)</i>	<i>Levels of achievement Training</i>		<i>Requirements for formed competencies</i>
	<i>Current and intermediate certification</i>	<i>Intermediate certification</i>	
<i>100 – 86</i>	<i>Increased</i>	<i>"credited" / "Excellent"</i>	Freely and confidently finds reliable sources of information, operates with the information provided, has excellent skills in analyzing and synthesizing information, knows all the basic methods of solving problems provided by the curriculum, knows typical mistakes and possible difficulties in solving a particular problem and is able to choose and effectively apply an adequate method for solving a specific problem. trouble
<i>85 – 76</i>	<i>Base</i>	<i>"credited" / "Good"</i>	In most cases, he is able to identify reliable sources of information, process, analyze and synthesize the proposed information, choose a method for solving the problem and solve it. Makes single serious mistakes in solving problems, experiences difficulties in rare or complex cases of problem solving, does not know typical mistakes and possible difficulties in solving one or another trouble
<i>75 – 61</i>	<i>Threshold</i>	<i>"credited" / "Satisfyingly "</i>	Makes mistakes in determining the reliability of sources of information, is able to correctly solve only typical, most common problems in a specific area (process information, choose a method for solving a problem and solve it)
<i>60 – 0</i>	<i>Level Not reached</i>	<i>"not credited" / "Dissatisfied"</i>	He does not know a significant part of the program material, makes significant mistakes, hesitantly, with great difficulty, performs practical work.

I. Current certification in the discipline "Clinical Pharmacology"

The current certification of students in the discipline "*Clinical Pharmacology*" is carried out in accordance with the local regulations of FEFU and is mandatory.

Current certification in the discipline is carried out in the form of control measures (*interview, colloquium, testing, essay, message, report*) to assess the actual learning outcomes of students and is carried out by the leading teacher.

For each object, a description of the evaluation procedures is given in relation to the appraisal tools used.

Assessment tools for ongoing control

An interview (oral survey) allows you to assess the knowledge and horizons of the student, the ability to logically build an answer, the possession of monologue speech and other communication skills.

Questioning is the most important means of developing thinking and speech. The training function of the survey is to identify details that, for some reason, were not sufficiently meaningful during training sessions and when preparing an assignment for independent work.

The objects of assessment are:

- academic discipline (activity in the classroom, timeliness of various types of tasks, attendance of all types of classes in the discipline being certified);
- the degree of assimilation of theoretical knowledge (survey);
- the level of mastery of practical skills in all types of educational work (colloquium);
- results of independent work.

Requirements for the presentation and evaluation of materials (results):

Criteria for grading a student in the discipline "Clinical Pharmacology"

Evaluation criteria.

Evaluation	Requirements
"Credited"	The student has the skills of independent work on the research topic, abstract literary sources; methods of analysis of theoretical and/or practical aspects of the study area. The answer is characterized by semantic integrity, coherence and consistency of presentation. The student is able to summarize the factual material, to draw independent conclusions. The work meets the requirements and is completed on time.
"Not credited"	The structure and theoretical component of the topic are not disclosed. The student does not know how to summarize factual material, draw independent conclusions, does not have the skill to abstract literary sources. The task was not completed.

Test control.

1. Topic: General issues of clinical pharmacology.

(choose one or more correct answers)

№ 1. A reflex action is an action that occurs when a drug substance stimulates receptors:

1. afferent link of the reflex
2. the central links of the reflex
3. efferent link of the reflex

№ 2. Medicinal substances that excite some receptors and block others are referred to as:

1. agonist-antagonists
2. Partial agonists
3. Antagonists
4. Total agonists

№ 3. What is the term for unusual reactions to drugs, usually associated with genetically determined enzymopathies and arising from the first administration of substances?

1. sensitization
2. tachyphylaxis
3. idiosyncrasy
4. abstinence
5. habituation

№ 4. Types of cumulation:

1. Material
2. Functional
3. Psychic
4. Physiological
5. Physical

№ 5. What is characteristic of the side effects of the drug substance non-allergic nature?

1. occur when the substance is used in therapeutic doses
2. belong to the spectrum of pharmacological action of the drug substance
3. The severity of the effects does not depend on the dose
4. The severity of the effects increases with increasing dose

№ 6. Adverse effect on the embryo, accompanied by the development of congenital deformities, denoted by the term:

1. mutagenic effect
2. Teratogenic effect
3. Embryotoxic effect
4. Fetotoxic effect

№ 7. Mark the correct statements:

1. The severity of the effect of drugs may vary depending on the time of administration (the so-called circadian rhythms)
2. The severity and direction of the effect of drugs may vary depending on the sex of the patient
3. The severity of the effect of drugs may depend on the age of the patient
4. The time of administration, sex and age of patients do not affect the severity and the direction of action of medicinal substances

№ 8. Enteral routes of drug administration:

1. inwards
2. sublingually
3. under the skin
4. Buccal
5. into the duodenum
6. rectally
7. into the muscle

№ 9. What dosage forms can not be injected into a vein

1. hypertonic solutions
2. Suspension
3. oil solutions

№ 10. The main mechanism of absorption of most drugs in the digestive tract:

1. filtration
2. Pinocytosis
3. Passive diffusion
4. Active transport
5. facilitated diffusion

№ 11. With inhalation administration of medicinal substances

1. enter the general bloodstream, passing through the hepatic barrier
2. enter the general bloodstream, bypassing the hepatic barrier
3. are absorbed by active transport
4. are absorbed by passive diffusion
5. As a rule, they quickly cause an effect
6. As a rule, slowly cause the effect

№ 12. Through the histohematological barriers from the blood into the tissues more easily penetrate:

1. non-polar lipophilic compounds
2. polar hydrophilic compounds

№ 13. Medicinal substances that intensively bind to plasma proteins:

1. do not exhibit pharmacological activity

2. are metabolized faster
3. are excreted faster from the body
4. Valid for a longer time

№ 14. Can pharmacologically more active substances be formed during the biotransformation of medicinal substances?

1. Yes.
2. No.

№ 15. In the pathology of the kidneys, the following changes in the pharmacokinetics of drugs occur, except:

1. disorders of renal excretion
2. increase in the concentration of drugs in the blood plasma;
3. decrease in binding to plasma proteins
4. increase in $T_{1/2}$
5. reducing bioavailability

№ 16. Cirrhosis of the liver is caused by the following changes in the pharmacokinetics of drugs, except:

1. reduction of presystemic metabolism
2. decrease in binding to plasma proteins
3. increase in $T_{1/2}$
4. increase bioavailability
5. Decreasing the volume of distribution

№ 17. Alcohol with a single dose of large doses leads to:

1. increase the absorption of drugs
2. increasing the volume of drug distribution
3. slowing metabolism in the liver
4. decreased renal excretion
5. increase in $T_{1/2}$

№ 18. Internal activity is:

1. The ability of a substance to bind to specific receptors
2. The ability of a substance, when binding to specific receptors, stimulates them and causes an effect
3. The ability of a substance, when binding to specific receptors, to block them and cause an effect

№ 19. Concomitant intake of alcohol and paracetamol is accompanied by an increased risk of developing:

1. nephrotoxicity
2. ototoxicity
3. Hepatotoxicity
4. alcohol intolerance
5. allergic reactions

№ 20. Note two main types of synergy in the interaction of drugs:

1. Agonism
2. Summation of effects (additive interaction)
3. Potentiation

№ 21. Indicate the result of the interaction of khlopromazine and phenobarbital

1. Diminishing the effect
2. Amplification of the effect
3. neutralization

№ 22. Indicate the result of the interaction of heparin and protamine sulfate

1. Diminishing the effect
2. Amplification of the effect
3. neutralization

№ 23. Indicate the result of the interaction of sulfanilamide and orange juice:

1. Diminishing the effect
2. Amplification of the effect
3. neutralization
4. Reduction of side effects
5. Increased side effects

№ 24. Mark the correct statements:

1. The concept of "pharmacodynamics" includes the absorption, distribution, deposition, biotransformation and excretion of medicinal substances
2. The concept of "pharmacodynamics" includes pharmacological effects, types of action, mechanisms and localization of action
3. The pharmacokinetics and pharmacodynamics of substances can be influenced by gender, age, pathological conditions, time of administration and dose of substances

№ 25. Indicate the result of the interaction of cholestyramine and vitamin B1:

1. Diminishing the effect
2. Amplification of the effect
3. neutralization
4. Reduction of side effects
5. Increased side effects

2. Test tasks. Drugs for the treatment of diseases of the cardiovascular system.

(Choose one correct answer)

No. 1 The bioavailability of a drug is the percentage of the active drug in:

1. urine
2. gastric juice
3. systemic blood flow

4. pancreatic juice

No. 2 Renal clearance is the quotient of division:

1. concentration of the drug in the urine on the rate of its appearance in the blood
2. the rate of appearance of the drug in the urine at its concentration in the plasma
3. the rate of appearance of the drug in the plasma on its concentration in the urine
4. concentration of the drug in plasma on the rate of its appearance in the urine

No. 3 Elimination half-life ($T_{1/2}$) is the time during which half of the administered dose of the drug:

1. Absorbed
2. Displays
3. inactivated
4. inactivated and excreted

No. 4 The dose of the drug for the elderly should be:

1. increased by 10%
2. Increased by 50%
3. reduced by 10%
4. Reduced by 50%

No. 5 In the treatment of hypertension, an ACE inhibitor is used:

1. Raunatin
2. Dibazole;
3. Enalapril
4. papaverine

No. 6 In the treatment of hypertension, a b-blocker is used:

1. Atenolol
2. Lasix
3. pentamine
4. Reserpine

No. 7 In the treatment of hypertension, an antagonist to angiotensin-2 receptors is used:

1. Dibazole;
2. valsartan
3. Furosemide
4. Clonidine

No. 8 In the treatment of hypertension, a calcium ion antagonist is used:

1. Raucedil
2. Clonidine

3. Isoptin
4. Captopril

No. 9 In the treatment of hypertension apply:

1. Bronchodilators
2. Diuretics
3. Glucocorticosteroids
4. Cytostatics

No. 10 ACE inhibitor is:

1. Inderal
2. Losartan
3. Captopril
4. Raunatin

No. 11 Antiarrhythmic drug is:

1. nitroglycerine
2. Lidocaine
3. papaverine
4. Raunatin

No. 12 The role of clonidine in the treatment of arterial hypertension:

1. relief of hypertensive crises
2. The drug of choice in pediatric practice
3. Help with orthostatic collapse
4. Prevention of damage to "target organs"
5. Prevention of hypertensive crises

No. 13 The drug of choice for the relief of hypertensive crises during pregnancy is:

1. hydrochlorothiazide
2. Captopril
3. methyldopa
4. Prazosin
5. metoprolol

No. 14 The antihypertensive effect of metaprolol is associated with:

1. direct vasodilator action
2. effect on the vasomotor center of the brain
3. blockade of cholinergic receptors in the nerve ganglia
4. decrease in the formation of ACE
5. decrease in renin production and obstruction of vasoconstriction

No. 15 Preparation for the relief of hypertensive crisis:

1. Captopril
2. Enalapril
3. Betaxolol

4. carvedilol
5. Indapamide

No. 16 Dry cough that occurs during the use of ACE inhibitors is associated with:

1. with an allergic reaction
2. With an increase in renin levels
3. With an increase in bradykinin levels
4. with an effect on the respiratory center
5. with irritation of the respiratory tract with a medicinal substance

No. 17 Safety criteria for metoprolol therapy

1. absence of AV blockades
2. absence of tachycardia
3. absence of hypocholesterolemia
4. no hearing impairment
5. absence of hypertensive crises

No. 18 The indication for the appointment of enalapril is not

1. atrial fibrillation
2. myocardial infarction
3. angina pectoris
4. arterial hypertension
5. CHF

No. 19 The mechanism of antihypertensive action of thiazide diuretics is associated with

1. decrease in heart rate
2. suppression of RAAS activity
3. increased sodium excretion
4. decrease in cardiac output
5. potassium retention

No 20 The main factors determining the level of blood pressure:

1. Heart rate and cardiac output
2. LDL and LDL levels
3. renin and angiotensin II levels
4. BCC and OPSS
5. cardiac output and OPSS

No. 21 Simultaneous application is unacceptable, why?

1. verapamil with metoprolol
2. metoprol with hydrochlorothiazide
3. enalapril with hydrochlorothiazide
4. indapamide with perendopril
5. amlodipine with enalapril

Because _____

No. 22 The role of prazosin in the treatment of patients with arterial hypertension:

1. It is the drug of choice for a combination of arterial hypertension with angina pectoris
2. It is the drug of choice in pediatric practice
3. It is the drug of choice when combined with arterial hypertension with prostatic hyperplasia
4. It is used to relieve hypertensive crises
5. It is the drug of choice in pregnant women

No. 23 The risk of hyperkalemia increases with a combination of:

1. Enalapril with veroshpiron
2. captopril with nifedipine
3. enalapril with hydrochlorothiazide
4. metoprolol with hydrochlorothiazide
5. indapamide with amlodipine

No. 24 Target organs in arterial hypertension:

1. heart and kidneys
2. Heart and liver
3. organs of the gastrointestinal tract
4. thyroid and pancreas
5. Respiratory

No. 25 In arterial hypertension, the criterion for the effectiveness of ACE inhibitor therapy is:

1. absence of hyperkalemia
2. no cough
3. normalization of blood pressure for 1-2 days
4. lack of progression of target organ damage
5. no headache

No. 26 Undesirable effects of hydrochlorothiazide:

1. hyperkalemia
2. neurotoxicity
3. Hepatotoxicity
4. Aetiology
5. Hypercholesterolemia

No. 27 The main indication for the use of azamethonium bromide is:

1. atherosclerosis
2. Prevention of angina pectoris attacks
3. arterial hypertension
4. tachyarrhythmia
5. Relief of hypertensive crisis

No. 28 The phenomenon of the first dose with the use of doxazosin is manifested:

1. Headache
2. Hypertension
3. Weakness
4. reflex tachycardia
5. orthostatic hypotension

No. 29 The indication for the appointment of amlodipine is not:

1. arterial hypertension
2. Relief of hypertensive crisis
3. Prevention of angina pectoris attacks
4. prevention of attacks of Prinzmetal's angina pectoris
5. arterial hypertension in combination with angina pectoris

No. 30 Preparation of the first, first aid for hypertensive crisis:

1. azamethonium bromide
2. Enalapril
3. sodium nitroprusside
4. Captopril
5. magnesium sulfate

No. 31 Choose an undesirable effect that is not characteristic of verapamil:

1. Aetiology
2. Constipation
3. development of AV blockade
4. swelling of the legs and feet
5. bronchospasm

No. 32 With arterial hypertension in combination with sinus tachycardia, preference should be given to:

1. calcium channel blockers of dihydropyridine derivatives;
2. loop diuretics
3. β -adrenergic blockers
4. α -adrenergic blockers
5. thiazide diuretics

No. 33 For the treatment of arterial hypertension in patients with bronchial asthma can not be used:

1. calcium channel blockers
2. angiotensin II receptor antagonists
3. α 1-adrenergic blockers
4. β -adrenergic blockers
5. Diuretics

No. 34 List groups of drugs that improve the prognosis of patients with CHF:

1. ACE inhibitors

2. β -blockers
3. angiotensin II receptor blockers
4. Spironolactone
5. All of these drugs

No. 35 List drugs that have a direct positive inotropic effect:

1. Digoxin
2. Dopamine
3. Amrinone
4. levosimendan
5. All of these drugs

No. 36 The drug of choice for ventricular tachyarrhythmias associated with myocardial infarction:

1. Quinidine
2. amiodarone
3. Propranolol
4. Lidocaine

No. 37 Correct:

1. Nitroglycerin dilates mainly resistive vessels
2. Dopamine is a cardiogenic agent
3. thiazides reduce the toxicity of cardiac glycosides
4. Clonidine reduces the effect of ethanol on the central nervous system

No. 38 For what purpose are antiplatelet agents prescribed in medical practice:

1. Only to dissolve fresh blood clots
2. only to prevent the formation of blood clots.

No. 39 Mechanism of lipid-lowering action of statins:

1. activation of lipoprotein lipase
2. Increased triglyceride catabolism
3. Blockade of mevalonic acid metabolism
4. Increased number of LDL receptors on the hepatocyte

No. 40 Nicotinic acid:

1. inhibits lipolysis
2. promotes the absorption of cholesterol in the intestines
3. inhibits the absorption of fats
4. reduces HDL content

II. Intermediate certification in the discipline "Clinical Pharmacology"

Intermediate certification of students. Intermediate certification of students in the discipline "Clinical Pharmacology" is carried out in accordance with the local regulations

of FEFU and is mandatory.

Assessment tools for intermediate control (exam)

Final Test in Clinical Pharmacology

(choose one correct answer)

№ 1. Choose an undesirable effect that is not characteristic of verapamil:

- 1) bradycardia
- 2) constipation
- 3) the development of AV blockade
- 4) swelling of the legs and feet
- 5) bronchospasm

№ 2. For the treatment of arterial hypertension, the drug of first choice in a patient with chronic heart failure is:

- 1) Enalapril
- 2) Verapamil
- 3) Clonidine
- 4) Prazosin
- 5) Nifedipine

№ 3. With arterial hypertension in combination with sinus tachycardia, preference should be given to:

- 1) calcium channel blockers of dihydropyridine derivatives;
- 2) loop diuretics
- 3) β -blockers
- 4) α -blockers
- 5) thiazide diuretics

№ 4. α 1-blockers are the drugs of choice for the treatment of arterial hypertension:

- 1) in patients with liver disease
- 2) in patients with rhythm disturbances
- 3) in elderly men with prostate adenoma and difficulty urinating;
- 4) in patients with angina pectoris
- 5) in patients with a history of myocardial infarction

№ 5. For the treatment of arterial hypertension in patients with bronchial asthma can not be used:

- 1) calcium channel blockers
- 2) angiotensin II receptor antagonists
- 3) α 1-adrenergic blockers
- 4) β -blockers
- 5) diuretics

№ 6. List groups of drugs that improve the prognosis of patients with CHF:

- 1) ACE inhibitors
- 2) β -blockers
- 3) angiotensin II receptor blockers
- 4) Spironolactone
- 5) all of the listed drugs

№ 7. List the drugs that have a direct positive inotropic effect:

- 1) digoxin
- 2) Dopamine
- 3) Amrinone
- 4) levosimendan
- 5) all of the listed drugs

№ 8. In case of insufficiency of the hypotensive effect of ACE monotherapy, it is advisable for a patient with arterial hypertension to add:

- 1) hydrochlorothiazide
- 2) Triamterene
- 3) Furosemide
- 4) nifedipine

№ 9. Activator of potassium products:

- 1) Quinidine
- 2) amiodarone
- 3) Minoxidil
- 4) nifedipine

№ 10. Digitalis preparation:

- 1) Strophanthin K
- 2) Korglikon
- 3) Digoxin
- 4) nifedipine

№ 11. Sodium channel blocker of subgroup IA of antiarrhythmic drugs:

- 1) Novocainamide
- 2) propafenone
- 3) Digoxin
- 4) Lidocaine

№ 12. Sodium channel blocker of subgroup IB of antiarrhythmic drugs:

- 1) Novocainamide
- 2) Lidocaine
- 3) Digoxin
- 4) Quinidine

№ 13. With atrioventricular blockade, apply:

1) Atenolol

2) Inderal

3) atropine

4) Enalapril

№ 14. In acute heart failure, apply:

1) Dobutamine

2) sodium nitroprusside

3) nitroglycerine

4) Spironolactone

№ 15. The mechanism of antianginal action of validol:

1) myotropic coronary dilating effect

2) reflex coronary dilating action

3) inhibition of the central links of coronary reflexes

№ 16. Cardioprotective agent:

1) Nifedipine

2) Validol

3) trimetazidine

4) nitrosorbide

№ 17. Correct:

1) nifedipine dilates mainly venous vessels

2) Clonidine stimulates the adrenergic receptors of the baroreceptor reflex centers

3) Captopril reduces renin secretion

№ 18. A remedy that reduces the activity of the renin-angiotensin system:

1) Pentamine

2) Captopril

3) Prazosin

4) sodium nitroprusside

№ 19. The principle of action of enalapril:

1) inhibits renin secretion

2) disrupts the transition of angiotensinogen to angiotensin I

3) disrupts the transition of angiotensin I to angiotensin II

4) Blocks angiotensin receptors

№ 20. The principle of action of losartan:

1) inhibits renin secretion

2) disrupts the transition of angiotensinogen to angiotensin I

3) disrupts the transition of angiotensin I to angiotensin II

4) Blocks angiotensin receptors

№ 21. Note the antihypertensive agent from the group of sympatholytics:

1) Reserpine

- 2) magnesium sulfate
- 3) Inderal
- 4) phentolamine

№ 22. The drug of choice for ventricular tachyarrhythmias associated with myocardial infarction:

- 1) Quinidine
- 2) amiodarone
- 3) Propranolol
- 4) Lidocaine

№ 23. Correct:

- 1) cardiac glycosides are used for supraventricular tachyarrhythmias
- 2) Panangin is a preparation of potassium and calcium
- 3) Hydrochlorothiazide causes hypermagnesemia
- 4) Cardiac glycosides reduce the level of calcium in cardiomyocytes

№ 24. Correct:

- 1) Nitroglycerin dilates mainly resistive vessels
- 2) Dopamine is a cardiotonic agent
- 3) thiazides reduce the toxicity of cardiac glycosides
- 4) Clonidine reduces the effect of ethanol on the central nervous system

№ 25. Increase the excretion of magnesium and potassium:

- 1) Spironolactone
- 2) Hydrochlorothiazide
- 3) Triamterene
- 4) Enalapril

№ 26. Groups of drugs that lower blood clotting:

- A. fibrinolytics
- B. anticoagulants
- B. Fibrinolysis inhibitors
- G. hemostatics
- E. antiplatelet agents

- 1) A, B, C
- 2) B,C,D
- 3) V,D,D
- 4) A, B, D

№ 27. The mechanism of anticoagulant action of heparin:

- 1) inhibits the synthesis of prothrombin in the liver
- 2) binds calcium ions, disrupting the transition of prothrombin to thrombin
- 3) enhances the inhibitory effect of antithrombin III on the transition of prothrombin to thrombin and thrombin

№ 28. For what purpose in medical practice are antiplatelet agents prescribed:

- 1) only to dissolve fresh blood clots
- 2) only to prevent the formation of blood clots.

№ 29. The mechanism of antifibrinolytic action of aminocaproic acid:

1) inhibits the transition of profibrinolysin to fibrinolysin, inhibiting the activators of this process

- 2) It has a direct inhibitory effect on fibrinolysin
- 3) acts directly on fibrin, stabilizing it

№ 30. In the pharmacotherapy of atherosclerosis, it is rational to use:

- 1) adrenomimetics
- 2) lipid-lowering agents
- 3) caffeine
- 4) glucocorticoids

№ 31. The mechanism of lipid-lowering action of statins:

- 1) activation of lipoprotein lipase
- 2) Increased triglyceride catabolism
- 3) Blockade of mevalonic acid metabolism
- 4) Increased number of LDL receptors on the hepatocyte

№ 32. Mechanism of lipid-lowering action of ezetimib:

- 1) Binds bile acids in the intestine
- 2) Compensatory increases the synthesis of cholesterol in the liver
- 3) Inhibits the transporter of cholesterol in intestinal enterocytes
- 4) Inhibits 3-hydroxy-3 methylglutarylcoenzyme-A-reductase and the synthesis of cholesterol in the liver

No. 33 The effectiveness of fibrates is due to:

- 1) increased activity of lipoprotein lipase
- 2) HDL reduction
- 3) decrease in the absorption of fats
- 4) Impaired absorption of lipids in the gastrointestinal tract

№ 34. Nicotinic acid:

- 1) inhibits lipolysis
- 2) promotes the absorption of cholesterol in the intestines
- 3) inhibits the absorption of fats
- 4) reduces HDL content

№ 35. The adverse effect of drugs on the embryo, accompanied by the development of congenital deformities, is denoted by the term:

- 1) mutagenic effect
- 2) Teratogenic effect
- 3) Embryotoxic effect
- 4) Fetotoxic effect

List of questions for the exam

1. The subject and objectives of clinical pharmacology. Sections of clinical pharmacology (clinical pharmacokinetics, pharmacodynamics, pharmacogenetics, pharmacoconomics, pharmacoepidemiology).
2. The concept of pharmacotherapy. Types of pharmacotherapy (etiologic, pathogenetic, symptomatic, prophylactic). Basic principles of rational pharmacotherapy (minimization, rationality, economy, controllability, individuality). Stages of pharmacotherapy.
3. Undesirable drug reactions. WHO classification: A, B, C, D, E. Toxic drug reactions.
4. Allergic and pseudo-allergic drug reactions. Principles of medical care for patients. Relief of anaphylactic shock. Measures to prevent allergic reactions.
5. Risk factors for the development of undesirable drug reactions. diagnosis, correction and prevention of adverse drug reactions. Rules for notifying the state supervision authorities of medicines about the occurrence of adverse drug reactions.
6. Drug interactions. Types of interaction, pharmaceutical interaction.
7. The concept of drug interactions. Pharmacokinetic interaction (at the levels of absorption, distribution, metabolism, excretion).
8. The concept of drug interactions. Pharmacodynamic interaction of drugs (direct and indirect). Synergy and antagonism.
9. Interaction of drugs with food, alcohol, components of tobacco smoke, herbal remedies. Risk factors for drug interactions.
10. Features of pharmacokinetics and pharmacodynamics of drugs in pregnant women and the fetus. Categories of drugs according to the degree of risk to the fetus according to WHO: A, B, C, D, E, X.
11. Principles of pharmacotherapy in pregnant women. Critical periods. Teratogenicity, embryotoxicity and fetotoxicity of drugs. Features of pharmacokinetics and pharmacodynamics in lactating women.
12. Features of pharmacokinetics and pharmacodynamics of drugs in children. Calculation of the dose of the drug in children. Features of pharmacotherapy in children.
13. Features of pharmacokinetics and pharmacodynamics of drugs in the elderly. Calculation of the dose of the drug in the elderly. Features of pharmacotherapy in elderly and senile patients.

14. Clinical pharmacoeconomics. Criteria for pharmaco-economic studies. Estimating the cost of drug treatment (cost estimate). Types of pharmaco-economic analysis.
15. Clinical trials of medicines: phases of clinical trials, the concept of GCP, ethical and legal standards of clinical trials, participant in clinical trials, protocols.
16. Evidence-based medicine: principles, level of evidence, endpoints of clinical trials. Meta-analysis. The importance of evidence-based medicine in clinical practice.
17. Mechanisms of action of drugs. Antagonists, agonists, partial agonists. Target molecules of drugs.
18. Types of pharmacological response: expected pharmacological response, hyperreactivity, tachyphylaxis, idiosyncrasy.
19. Evaluation of the efficacy and safety of medicines. Therapeutic drug monitoring (indications, clinical significance, interpretation of results).
20. Clinical pharmacokinetics. The main pharmacokinetic parameters and their clinical significance. Pharmacokinetic curve.
21. Calculation of the loading and maintenance dose of the drug.
22. Calculation of the dose of the drug in patients with chronic renal insufficiency. Dose adjustment in patients with impaired liver function.
23. Ways of pharmacological correction of myocardial ischemia. Clinical pharmacology of antianginal drugs: the main groups of antianginal drugs, individual drugs.
24. Clinical pharmacology of organic nitrates and nitrites. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.
25. Antianginal drugs: indications, contraindications for use; side effects, methods of their prevention;
26. Algorithm for first aid for angina attacks.
27. Clinical pharmacology of hypocholesterolemic drugs: features of pharmacokinetics, pharmacodynamics. Assignment rules. Testimony. Contraindications.
28. Clinical pharmacology of drugs affecting hemostasis: features of pharmacokinetics, pharmacodynamics. Assignment rules. Testimony. Contraindications.
29. Pharmacokinetic and pharmacodynamic features of antihypertensive drugs.
30. The main groups of antihypertensive drugs: individual drugs; Indications, contraindications for use, side effects, methods of their prevention.

31. Clinical pharmacology of antihypertensive drugs of the central mechanism of action. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

32. Clinical pharmacology of α -blockers. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

33. Clinical pharmacology of β -blockers. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

34. Clinical pharmacology of ganglion blockers. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

35. Clinical pharmacology of myotropic antihypertensive drugs. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

36. Clinical pharmacology of calcium ion antagonists. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

37. Clinical pharmacology of diuretics. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

38. Pharmacotherapy of hypertensive crisis.

39. Pharmacokinetic and pharmacodynamic features of cardiotoxic agents.

40. Clinical pharmacology of cardiotonics: individual drugs from the group of cardiac glycosides, indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

41. Clinical pharmacology of cardiotonics: selected drugs from the group of non-glycosidic cardiotoxic agents; indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

42. The concept of heart rhythm disturbances. Ways of drug correction.

43. Clinical pharmacology of antiarrhythmics: individual drugs, indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

44. Pharmacokinetic and pharmacodynamic features of bronchodilators.

45. The main groups of drugs used for the treatment of bronchial obstruction: individual drugs, indications, contraindications for use; side effects, methods of their prevention, the nature of interaction with drugs of other groups.

46. Principles of pharmacotherapy of bronchial asthma, asthmatic status: drugs, rules of administration, order of administration.

47. Clinical pharmacology of cell membrane stabilizers, α , β -adrenomimetics, β -adrenomimetics. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

48. Clinical pharmacology of M-anticholinergic blockers. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

49. Clinical pharmacology of methylxanthines. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

50. Clinical pharmacology of systemic glucocorticosteroids. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

51. Clinical pharmacology of inhaled glucocorticosteroids. Features of use, rules of inhalation. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

52. Clinical pharmacology of H₁-histamine receptor blockers. Features of use, rules of inhalation. Indications, contraindications for use; side effects, methods of their prevention; the nature of interaction with drugs of other groups.

53. Pharmacokinetic and pharmacodynamic features of drugs used in diseases of the digestive system.

54. The main groups of drugs for the treatment of gastroduodenal pathology, individual drugs, indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

55. Principles of pharmacotherapy of gastritis. Features of the use of drugs.

56. Principles of pharmacotherapy of gastric ulcer, especially the use of drugs.

57. Pharmacological care for perforation of gastric ulcers, duodenal ulcers.

58. Clinical pharmacology of H₂-histamine receptor blockers. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of interaction with drugs of other groups.

59. Clinical pharmacology of proton pump inhibitors. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

60. Clinical pharmacology of M-anticholinergic blockers. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

61. Clinical pharmacology of gastroprotectors, antacids, enveloping, adsorbing drugs. Peculiarities of application. Indications, contraindications for use; side effects, methods of their prevention; the nature of the interaction with drugs of other groups.

62. Basic principles of antimicrobial therapy. Clinical pharmacology of antimicrobial agents.

63. Rational antibiotic therapy. Principles of rational antibiotic therapy. Rules for taking antibacterial drugs.

64. The main mechanisms of the formation of resistance to antibiotic therapy. Ways to prevent resistance.

65. The concept of the minimum inhibitory concentration of the antibiotic, the average therapeutic and toxic concentration. Their importance in clinical practice.

66. Types of antimicrobial therapy. The concept of etiotropic therapy. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

67. Features of the appointment of uroseptics. Correction of urine pH, diet.

68. Algorithm for choosing an antibacterial drug for urinary tract infections.

69. Pharmacokinetic and pharmacodynamic features of antimicrobial drugs.

70. Characteristics of the main groups of antimicrobial drugs, individual drugs. Indications for the use of the main groups of drugs.

71. Clinical pharmacology of the group of natural penicillins. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

72. Clinical pharmacology of the group of semisynthetic penicillins. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

73. Clinical pharmacology of the cephalosporin group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

74. Clinical pharmacology of the tetracycline group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

75. Clinical pharmacology of the macrolide group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

76. Clinical pharmacology of the fluoroquinolone group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

77. Clinical pharmacology of the carbapenem group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

78. Clinical pharmacology of the monobactam group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

79. Clinical pharmacology of the lincosamide group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

80. Clinical pharmacology of the aminoglycoside group. Features of prescribing antibiotics. Indications for use. Side effects, methods of their prevention. Contraindications.

81. Clinical pharmacology of antiviral drugs. Clinical pharmacology.

**Requirements for the presentation and evaluation of materials (results):
Criteria for grading a student in the exam in the discipline "Clinical
Pharmacology"**

Scoring	Requirements for formed competencies
"Excellent"	An "excellent" grade is given to a student if he has deeply and firmly mastered the program material, exhaustively, consistently, clearly and logically coherently presents it, knows how to closely link theory with practice, freely copes with tasks, questions and other types of application of knowledge, and does not find it difficult to answer when modifying tasks, uses monographic literature in the answer, correctly justifies the decision.
"Good"	A "good" grade is given to a student if he firmly knows the material, competently and essentially presents it, avoiding significant inaccuracies in the answer to the question, correctly applies theoretical provisions in solving practical issues and problems, has the necessary skills and techniques for their implementation.
"satisfactory"	A "satisfactory" grade is given to a student if he has knowledge of only the basic material, but has not mastered its details, admits inaccuracies, insufficiently correct formulations.
'Unsatisfactory'	An "unsatisfactory" grade is given to a student who does not know a significant part of the program material, makes significant mistakes. As a rule, an "unsatisfactory" grade is given to students who cannot continue their studies without additional classes in the relevant discipline.

Examples of situational tasks:

Task 1.

Patient A., 42 years old, was hospitalized with a diagnosis: coronary artery disease Stable angina pectoris, FC II, HYPERTENSION of the 2nd degree, very high risk. Constantly took propranolol at a dose of 120 mg per day. After suffering SARS, expiratory dyspnea appeared, decreasing after taking 2 doses of salbutamol. Independently canceled propranolol, having read in the annotation to the drug about its ability to cause bronchial obstruction. 24 hours after cancellation, severe compressive pains appeared behind the sternum with irradiation to the left shoulder, tachycardia, increased blood pressure. ECG: atrial extrasystole, ST-segment depression in V5, V6 up to 1 mm, left ventricular hypertrophy. The patient associates the deterioration with the intake of salbutamol.

Indicate the cause of the deterioration of the patient's condition and correct antianginal therapy.

Task 2.

Patient S., 62 years old, complained of severe pressing pains behind the sternum with irradiation to the left arm, which arose after physical exertion. Pain is disturbed for 1 hour. Heart rate -85 per minute, blood pressure 140 \ 80 mm Hg. (maximum blood pressure - 190 \ 100 mm Hg). On the ECG: the Q wave is missing, the rise of the ST segment by 2 mm in I, II, AVL, V5-V6 leads is an isoelectric curve. ST Depression in III, AVF.

What medications should an emergency doctor prescribe (list groups)?

Task 3.

Patient R., 76 years old, was admitted with pressing, squeezing pains behind the sternum. According to the patient, the pain appeared about 12 hours ago, she took nitroglycerin twice under the tongue on her own, without effect. She called the ambulance, was taken to the emergency room of the emergency hospital. Help. On the ECG: focal lesions of the anterior septal region of the LV. (z.Q and ST elevation – isoelectric line in I, AVL, V1-V3, ST depression in the lower leads), heart rate –90 per min. BP 130 \ 80 mm Hg.

What drugs should be prescribed to the patient (list groups)?

Task 4.

Patient I., 54 years old, suffers from coronary artery disease. Angina pectoris III FC. PEAKS. Permanent atrial fibrillation, tachysystolic form. The patient constantly takes enap 5 mg x 2 times, bisoprolol 5 mg x1 times a day, indapamide - retard 1.5 mg / day, furosemide 40 mg. 1 time per week. Against the background of the therapy, pastosity of the legs appeared, periodically angina pectoris, heart rate -90 per minute, PS-86 per minute, blood pressure -160 \ 90 mm Hg.

Suggest patient management tactics.

Task 5.

Patient A., 60 years old, was treated in a hospital with Dz: coronary artery disease. Progressive angina pectoris. CHF II A ST. Arterial hypertension II st, OVR. Gastric ulcer, remission. In the hospital he received treatment: nitrates IV once, then tableted; heparin p

/ k, ACE inhibitors, b-blockers. It is prescribed with improvement, with stabilization of angina pectoris in II FC (HEART RATE-72 per minute, blood pressure 140 \ 80 mm Hg, HS -4.2 mmol / l)

What medications should be recommended to the patient at discharge?

What antiplatelet agents can be prescribed to the patient?

How to prescribe nitrates for FC II?

Indicative list of valuation units(CB)

№	Code	The name of the appraisal means	Brief description of the evaluation tool	Presentation appraisal funds in the fund
Oral questioning				
1	UO-1	Interview	A means of control, organized as a special conversation between the teacher and the student on topics related to the discipline being studied, and calculated to clarify the amount of knowledge a student on a particular section, topic, problem, etc.	Questions on topics/sections of the discipline
2	UO-2	Colloquium	A means of controlling the assimilation of educational material of a topic, section or sections of the discipline, organized as a training session in the form of an interview between the teacher and students	Questions on topics/sections of the discipline
3	UO-3	Report, report	The product of the student's independent work, which is a public speech on the presentation of the results obtained, the solution of a certain educational, practical, educational, research or scientific topic	Topics of reports, reports
4	UO-4	Round table, discussion, controversy, dispute, debate	Assessment tools that allow students to be included in the process of discussing a controversial issue, problem and assess their ability to argue their own point of view	List of discussion topics for a round table, discussion, controversy, dispute, debate
Written works				
1	PP-1	Test	A system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills Student	Test Task Fund
2	PP-2	Examination	A tool for testing the ability to apply the knowledge gained to solve problems of a certain type on a topic or section	A set of control tasks By variants
3	PR-3	Essay	A tool that allows you to assess the student's ability to present in writing the essence of the problem posed, independently analyze this problem using concepts and analytical tools of the relevant discipline, to draw conclusions summarizing the author's position on the problem posed	Essay topics

4	PP-4	Abstract	The product of the student's independent work, representing is a summary in writing of the results of the theoretical analysis of a certain scientific (educational and educational	Topics of essays
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			research) topics, where the author reveals the essence of the study problems, gives different points of view, as well as their own views on it	
5	PP-5	Coursework, course project	The product of the student's independent work, which is a summary in writing of the results of the theoretical analysis of a certain scientific (educational and research) topic, where the author reveals the essence of the problem under study, gives various points of view, as well as his own Views on it	Topics of term papers / projects, term paper plans works/projects, guidelines for writing CR and KP
6	PR-6	Laboratory work	A tool for consolidating and practical mastering of the material for a specific section	A set of tasks for Laboratory work
7	PP-7	Abstract	The product of the student's independent work, reflecting the main ideas of the lecture, message, etc.	Sections of the discipline
8	PP-8	Portfolio	A targeted selection of the student's works, revealing his individual educational achievements in one or more several academic disciplines	Portfolio structure
9	PP-9	Project	The final product obtained as a result of planning and performing a set of educational and research tasks. It allows you to assess the ability of students to independently construct their knowledge in the process of solving practical problems and problems, navigate the information space and the level of formation of analytical, research skills, practical and creative thinking skills. Can be performed individually or by a group of students	Topics of group and/or individual projects
10	PP-10	Business and/or role-playing game	Joint activity of a group of students under the guidance of a teacher in order to solve educational and professionally oriented problems through game modeling of a real problem situation. Allows you to evaluate the ability to analyze and solve typical professional problems	Theme (problem), concept, roles and expected result for each game

11	PP-11	Case Study	A problem task in which the student is asked to comprehend the real professionally-oriented situation necessary to solve this problem	Tasks for solving case problems
12	PP-12	Workbook	Didactic complex designed for independent the work of the student and allows him to assess the level of assimilation of educational material	Sample workbook
13	PP-13	Multi-level tasks and tasks	There are tasks and tasks: a) reproductive level, allowing to assess and diagnose knowledge of factual material (basic concepts, algorithms, facts) and the ability to correctly use special terms and concepts, recognition of objects of study within a certain section of the discipline; b) reconstructive level, allowing to evaluate and diagnose the ability to synthesize, analyze, summarize factual and theoretical material with the formulation of specific conclusions, the establishment of cause-and-effect relationships; c) a creative level that allows you to evaluate and diagnose skills, integrate knowledge of various fields, and argue your own point of view	A set of multi-level tasks and tasks
14	PP-14	Cash-Graphic work	A tool for testing the ability to apply the acquired knowledge according to a predetermined methodology for solving tasks or tasks by module or the discipline as a whole	A set of tasks for performing the calculation graphic work
15	PR-15	Creative task	A partially regulated task that has a non-standard solution and allows you to diagnose skills, integrate knowledge of various fields, and argue your own point View. It can be performed individually or by a group of students	Topics of group and/or individual creative tasks
Technical means				
16	TC-1	Simulator	Technical means that can be used to control the professional skills and abilities acquired by the student to manage a specific material object	A set of tasks for working on the simulator

