Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of Higher Education
"St. Petersburg State University of Veterinary Medicine"

APPROVED BY
Vice-Rector for Educational
Work and Youth Policy
Sukhinin A.A.
April 10, 2026

Department of Internal Diseases of animals named after A. V. Sinev

EDUCATIONAL WORK PROGRAM

for the discipline

"CARDIOLOGY"
The variable part
SPECIALTY
Specialty 36.05.01 Veterinary Medicine
Profile: "General Clinical Veterinary Medicine"

Full-time education
Education starts in 2026

Reviewed and adopted
at the meeting of the department
on March 20, 2026.
Protocol No. 9

Head of the Department of Internal
Diseases of Animals named after Sinev A.V.
Doctor of Veterinary Sciences,
Associate Professor A.V. Prusakov

Saint Petersburg
2026

1. AIMS AND OBJECTIVES OF THE DISCIPLINE "INTERNAL NON-COMMUNICABLE DISEASES"

The academic discipline FTD.03 "Cardiology" is intended for students of veterinary medicine. In accordance with the purpose, the main purpose of the discipline is that, in accordance with the qualification characteristics of a veterinarian, to teach students modern rules and methods for providing emergency care to pets in case of complications related to the implementation of veterinary measures.

Based on the goal, the following tasks are solved in the process of studying the discipline:

1. To study the main cardiological diseases of animals and their clinical manifestation; congenital heart defects; general and special methods of research of the cardiovascular system; basic treatment regimens and methods of prevention of cardiac diseases.

2. Be able to diagnose diseases of the cardiovascular system; correctly prescribe treatment to animals with pathology and develop prevention schemes.

3. To master modern methods of laboratory and instrumental diagnostics, treatment and prevention schemes for sick animals.

2. THE LIST OF THE PLANNED RESULTS OF THE DISCIPLINE (MODULE), CORRELATED WITH THE PLANNED RESULTS OF THE REALISED EDUCATIONAL PROGRAM

As a result of mastering the discipline, the student prepares for the following types of activities, in accordance with the educational standard of the FSE on 05.36.01 "Veterinary Medicine".

Types of professional activities:

- medical;
- expert and control;
- scientific and educational.

The study of the discipline should form the following competencies:

a) professional competencies (PC):

- Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis **(PC-2);**
- To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods **(PC -3).**

The planned results of the development of competencies, taking into account professional standards

Index	Content
PC-2	Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis
PC-2 ID-1	To be able to study animals, using digital equipment and special (instrumental) methods, including endoscopy, probing, catheterization, radiography, electro cardiography, echography
PC-2 ID-2	To be able to interpret and analyze data from special (instrumental) animal research methods to verify the diagnosis
PC-2 ID-3	To be able to determine the reaction of the cardiovascular system of animals to various loads by the method of functional tests
PC-2 ID-6	To be able to interpret and analyze data from laboratory animal research methods for diagnosis
PC-2 ID-7	To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals
PC-2 ID-	To possess skills of the technique of the animal study, using digital equipment and special

9	(instrumental) methods in accordance with methodological guidelines, instructions, rules for the diagnosis, prevention and treatment of animals
PC-2 ID -11	To possess skills of the technique of setting functional tests for animals
PC-3	To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods
PC-3 ID -1	To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases
PC-3 ID -2	To possess skills to use specialized information databases for the diagnosis of animal diseases
PC-3 ID -3	To possess skills to document the results of clinical animal studies, using digital technologies
PC-3 ID -4	To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination
PC-3 ID -6	To know the etiology and pathogenesis of animal diseases of various species
PC-3 ID -7	To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease

3. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE MPEP

The discipline FTD.03 "Cardiology" is an optional part of the federal state educational standard of higher education in the specialty 36.05.01 "Veterinary Medicine".

In the profile: "General Clinical Veterinary Medicine" is mastered by 5th-year full-time students in the 10th semester.

When studying the discipline "Cardiology", the knowledge and skills acquired by students during the development of the disciplines of anatomy, histology and embryology, biochemistry, physiology, feeding, pathological physiology, pathological anatomy and forensic veterinary examination, clinical diagnostics, pharmacology and toxicology, parasitology and epizootology are used.

4. THE SCOPE OF DISCIPLINE AND TYPES OF ACADEMIC WORK

4.1. The scope of the discipline for full-time education

Type of educational work	Hours	Semesters
		10
Classroom classes (total)	**27**	**27**
Including:	**-**	**-**
Lectures, including interactive forms	**9**	**9**
Practical lessons (PL), including interactive forms, among which are:	**18**	**18**
practical training (PT)	4	4
Self-study	**45**	**45**
Type of intermediate and final certification (test, exam)	Test, exam	Test
Total labor intensity hours/credits	**72**	**72/2**

5. THE CONTENT OF THE DISCIPLINE AND TYPES OF CLASSES

№	Name Practical and lecture classes (7th semester)	Emerging competencies	Term	Types of academic work, including students' independent work and labor intensity (in hours)			
				lectures	practical lessons	practical training	Self-study
1.	Introduction to cardiology. The history of the development of cardiology. The structure of the circulatory system. Topography of the heart, properties of the heart muscle. Anatomical and physiological features of the cardiovascular system. The topography of the heart in various animal species.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	1	1	4
2.	Electrocardiography. Bioelectric basis of ECG recording. The nature of the main teeth, intervals and segments of the ECG. Bioelectric basis of ECG recording. Equipment and devices. The technique of ECG. Recording an electrocardiogram. ECG analysis.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	2	-	8

3.	Changes in the rhythm of cardiac activity. The concept of internal deviation time, the excitation vector. Electrocardiographic leads. Determination of the heart rate and the electrical axis of the heart. Recording an electrocardiogram. ECG analysis.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	1	1	6
4.	Conduction disturbances. Arrhythmias. ECG diagnosis of extrasystole. Recording an electrocardiogram. ECG analysis.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	2	-	4
5	Electrocardiographic leads: standard, unipolar, thoracic. The location of the electrodes. "Right" and "left" leads.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	2	-	4
6.	ECG changes in various pathologies. ECG changes in myocardial pathologies. ECG changes in electrolyte disorders and other heart diseases.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	1	1	6
7.	Electrocardiography in pericardial pathology. Acute heart failure (pulmonary edema, interstitial pulmonary edema, cardiogenic shock).	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	2	1	1	5

8.	Basics of echocardiography. Ultrasound cardiography. Phonocardiography. Functional tests of the heart.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	2	-	5
9.	Pharmacological agents from the group of cardiac drugs and their use in veterinary practice. Complications associated with the use of cardiac drugs, their prevention and elimination.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	10	1	2	-	3
14.	TOTAL: **72**			**9**	**14**	**4**	**45**

6. THE LIST OF EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR STUDENTS' SELF WORK

6.1. Guidelines for self -work

1. Methodological recommendations on the organization of independent work in the discipline "Internal non-infectious diseases" for students studying in the specialty "Veterinary Medicine" / comp. A.V. Yashin, G. G. Shcherbakov, A. Ya. Batrakov [et al.]; Ministry of Agriculture of the Russian Federation, SPbGAVM. - St. Petersburg : Falcon Print, 2017. - 26 p. –URL: https://search.spbguvm.informsystema.ru/viewer.jsp?aWQ9MjgyJnBzPTI1 (date of request: 03/20/2026).- Access mode: for authorization. EB SPbGUVM users.

6.2. Literature for self-work

1. 1. Kulyakov, G.V. Dispensary of Farm Animals: Guidelines for 4-5 Year Students of the Day and Correspondence Faculties of Veterinary Medicine, Veterinarians of the Faculty of Advanced Training / Kulyakov G.V.; SPbGAVM. – St. Petersburg: SPbGAVM. 2012. – 19 p. – URL: https://clck.ru/ebtjN (date of access: 03/20/2026).

7. THE LIST OF BASIC AND ADDITIONAL LITERATURE NECESSARY FOR THE EDUCATION OF THE DISCIPLINE

7.1. Basic literature

1. Krasnov, I.P., Workshop on Internal Non-Contagious Diseases of Farm Animals / I.P. Krasnov, V.V. Mityushin. — 2nd ed. — St. Petersburg: Quadro, 2025. — 216 p. – URL: https://elibrica.com/book/afef8540-6032-4b07-979f-92db9d4e5b9d/read (date of request: 03/20/2026). — Access mode: for authorization. users of the Elibrica EBS.

2. Guide to Practical Classes on Internal Non-Contagious Diseases / A. V. Yashin, G. G. Shcherbakov, N. A. Kochueva [et al.] ; edited by A. V. Yashin; Ministry of Agriculture of the Russian Federation. - St. Petersburg : Special Literature, 2017. - 108 p. – URL: https://search.spbguvm.informsystema.ru/viewer.jsp?aWQ9NDAyJnBzPTEwOA= (date of access: 03/20/2026). - Access mode: for authorization. EB SPbGUVM users

7.2. Additional literature

1. Prevention of non-communicable diseases of productive animals: method. manual / comp.: A.V. Yashin [et al.]; SPbGAVM. – St. Petersburg: St. Petersburg State Academy of Veterinary Medicine. – 2016. – 35 p. – URL: https://clck.ru/ebvtk (accessed 03/20/2026).

2. Usha, B.V. Clinical Diagnostics of Internal Non-Contagious Diseases in Animals / B.V. Usha, I.M. Belyakov, and R.P. Pushkarev. - 2nd edition, revised. - St. Petersburg : Quadro, 2022. - 504 p. – URL: https://elibrica.com/c4b67050-49dd-4e11-b320-5bb055acabb1 (date of request: 03/20/2026). - Access mode: for authorization. EB SPbGUVM users.

8. THE LIST OF RESOURCES OF THE INFORMATION AND TELECOMMUNICATION NETWORK "INTERNET" NECESSARY FOR EDUCATION OF THE DISCIPLINE

To prepare for laboratory classes and perform self-work, students can use the following online resources:

Electronic library systems

1. ELS "SPBGUVM"
2. Legal reference system "ConsultantPlus"
3. University information system "RUSSIA"
4. Scientific electronic Library ELIBRARY.RU
5. Russian Scientific Network
6. Full-text interdisciplinary database on agricultural and environmental sciences ProQuest AGRICULTURAL AND ENVIRONMENTAL SCIENCE DATABASE
7. Collection "Agriculture. Veterinary medicine" publishing house "Quadro" ELS "Elibris" publishing house "Quadro" https://elibrica.com/

9. METHODOLOGICAL GUIDELINES FOR STUDENTS ON EDUCATION OF THE DISCIPLINE

Methodological recommendations for students are a set of recommendations and explanations that allow the student to optimally organize the process of studying this discipline.

The content of the methodological recommendations, as a rule, may include:

• Tips on planning and organizing the time needed to study the discipline. Description of the sequence of actions of the student, or the "scenario of studying the discipline".

Morning time is the most fruitful for academic work (from 8-14 o'clock), followed by afternoon time (from 16-19 o'clock) and evening time (from 20-24 o'clock). The most difficult material is recommended to be studied at the beginning of each time interval after rest. After 1.5 hours of work, a break is required (10-15 minutes), after 4 hours of work, the break should be 1 hour. Part of the scientific organization of labor is the mastery of the technique of mental labor. Normally, a student should devote about 10 hours a day to studying (6 hours at university, 4 hours at home).

• Recommendations for working with literature.

Working with literature is an important stage of the student's independent work on mastering the subject, contributing not only to the consolidation of knowledge, but also to the expansion of horizons, mental abilities, memory, the ability to think, express and confirm their hypotheses and ideas. In addition, the skills of research work necessary for further professional activity are being developed.

When starting to study the literature on the topic, it is necessary to make notes, extracts, notes. It is mandatory to take notes of the works of theorists, which allow us to comprehend the theoretical basis of the study. For the rest, you can limit yourself to extracts from the studied sources. All extracts and quotations must have the exact "return address" (author, title of the work, year of publication, page, etc.). It is advisable to write an abbreviated title of the question to which the extract or quotation refers. In addition, it is necessary to learn how to immediately compile a file of special literature and publications of sources, both proposed by the teacher and identified independently, as well as refer to bibliographic reference books, chronicles of journal articles, book chronicles, abstract journals. At the same time, publications of sources (articles, book titles, etc.) should be written on separate cards, which must be filled in according to the rules of bibliographic description (surname, initials of the author, title of the work. Place of publication, publisher, year of publication, number of pages, and for journal articles – the name of the journal, year of publication, page numbers). On each card, it is advisable to record the thought of the author of the book or a fact from this book on only one specific issue. If the work, even in the same paragraph or phrase, contains more judgments or facts on another issue, then they should be written out on a separate card. The presentation should be concise, accurate,

without subjective assessments. On the back of the card, you can make your own notes about this book or article, its content, structure, on which sources it is written, etc.

• Explanations about working with control and test materials for the course, recommendations for completing homework.

Testing allows you to determine whether the actual behavior of the program corresponds to the expected one by performing a specially selected set of tests. A test is the fulfillment of certain conditions and actions necessary to verify the operation of the function under test or part of it. Each question in the discipline must be answered correctly by choosing one option.

• Recommendations for the implementation of course work (if it is assumed by the curriculum), defining their thematic focus, goals and objectives of implementation, requirements for the content, volume, design and organization of guidance for their preparation by departments and teachers.

According to the guidelines provided in the list of guidelines.

10. EDUCATIONAL WORK

As part of the implementation of the discipline, educational work is carried out to form a modern scientific worldview and a system of basic values, the formation and development of spiritual and moral, civil and patriotic values, a system of aesthetic and ethical knowledge and values, attitudes of tolerant consciousness in society, the formation of students' need for work as the first vital necessity, the highest value and the main way to achieve success in life, to realize the social significance of your future profession.

11. THE LIST OF INFORMATION TECHNOLOGIES USED IN THE IMPLEMENTATION OF THE EDUCATIONAL PROCESS

11.1 Information technologies

For the educational process of the discipline is previewed the use of information technologies:

- practical classes using multimedia;
- interactive technologies (dialogues, collective discussion on various topics for realization a particular educational and professional task);
- interaction with students via e - mail;
- community work in the electronic information and educational environment of St. Petersburg State University: https://spbguvm.ru/academy/eios/

11.2. Software

The list of licensed and free- distributed software, including national programs

№ п/п	Technical and computer programs recommended by sections and topics of the program	License
1	MS PowerPoint	67580828
2	LibreOffice	free software
3	OS Alt Education	AAO.0022.00
4	ABIS “ MARK-SQL”	02102014155
5	MS Windows 10	67580828
6	System Consult Plus	503/КЛ
7	Android OS	free software

12. THE MATERIAL AND TECHNICAL BASE NECESSARY FOR THE IMPLEMENTATION OF THE DISCIPLINE EDUCATIONAL PROCESS.

No. p / p	The name of the subject, discipline (module) in accordance with the curriculum	The name of equipped lecture halls with a list of basic equipment	The actual address of classrooms and facilities
1	Cardiology	1.Study rooms 102,103,104,107 Educational furniture: seats according to the number of students; teacher's workplace; cabinets, stands, multimedia projector, laptop. 2. Specialized tools: probes: Khokhlova, oral-gastric for large and small animals, magnetic: Meliksetyana, Korobova (ZMU-1); ultrasound diagnostic apparatus; metal indicator; magnetic rings; fixation materials (ropes, bandages, muzzles, yawners, Garms forceps, Bayer wedge, mouth, etc.); syringes: 1.0; 2,0; 5,0; 10,0; 20,0; 50,0; 100,0; 250,0 ml; injection needles, needles for blood collection; gloves; bathrobes;; syringes, Esmarch mugs for enemas; sets for compresses; cotton wool; bandages; funnels; urinary catheters; trocars small and large; electrocardiograph "Baby". 108. Laboratory: laboratory equipment and reagents for the study of blood, urine, feces according to the methods, simulators for practicing manipulations	St. Petersburg, Chernihiv str., 5, Department of Internal Diseases of Animals named after Sineva A.V.

Developers:

Associate Professor of the Department of Internal Animal Diseases — Golodyaeva M.S.

Associate Professor of the Department of Internal Animal Diseases — Katargin R.S.

Head of the Department of Internal Diseases of Animals named after Sinev A.V. Doctor of Veterinary Sciences — Prusakov A.V.

Annex 1

Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of higher education
"Saint Petersburg State University of Veterinary Medicine"

Department of Internal Diseases of animals named after A.V. Sinev

FUND OF ASSESMENT TOOLS
for the discipline
"CARDIOLOGY"

Level of higher education
SPECIALIST COURSE

Specialty 36.05.01 Veterinary Medicine
Profile: «General clinical veterinary medicine»
Full-time education.

Education starts in 2026

Saint Petersburg
2026

1. PASSPORT OF THE FUND OF ASSESMENT TOOLS

Table 1

Index	Content
PC-2	Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis
PC-2 ID -1	To be able to study animals, using digital equipment and special (instrumental) methods, including endoscopy, probing, catheterization, radiography, electro cardiography, echography
PC-2 ID -2	To be able to interpret and analyze data from special (instrumental) animal research methods to verify the diagnosis
PC-2 ID -3	To be able to determine the reaction of the cardiovascular system of animals to various loads by the method of functional tests
PC-2 ID -6	To be able to interpret and analyze data from laboratory animal research methods for diagnosis
PC-2 ID -7	To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals
PC-2 ID -9	To possess skills of the technique of the animal study, using digital equipment and special (instrumental) methods in accordance with methodological guidelines, instructions, rules for the diagnosis, prevention and treatment of animals
PC-2 ID -11	To possess skills of the technique of setting functional tests for animals
PC-3	To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods
PC-3 ID -1	To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases
PC-3 ID -2	To possess skills to use specialized information databases for the diagnosis of animal diseases
PC-3 ID -3	To possess skills to document the results of clinical animal studies, using digital technologies
PC-3 ID -4	To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination
PC-3 ID -6	To know the etiology and pathogenesis of animal diseases of various species
PC-3 ID -7	To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease

An approximate list of evaluation tools

Table 2

№	**Name of the evaluation tool**	**Brief description of the evaluation tool**	**Presentation of an evaluation tool in the fund**
1.	Tests	A system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills of a student	The fund of test tasks
2.	Credit	A means of monitoring the assimilation of educational material per semester	Questions on topics/sections of the discipline

List of assessment tools

№	Emerging competencies	Supervised sections (topics) of the discipline	Evaluation tool
1.	PC-2 (PC-2ID-1, PC-2ID-2, PC-2ID-3, PC-2ID-6, PC-2ID-7, PC-2ID-9) PC-3 (PC-3ID-1, PC-3ID-2, PC-3ID-3, PC-3ID-4, PC-3ID-6, PC-3ID-7)	Introduction to cardiology. The history of the development of cardiology. The structure of the circulatory system. Topography of the heart, properties of the heart muscle. Anatomical and physiological features of the cardiovascular system. The topography of the heart in various animal species.	Test
2.		Electrocardiography. Bioelectric basis of ECG recording. The nature of the main teeth, intervals and segments of the ECG. Bioelectric basis of ECG recording. Equipment and devices. The technique of ECG. Recording an electrocardiogram. ECG analysis.	Test
3.		Changes in the rhythm of cardiac activity. The concept of internal deviation time, the excitation vector. Electrocardiographic leads. Determination of the heart rate and the electrical axis of the heart. Recording an electrocardiogram. ECG analysis.	Test
4.		Conduction disturbances. Arrhythmias. ECG diagnosis of extrasystole. Recording an electrocardiogram. ECG analysis.	Test
5.		Electrocardiographic leads: standard, unipolar, thoracic. The location of the electrodes. "Right" and "left" leads.	Test
6.		ECG changes in various pathologies. ECG changes in myocardial pathologies. ECG changes in electrolyte disorders and other heart diseases.	Test
7.		Electrocardiography in pericardial pathology. Acute heart failure (pulmonary edema, interstitial pulmonary edema, cardiogenic shock).	Test
8.		Basics of echocardiography. Ultrasound cardiography. Phonocardiography. Functional tests of the heart.	Test
9.		Pharmacological agents from the group of cardiac drugs and their use in veterinary practice. Complications associated with the use of cardiac drugs, their prevention and elimination.	Test

2. INDICATORS AND CRITERIA FOR ASSESSING COMPETENCIES AT VARIOUS STAGES OF ITS FORMATION, DESCRIPTION OF ASSESSMENT SCALES

Planned results of competence development	The level of development				Evaluation tool
	Unsatisfactory	satisfactory	good	excellent	
• **PC-2. Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis**					
PC-2 ID -1 To be able to study animals, using digital equipment and special (instrumental) methods, including endoscopy, probing, catheterization, radiography, electro cardiography, echography **PC-2 ID -2** To be able to interpret and analyze data from special (instrumental) animal research methods to verify the diagnosis **PC-2 ID -3** To be able to determine the reaction of the cardiovascular system of animals to various loads by the method of functional tests **PC-2 ID -6** To be able to interpret and analyze data from laboratory animal research methods for diagnosis **PC-2 ID -7** To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and	The level of knowledge is below the minimum requirements, gross errors have occurred	The minimum acceptable level of knowledge, many blunders have been made	The level of knowledge in the volume corresponding to the training program, several blunders were made	The level of knowledge in the volume corresponding to the training program, without errors	Colloquium, tests, situational tasks

treatment of animals **PC-2 ID -9** To possess skills of the technique of the animal study, using digital equipment and special (instrumental) methods in accordance with methodological guidelines, instructions, rules for the diagnosis, prevention and treatment of animals **PC-2 ID -11** To possess skills of the technique of setting functional tests for animals					
• **PC-3. To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods**					
PC-3 ID-1 **To possess skills to** make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases. **PC-3 ID-2** **To possess skills to** use specialized information databases for the diagnosis of animal diseases **PC-3 ID-3** **To possess skills to** document the results of clinical animal studies, using digital technologies. **PC-3 ID-4** **To know** the methods of interpretation and data analysis of special (instrumental) methods of animal examination. **PC-3 ID-6** **To know** the etiology	Basic skills were not demonstrated when solving standard tasks, and gross errors occurred	Basic skills have been demonstrate, typical tasks with minor errors have been solved, all tasks have been completed, but not in full	All the basic skills have been demonstrate, all the main tasks with minor errors have been solved, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrate, all basic tasks have been solved with some minor flaws, and all tasks have been completed in full	Colloquium, tests, control work

and pathogenesis of animal diseases of various species. **PC-3 ID-7** **To know** the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.					

3. A LIST OF CONTROL TASKS AND OTHER MATERIALS, NECESSARY FOR THE ASSESSMENT OF KNOWLEDGE, SKILLS AND WORK EXPERIENCE

3.1. Diagnostic tasks

PC-2 Development of an animal research program and conducting a clinical study of animals using special (instrumental) and laboratory methods, including for clarifying the diagnosis

CLOSED TYPE TASKS

Combined type tasks: choosing one correct answer from the options provided

PC-2ID-1 To be able to conduct animal research using digital equipment and special (instrumental) methods, including endoscopy, probing, catheterization, radiography, electrocardiography, echography.

Task 1

Read the text and choose the correct answer.

Bioelectric potentials are electrical potentials that arise in tissues and individual cells of living organisms.

The method of studying bioelectric potentials generated by the heart muscle is called:

1. Cardiology;
2. Electrocardiography;
3. Electrocardiogram;
4. Polarization.

Answer: 2.

Task 2

Read the text and choose the correct answer

The pericardial sac is a closed slit-like cavity surrounding the heart and containing serous fluid.

What is the name of inflammation of the pericardial sac?

1. Endocarditis;
2. Pericarditis;
3. Myocarditis;
4. Ulcerative endocarditis.

Answer: 2.

Task 3

Read the text and choose the correct answer.

Heart murmurs are sounds that occur during anatomical and physiological changes in blood flow conditions both inside the heart and when blood is ejected into the main arteries. Murmurs differ from heart sounds in their duration, higher frequency, and negligible energy capacity.

The appearance of noise in the area of absolute cardiac dullness indicates damage to:

1. Pericardium;
2. Myocardium;
3. Endocardium;
4. Aortic valve.

Answer: 1.

PC-2ID-2 To be able to interpret and analyze data from special (instrumental) methods of animal research to verify a diagnosis.

Task 4

Read the text and choose the correct answer.

Heart murmurs in animals are additional pathological sounds that accompany heart tones. As a rule, they are heard for quite a long time.

The appearance of murmur at the apex of the heart indicates valve damage:

1. Aortic;
2. Tricuspid;
3. Mitral;
4. Pulmonary.

Answer: 3.

Task 5

Read the text and choose the correct answer.

Atherosclerosis is a chronic disease that occurs as a result of a violation of lipid and protein metabolism and is accompanied by the deposition of cholesterol and some fractions of lipoproteins in the lumen of blood vessels. Which vessels are affected by atherosclerosis?

1. Veins;
2. Arteries;
3. Venules;
4. Capillaries.

Answer: 2.

Closed-type tasks to establish compliance

Task 6

Read the text and establish a correspondence.

The main parameters of the action potential characterize the electrophysiological properties of the myocardium and the cardiac conduction system.

For each position given in the left column, select the corresponding position from the right column:

Properties of the myocardium		**Action**	
A.	Excitability	1	The ability of the heart to generate electrical impulses (in the absence of any external stimuli) that cause excitation
B.	Conductivity	2	The ability of the heart to conduct impulses from the place of their origin to the contractile myocardium
C.	Automatism	3	The ability of the heart to be excited under the influence of impulses
D.	Contractility	4	The ability of the heart to contract under the influence of impulses and pump blood into the large and small circles of blood circulation

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-3,B-2,C-1,D-4.

Task 7

Read the text and establish a correspondence.

The source of supraventricular arrhythmias can be the SA node, atria, AV node, common trunk of the His bundle, as well as the mouths of the vena cava or pulmonary veins.

For each arrhythmia given in the left column, select the corresponding definition from the right column:

Type of arrhythmia		**Definition**	
A.	Supraventricular (atrial) extrasystole	1	This is a premature (in relation to the main rhythm) electrical activation of the heart (single or paired) by an impulse arising in the atria or AV junction
B.	Supraventricular paroxysmal tachycardia	2	This is the circulation of excitation in the atria by the micro-reentry mechanism with the formation of multiple waves as a result of complete electrical disorganization of the atrial myocardium
C.	Atrial flutter	3	This is the circulation of excitation in the atria with the formation of a single macro-re-entry circle of high stability
D.	Atrial fibrillation	4	This is a paroxysmal

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-1,B-4,C-3,D-2.

Task 8

Read the text and establish a match.

The source of ventricular arrhythmias can be ectopic impulses arising in the branches and branches of the His bundle, Purkinje fibers and contractile myocardium of the ventricles.

For each position of supraventricular arrhythmias given in the left column, select a definition from the right column:

Type of supraventricular arrhythmia		**Definition**	
A.	Ventricular extrasystole	1	Almost always are terminal variants of ventricular tachyarrhythmias and in most cases are the immediate cause of sudden cardiac death
B.	Ventricular paroxysmal tachycardia	2	Means three or more consecutive ventricular complexes generated by the ventricular myocardium
C.	Ventricular flutter and fibrillation	3	This is a premature (in relation to the main rhythm) electrical activation of the heart by an impulse that arose in the legs or branches of the bundle of His, Purkinje fibers or contractile myocardium of the ventricles

Write the selected numbers in the table under the corresponding letters:

A	B	C

Key: A-3,B-2,C-1.

PC-2ID-3 To be able to determine the reaction of the cardiovascular system of animals to various loads using the method of functional tests.

Task 9

Read the text and match.

The heart rate of animals depends on several factors: the weight and type of animal, the metabolic rate, age, level of physical activity, the autonomic nervous system, hormones.

For each position given in the left column, select the corresponding position from the right column:

Animal type		**Heart rate bpm.**	
A.	Cattle	1	24-42
B.	Horse	2	110-130
C.	Cat	3	60-90
D.	Pig	4	50-80

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-4,B-1,C-2,D-3.

Task 10

Read the text and match.

Auscultation of the heart requires excellent hearing and the ability to distinguish small differences in frequency characteristics and time of occurrence.

The main auscultatory data include: heart sounds, murmurs and friction noises

For each heart sound in the left column, select the corresponding position from the right column:

Heart sounds		**Main Features**	
A.	First tone	1	Occurs due to the slamming of the semilunar valves and the resulting vibration of their walls
B.	Second tone	2	Reflects the vibration of the ventricular walls due to the rapid flow of blood at the beginning of the filling phase
C.	Third tone	3	Occurs simultaneously with the onset of ventricular systole and is caused by vibration of the atrioventricular valve flaps, contraction of the ventricular muscles, and mechanical vibrations of the initial sections of the aorta and pulmonary artery. Occurs during atrial systole and continues until the onset of their relaxation
D.	Fourth tone	4	Occurs simultaneously with the onset of ventricular systole and is caused by vibration of the atrioventricular valve flaps, contraction of the ventricular muscles, and mechanical vibrations of the initial sections of the aorta and pulmonary artery. Occurs during atrial systole and continues until the onset of their relaxation

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Ключ: A-3,B-1,C-2,D-4.

Closed type tasks to establish compliance

Task 11

Read the text and establish the sequence.

The formation and orderly conduction of an electrical impulse to the myocardium is provided by the structures of a specialized conduction system, the cells of which normally have not only excitability and conductivity, but also the ability to spontaneously generate rhythmic impulses – automatism.

Write down the numbers that indicate the stages of the electrical impulse in the myocardium in the correct sequence.

1. Purkinje fibers;
2. Sinoatrial node;
3. Bundle of His;
4. Atrioventricular node.

Answer: 2,4,3,1.

PC-2ID-6 To be able to interpret and analyze data from laboratory methods of animal research to establish a diagnosis.

Task 12

Read the text and establish the sequence.

The heart is a hollow muscular organ that ensures the movement of blood through the blood vessels.

Write down the numbers that indicate the layers that form the wall of the heart in the correct sequence, starting from the inside to the outside.

1. Pericardium;
2. Endocardium;
3. Myocardium;
4. Epicardium.

Answer: 2,3,4,1.

Task 13

Read the text and establish the sequence.

An electrocardiogram is a non-invasive electrophysiological test that includes recording the bioelectric potentials of the heart using skin electrodes and their graphic reproduction on paper or a display.

Write down the numbers that designate the teeth of the electrocardiogram in the correct sequence:

1. R wave (depolarization of the lateral walls and apex of the ventricles);
2. Q wave (repolarization of the atria and depolarization of the interventricular septum);
3. T wave (repolarization of the ventricles);
4. P wave (depolarization of the atria);
5. S wave (depolarization of the bases of the ventricles).

Answer: 4,2,1,5,3.

Task 14

Read the text and establish the sequence.

It is necessary to analyze the ECG using lead II, having first familiarized yourself with the clinical picture of the animal's disease and anamnesis, since various pathological processes can lead to similar changes recorded on the ECG. Leads I and III are used for additional analysis.

Write down the order in which the electrocardiogram is analyzed, in the correct sequence:

1. Measure the duration and magnitude of individual ECG elements;
2. Determine the heart rate;
3. Determine the voltage of the teeth;
4. Determine the correctness of the heart rhythm.

Answer: 4,2,3,1.

PC-2ID-7 To know the indications for the use of digital equipment and special (instrumental) and laboratory methods of animal research in accordance with guidelines, instructions, rules for diagnostics, prevention and treatment of animals.

Task 15

Read the text and establish the sequence.

Endocarditis is an inflammation of the inner lining of the heart muscle (endocardium), which can also damage the heart valves. Most often, endocarditis is of an infectious nature.

Write down the numbers that indicate the mechanism of endocarditis development in the correct sequence:

1. Bacteria enter the bloodstream;
2. Bacteria attach to the valve;
3. Infection of the valve cusps;
4. Endocardial damage.

Answer: 4,1,2,3.

OPEN TYPE TASKS

Task 16

Read the text and write a detailed, reasoned answer.

Using a special system of applying electrodes to the surface of the body,

changes in the potential difference on the surface of the body that occur during the work of the heart are recorded.

The system of applying electrodes to the surface of the body is called:

Answer: ECG leads.

PK-2ID-9 To know the technique of conducting animal research using digital equipment and special (instrumental) methods in accordance with guidelines, instructions, rules for diagnostics, prevention and treatment of animals.

Task 17.

Read the text and write down a detailed, reasoned answer.

Sounds that occur during anatomical and physiological changes in the conditions of blood flow both inside the heart and when blood is ejected into the main arteries are called:

Answer: Heart murmurs.

Task 18.

Read the text and write a detailed, reasoned answer.

Deformation and pathological changes in the structure of the valves, partitions and walls of the chambers, which lead to improper functioning of the organ and disruption of intracardiac hemodynamics, are called:

Answer: Heart defects.

PK-2ID-11 To know the technique of setting up functional tests in animals.

Task 19.

Read the text and write a detailed, reasoned answer.

The regulatory globular protein of the cardiac muscle, a specific marker of myocardial damage, is:

Answer: Troponin.

Task 20.

Read the text and write a detailed, reasoned answer.

The cardiac conduction system is a complex of anatomical structures of the heart (nodes, bundles and fibers) consisting of atypical muscle fibers (cardiac conduction muscle fibers) and providing coordinated work of different parts of the heart (atria and ventricles) aimed at ensuring normal cardiac activity.

Write down the detailed answer of the cardiac conduction system (what is it).

Answer: Sinoatrial node, atrioventricular node, bundle of His, Purkinje fibers.

PC-3 Making a diagnosis based on the analysis of medical history data, general, special (instrumental), and laboratory research methods

CLOSED TYPE TASKS

Combined-type tasks: choosing one correct answer from the options provided

PC-3ID-1 To be able to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases.

Task 1

Read the text and choose the correct answer.

The study of bioelectric potentials is of great importance for understanding the physicochemical and physiological processes in living systems and is used in the clinic for diagnostic purposes.

The total recorded bioelectric potential of myocardial cells is called:

1. Cardiology;
2. Electrocardiography;
3. Electrocardiogram;
4. Polarization.

Answer: 3.

Task 2

Read the text and choose the correct answer.

When a signal comes to a cell, it "wakes up" and begins to change its internal charge to positive for a short time. This moment of cell activation is needed to transmit signals further, to other cells.

Depolarization of the myocardium is:

1. Systole of the ventricles of the heart;
2. Polarization of the ventricles;
3. Diastole of the ventricles of the heart;
4. The appearance of a negative charge on the outer side of the excited myocardium.

Answer: 4.

Task 3

Read the text and choose the correct answer.

Treatment of myocarditis depends on the cause of inflammation in the heart muscle. Therapeutic measures are aimed at reducing inflammation, correcting circulatory disorders and complications.

Which of the following drugs is indicated in the second period of myocarditis:

1. Suprastin;
2. Valocordin;
3. Tylosin;
4. Cordiamine.
Answer: 4.

PC-3ID-2 To be able to use specialized information databases for diagnosing animal diseases.

Task 4

Read the text and choose the correct answer.

Myocarditis is an inflammation of the heart muscle caused by infectious, toxic or allergic effects and accompanied by a violation of the heart function.

In patients with tricuspid valve insufficiency, relative cardiac dullness is increased in the direction of percussion:

1. To the left;
2. Not increased;
3. Up and to the right;
4. Up and to the left.

Answer: 4.

Task 5

Read the text and choose the correct answer.

The neurotransmitter that ensures the chemical transmission of a nerve impulse in the synapses of the central and peripheral nervous systems is called:

1. Somatotropin;
2. Adrenaline;
3. Thyroxine;
4. Norepinephrine.

Answer: 4.

Closed type tasks to establish compliance

Task 6

Read the text and establish a match.

Electrocardiography (ECG) is an instrumental method for studying the work of the heart. With the help of ECG, the electrical activity of the heart is recorded, then the obtained result is interpreted, on the basis of which the condition of the heart muscle is assessed.

For each position given in the left column, select the corresponding position from the right column:

Components of an electrocardiogram		**Designation**	
A.	P wave	1	Reflects the time of excitation propagation through the atria, AV node, His bundle and its branches
B.	P-Q interval	2	Reflects depolarization (excitation coverage) of both atria
C.	QRS complex	3	Reflects the final repolarization of the ventricles
D.	T wave	4	Reflects the depolarization of the ventricles and consists of three pointed waves

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-2,B-1,C-4,D-3.

PC-3ID-3 Be able to present the results of clinical studies of animals using digital technologies

Task 7

Read the text and establish a match.

The source of supraventricular arrhythmias can be the SA node, atria, AV node, common trunk of the His bundle, as well as the mouths of the vena cava or pulmonary veins.

For each arrhythmia given in the left column, select the corresponding definition from the right column:

Type of arrhythmia		**Definition**	
A.	Sinus bradycardia	1	This is an increase in the normal automatism of the SA node in a completely healthy organism, as well as in patients with infections, toxic, medicinal effects, heart failure.
B.	Sinus arrhythmia	2	This is a dysfunction of the sinoatrial node, which is characterized by either sudden sinus arrest or persistent severe bradycardia, especially after paroxysms of sinus tachycardia, atrial fibrillation or atrial flutter with a high heart rate.
C.	Sinus tachycardia	3	This is an irregular formation of impulses in the SA node as a result of the reflex effect on the vagus nerve of the act of breathing or organic damage to the SA node
D.	Sick sinus syndrome	4	This is a decrease in the automatism of the SA node in a completely healthy organism, as well as in patients with an increase in the tone of the vagus nerve in some infections, brain injuries, ischemia of the SA node, and the effects of drugs

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: А-4,Б-3,В-1,Г-2.

Task 8

Read the text and establish a correspondence.

For each stage of depolarization in the ventricular myocardium given in the left column, select its corresponding course from the right column:

Stage		**The course of depolarization in the ventricular myocardium**	
A.	Stage I	1	The excitation covers the maximum number of fibers of the left ventricle
B.	Stage II	2	The excitation first covers the interventricular septum, mainly its left sections
C.	Stage III	3	It is inconstant. This stage is distinguished in those cases when, after the end of excitation of the main mass of fibers of the left ventricle, excitation of a small area at the base of the left ventricle, where the mass of the myocardium is most powerful, continues. Excitation continues to cover the interventricular septum and passes to the right and left ventricle
D.	Stage IV	4	It is inconstant. This stage is distinguished in those cases when,

			after the end of excitation of the main mass of fibers of the left ventricle, excitation of a small area at the base of the left ventricle, where the mass of the myocardium is most powerful, continues. Excitation continues to cover the interventricular septum and passes to the right and left ventricle

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-2,B-4,C-1,D-3.

Task 9

Read the text and establish a match.

ECG recording under standard conditions is performed in 12 generally accepted leads. If necessary, additional leads are used, and the operating mode of the tape-drive mechanism and the amplitude of the control millivolt are changed, which allows for detailing of ECG elements.

To take conventional leads, the electrodes are applied according to the markings. For each position given in the left column, select the corresponding position from the right column:

Electrode marking		**Place of electrode attachment**	
A.	Red	1	On the left thoracic limb
B.	Yellow	2	On the left pelvic limb
C.	Green	3	On the right thoracic limb
D.	Black	4	On the right pelvic limb

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-3,B-1,C-2,D-4.

PC-3ID-4 To know the methods of interpretation and analysis of data from special (instrumental) methods of animal research.

Task 10

Read the text and establish a match.

The international classification of cardiac drugs includes a group of cardiac glycosides, antiarrhythmic drugs, non-glycoside cardiotonic, peripheral vasodilators and other cardiac drugs.

They are intended for the treatment of cardiovascular diseases with various pathologies. For each group of drugs given in the left column, select the corresponding action from the right column:

Group of medications		**Action**	
A.	Antiarrhythmics	1	Expand blood vessels and help normalize blood circulation
B.	Peripheral vasodilators	2	Restore the work of the heart muscle, eliminate arrhythmia and stimulate the activity of the heart
C.	Cardiac glycosides	3	Eliminate failures and restore normal heart rhythm
D.	Nonglycoside cardiotonic drugs	4	Stimulate the work of the heart, increase the contraction of the heart muscle

Write the selected numbers in the table under the corresponding letters:

A	B	C	D

Key: A-3,B-1,C-2,D-4.

Closed type tasks to establish a sequence

Task 11

Read the text and establish the sequence.

The dipole theory considers the ECG as the result of the propagation of an electrical system (–, +) through the heart muscle, which has an equal but opposite charge (dipole) and moves with the positive pole forward from the excited part of the myocardium to the unexcited part

Write down the numbers that indicate the stages of formation of the potential difference on the surface of a single muscle fiber, in the correct sequence.

1. Beginning of repolarization;
2. Beginning of depolarization;
3. Movement of the depolarization wave from the endocardium to the epicardium;
4. Movement of repolarization from the epicardium to the endocardium;
5. End of repolarization.

Answer: 2,3,1,4,5.

Task 12

Read the text and establish the sequence.

Circulation is a closed vascular pathway that provides a continuous flow of blood, bringing oxygen and nutrition to cells, and carrying away carbon dioxide and metabolic products.

Write down the numbers that indicate the stages of blood flow in the systemic circulation in the correct sequence.

1. Through arteries to internal organs, muscles, bones;
2. Aorta;
3. Through veins to the right atrium;
4. Gives off nutrients and oxygen, takes away waste products and carbon dioxide;
5. Left ventricle.

Answer: 5,2,1,4,3.

PK-3ID-6 To know the etiology and pathogenesis of diseases of animals of various species.

Task 13

Read the text and establish the sequence.

Electrocardiography is one of the additional methods of examining the heart of both farm and small domestic animals.

Write down the numbers that indicate the stages of conducting electrocardiography of animals, in the correct sequence.

1. Placing the electrodes;
2. Completing the procedure;
3. Preparing the patient;
4. Connecting the cardiograph and recording;
5. Interpretation of results.

Answer: 3,1,4,2,5.

Task 14

Read the text and establish the sequence.

Infective endocarditis, the endocardium is affected to varying degrees.

Write in sequence from the most common valve lesion in infective endocarditis to the less common ones.

1. Aortic valve;
2. Tricuspid valve;
3. Pulmonary valve;
4. Mitral valve.

Answer: 1,4,2,3.

Task 15

Read the text and establish the sequence.

A key role in the development of active myocarditis is played by a viral infection.

Write down the numbers that indicate the phases of myocarditis development in the correct sequence.

1. Autoimmune reactions occur, cardiomyocytes are destroyed under the influence of immune cells;
2. The immune system is activated;
3. Cardiotropic viruses penetrate the myocardium;
4. Myocardial remodeling (modification) occurs - structural changes in the heart muscle.

Answer: 3,2,1,4.

OPEN TYPE TASKS

PC-3ID-7 To know generally accepted criteria and classifications of animal diseases, approved lists of animal diseases.

Task 16.

Read the text and write down a detailed, reasoned answer.

With deviations, the following indicators are possible on the electrocardiogram:

- The P wave is missing in the branches. Instead, fibrillation waves are present.
- Atria fibrillation waves appear frequently and intermittently, their shape and amplitude change.
- The P-Q interval shortens.
- The P wave may be located before the QRS complex.
- The R-R intervals increase. They become uneven.
- The QRS complex remains unchanged.

To what type of supraventricular arrhythmia can the described changes on the ECG be attributed?

Answer: Atrial fibrillation (atrial fibrillation).

Task 17.

Read the text and write a detailed, reasoned answer.

A non-inflammatory heart disease based on degenerative changes in the heart muscle is called:

Answer: Myocardosis.

Task 18.

Read the text and write a detailed, reasoned answer.

A heart defect is defined as an atypical or abnormal structure of its structures (chambers, valves, large vessels), which is a consequence of disturbances in the formation and development (congenital heart defect) or various pathological changes (acquired heart defect). As a result of the formation of this pathology, the work of the heart is disrupted and oxygen deficiency of the organs and tissues of the body is formed, which can ultimately lead to heart failure.

What immediately of the right half of the heart (tricuspid and pulmonary valve) is disrupted, blood stagnation occurs in.

Answer: In the vessels of the systemic circulation.

Task 19.

Read the text and write down a detailed, reasoned answer.

The valve between the left atrium and the left ventricle of the heart, which is attached around the circumference of the left atrioventricular orifice, is called:

Answer: The mitral valve.

Task 20.

Read the text and write a detailed, reasoned answer.

It has a pronounced effect on the cardiovascular system. It increases the heart rate and force of contractions, stroke volume and minute volume of the heart. It improves AV conduction, increases automaticity. Increases myocardial oxygen demand. Causes vasoconstriction of abdominal organs, skin, mucous membranes, and to a lesser extent, skeletal muscles. Increases blood pressure (mainly systolic), and in high doses increases total peripheral vascular resistance. The pressor effect can cause a short-term reflex slowdown in heart rate.

Write down a detailed answer about which hormone is being discussed.

Answer: Adrenaline.

2.2 Typical tasks for intermediate certification

List of questions for the test

Emerging competencies: PC-2 Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis

PC-2 ID -1 To be able to study animals, using digital equipment and special (instrumental) methods, including endoscopy, probing, catheterization, radiography, electro cardiography, echography

PC-2 ID-6 To be able to interpret and analyze data from laboratory animal research methods for diagnosis

PC-2 ID-7 To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals

PC-2 ID-9 To possess skills of the technique of the animal study, using digital equipment and special (instrumental) methods in accordance with methodological guidelines, instructions, rules for the diagnosis, prevention and treatment of animals

PC-2 ID-11 To possess skills of the technique of setting functional tests for animals

PC-3 To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods

PC-3 ID-1 possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases

PC-3 ID-2 To possess skills to use specialized information databases for the diagnosis of animal diseases

PC-3 ID-3 To possess skills to document the results of clinical animal studies, using digital technologies

PC-3 ID-4 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination

PC-3 ID-6 To know the etiology and pathogenesis of animal diseases of various species

PC-3 ID-7 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease

1. Departments of the heart.
2. Small circle of blood circulation.
3. A large circle of blood circulation.
4. The main characteristics of the ECG.
5. The anatomical structure of the heart.
6. Phases of cardiac activity.
7. Research of cardiac activity.
8. ECG arrhythmias.
9. Drugs for cardiac arrhythmias.
10. Chronic heart failure.
11. Tachycardia
12. Modern methods of diagnosis of heart diseases.
13. Symptoms of cardiovascular insufficiency.
14. Myocarditis
15. Diseases of the pericardium. Pericarditis
16. Congenital heart defects
17. Dilated cardiomyopathy
18. Endocardiosis
19. ECG readings in case of cardiac arrhythmia
20. Vectorcardiography
21. Functional tests of the heart
22. Phonocardiography
23. Ultrasound methods of heart examination
24. X-ray examination of the heart and blood vessels
25. Laboratory research methods in cardiology
26. Blood supply to the heart. Circulatory circles. The conductive system of the heart
27. Heart functions
28. Insufficiency of the aortic valves
29. Dropsy of the cardiac sac
30. Myocardosis
31. Endocarditis
32. Heart defects
33. Atherosclerosis
34. Vascular thrombosis
35. Definition and classification of cardiomyopathies
36. Dilated cardiomyopathy
37. Classification of hypertrophic cardiomyopathy
38. Classification of congenital heart defects and major vessels.

4. METHODOLOGICAL MATERIALS DEFINING THE PROCEDURES FOR ASSESSING KNOWLEDGE, SKILLS AND ABILITIES AND WORK EXPERIENCE CHARACTERIZING THE STAGES OF COMPETENCE FORMATION

The control of the development of the discipline "Internal non-communicable diseases" is carried out in accordance with the regulation "On the forms, frequency and procedure of current monitoring of academic performance and intermediate certification of students". The current control of the discipline allows you to assess the degree of perception of the educational material and is carried out to evaluate the results of studying the sections / topics of the discipline.

Criteria for evaluating the performance of the control work:

The mark "excellent" control is written in full in compliance with the necessary sequence of actions; passed on time;

The mark "good" control is written correctly, taking into account 1-2 minor errors or 2-3 defects, corrected independently at the request of the teacher;

The mark "satisfactory" is written correctly by at least half, 1-2 errors or one gross mistake were made, it was not delivered on time;

The mark "unsatisfactory" two (or more) gross mistakes were made in the course of work, which the student cannot correct even at the request of the teacher or the test was not passed at all.

Criteria for evaluating students' knowledge during testing:

The grade "excellent" is given if the student answers correctly at least 90% of the test tasks;

The grade "good" is given if the student answers correctly at least 80% of the test tasks;

The grade "satisfactory" is given if the correct answer of the student is at least 70 %;

The grade "unsatisfactory" is given if the student answers correctly to less than 70% of the test tasks.

Criteria for evaluating the colloquium:

Mark "excellent" the answer is given in full; correctly performs error analysis;

The mark is "good" the answer is given correctly, taking into account 1-2 minor errors or 2-3 defects, corrected independently at the request of the teacher;

The mark is "satisfactory" the answer is given correctly by at least half, 1-2 errors or one gross error were made;

Mark "unsatisfactory" two (or more) gross errors were made during the response, which the student cannot correct even at the request of the teacher.

Criteria for evaluating the completion of the course work:

The mark "excellent" course is completed in full in compliance with the necessary sequence of actions; completed on time;

The mark "good" of the course is executed correctly, taking into account 1-2 minor errors or 2-3 defects, corrected independently at the request of the teacher;

The mark "satisfactory" is written correctly by at least half, 1-2 errors or one gross error were made;

The mark "unsatisfactory" two (or more) gross mistakes were made during the writing of the work, which the student cannot correct even at the request of the teacher or the course paper has not been submitted at all.

Criteria for evaluating answers to test questions:

The mark "credited" is given in full; the answer is given correctly, taking into account 1-2 minor errors or 2-3 defects corrected independently at the request of the teacher, the answer is given correctly by at least half, 1-2 errors or one gross error are allowed;

The mark "not counted" two (or more) gross errors were made during the response, which the student cannot correct even at the request of the teacher.

Criteria for evaluating answers to exam questions:

The mark is "excellent" the answer is given in full;

The mark "good" correctly performs error analysis. The answer is given correctly, taking into account 1-2 minor errors or 2-3 defects, corrected independently at the request of the teacher;

The mark is "satisfactory" the answer is given correctly by at least half, 1-2 errors or one gross error were made;

Mark "unsatisfactory" two (or more) gross errors were made during the response, which the student cannot correct even at the request of the teacher.

Criteria for evaluating the performance of situational tasks:

Mark "excellent" the task was completed in full with the necessary sequence of actions; completed on time;

The mark is "good" the task was completed correctly, taking into account 1-2 minor errors or 2-3 defects, corrected independently at the request of the teacher;

The mark is "satisfactory" the task was completed correctly by at least half, 1-2 errors were made or one gross mistake was made, it was not delivered on time;

The mark "unsatisfactory" two (or more) gross mistakes were made in the course of work, which the student cannot correct even at the request of the teacher or the task is not done at all.

5. ACCESSIBILITY AND QUALITY OF EDUCATION FOR DISABLED PEOPLE

If necessary, persons with disabilities and persons with disabilities are given additional, time to prepare an answer for the test.

When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities, their own technical means can be used.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline provides for the provision of information in forms adapted to the limitations of their health and perception of information:

For people with visual impairments:	– in printed form in enlarged font; – in the form of an electronic document.
For people with hearing impairments:	– in printed form; – in the form of an electronic document.
For people with disorders of the musculoskeletal system:	– in printed form, the device; – in the form of an electronic document.

When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline, it ensures that the following additional requirements are met, depending on the individual characteristics of the students:

a) instructions on the procedure for conducting the assessment procedure are provided in an accessible form (orally, in writing);

b) an accessible form of assignment of assessment tools (in printed form, in printed form in enlarged font, in the form of an electronic document, assignments are read out by the teacher);

c) an accessible form of providing answers to tasks (written on paper, a set of answers on a computer, orally).

If necessary, for students with disabilities and the disabled, the procedure for evaluating the results of training in the discipline can be carried out in several stages.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities is allowed using distant learning technologies.