

**Assessment tools for conducting attestation  
in discipline «Pathophysiology»  
for students of 2024 year of admission  
under the educational programme  
31.05.01 General Medicine,  
specialisation (profile) General Medicine  
(Specialist's degree),  
form of study full-time  
for the 2025-2026 academic year**

**1. Assessment tools for conducting current attestation in discipline**

**1.1. Assessment tools for conducting certification in seminar-type classes**

The current attestation includes the following types of tasks: testing, solving situational problems, assessing the acquisition of practical skills (abilities), a test, an interview on test questions, preparing a report.

1.1.1. Examples of test tasks. Checked indicators of achievement of competence general practical competencies (GPC): GPC-5.1.1, GPC-5.2.1, GPC-5.3.1

1.1.2. The correct statement is

- 1) pathological process is the basis of any disease
- 2) notions of a pathological process and a disease are identical

Specific features of the disease depend on

- 1) causes of the disease
- 2) conditions contributing to the development of the disease
- 3) reactivity of the body

the correct definition of a etiology IS

- 1) a etiology is the doctrine about a disease
- 2) a etiology is the doctrine about the causes and conditions of development of diseases and pathological processes

the statement “disease is a combination of several pathological processes” IS correct

- 1) yes
- 2) no

Reactivity is

- 1) ability of tissues to answer with protective and adaptive reactions to pathogenic influences
- 2) ability of the whole organism to answer with changes of vital activity to various influences of the environment

The correct definition Of resistance IS

- 1) stability of cells to the action of pathogenic factors of the environment
- 2) ability of the organism to resist action of pathogenic factors of the environment

Characteristic for mechanisms of active resistance of the organism is

- 1) emigration of leukocytes and phagocytes
- 2) barrier functions of the skin and mucous membranes

Strong balanced mobile body type according to I.P.Pavlov and Hippocrat IS

- 1) choleric person
- 2) phlegmatic person
- 3) sanguine person
- 4) melancholiac person

Signs of arterial hyperemia ARE

- 1) cyanosis of the organ
- 2) reddening of the organ or tissue
- 3) marked edema of the organ

Cause for damage of the organ in blood circulation disorder IS

- 1) increased concentration of oxyhemoglobin in blood
- 2) decreased concentration of oxyhemoglobin in blood
- 3) reduction of volumetric blood circulation
- 4) increased concentration of reduced hemoglobin in blood

Consequences of venous hyperemia are

- 1) growth of the connective tissue
- 2) increase of the organ's function
- 3) haemorrhage

Non-typical changes for ischemia are

- 1) necrosis
- 2) acidosis
- 3) decreased function
- 4) increased function
- 5) accumulation of  $\text{Ca}^{2+}$  in the cell's hyaloplasm
- 6) increase of  $\text{Na}^+$  concentration in the cell

1.1.2. Examples of situational tasks (cases). Checked indicators of achievement of competence: GPC-5.2.1, GPC-5.3.1.

Task No. 1. Increased residual nitrogen (hyperazotemia) was detected in the patient's blood, but a thorough examination did not reveal any renal excretory function disorders. Please, explain the reasons for the obtained data.

Task No. 2. Two rats: one intact, the other after removal of the adrenal glands are placed in a large jar of water and the animals are observed swimming. After 10-15 minutes, the adrenalectomized rat begins to drown and is removed, and the other continues to swim for a long time.

Questions: 1. Assess the reactivity and resistance of these animals to physical activity. 2. Explain the results obtained.

1.1.3. Examples of tasks for assessing the acquisition of practical skills. Indicators of competence achievement to be verified: GPC-5.2.1, GPC-5.3.1.

Experiment 1. Reproducing neuroparalytic arterial hyperemia.

Method: A frog is anaesthetized with 0.4-0.5 ml of 1% solution of Hexenalum injected into the lymphatic sac. The frog must be fixed on the preparation board with its abdomen down. On one extremity in the middle part of the thigh uncover a sciatic nerve, which is carefully strangulated by a ligature. The swimming membrane of the same extremity must be stretched under the side window of a board and moistened with warm physiological solution. You have to observe the initial status of circulation under slight magnification with a microscope and then you have to cut quickly the sciatic nerve continuing your observation.

The results have to be recorded and sketched. On the basis of obtained data draw a conclusion about the cause of arterial hyperemia development after paralysis of nerves and the nature of disturbance of blood circulation in it.

Experiment 2. Dependence of the reactivity of the organism on the function of the nervous system.

Method: you have to place three mice in three hermetically closed jars. The first one is narcotised by an injection of 0.2-0.3 ml of 1% solution of Hexenalum, the second one is given a subcutaneous injection of caffeine (0.3-0.4 ml 1% solution) and the third one is a control (intact) mouse. You must mark the time of asphyxia onset. You have to record the results of the experiment at every reason function of the nervous system.

1.1.4. Examples of control questions for an interview

Checked indicators of achievement of competence: GPC-5.1.1.

Interview questions on the topic: Reactivity and resistance of the body. The influence of exogenous factors on the reactivity of the body.

1. The conception of reactivity and its role in pathogenesis.
2. Kinds of reactivity (specific, group and individual).
3. Forms and mechanisms of reactivity
4. The role of heredity - constitutional, peculiarity of the organism in the individual reactivity.
5. The significance of the nervous system type, sex, age, acquired characteristics of the organism in reactivity.
6. Pathological reactivity, its role in development of preillness.
7. Resistance. The forms and basic mechanisms of resistance.
8. Interrelation of reactivity and resistance. Methods of directional change of individual reactivity and increase of resistance.

1.1.5. An example of a test option for a test paper. Indicators of competency achievement to be tested: GPC-5.1.1.

Option 1.

1. Edema and exudation during inflammation. Inflammatory mediators.
2. The concept of proto-oncogenes, oncogenes, oncoproteins. The role of oncoproteins in the initiation of tumor growth.
3. Definition of the concept of "fever". Infectious and non-infectious fever. The main differences between fever and overheating.
4. General pathogenesis of shock. Shock stages.

1.2. Assessment tools for independent work of students

1.2.1. Assessment of independent work includes testing.

Examples of test items with a single answer. Checked indicators of achievement of competence: GPC-5.1.1. GPC-5.3.1

1. Primary types of obesity: a) alimentary-constitutional b) iatrogenic c) cerebral d) endocrine
2. Secondary types of obesity: a) alimentary-constitutional b) iatrogenic
3. Body mass index corresponding to normal body weight: less than 18.5 a) 18.5 – 24.9 b) 25.0 – 29.9 c) 30.0 – 34.9

Examples of test items with multiple choice and/or matching and/or sequencing. Verifiable indicators of competence achievement: GPC-5.1.1, GPC-5.2.1, GPC-5.3.1

1. Causes of impaired digestion and absorption of fats: a) vitamin C deficiency b) bile acid deficiency c) pancreatic lipase deficiency d) excess calcium ions in food d) magnesium ions deficiency

2. Functions of apoproteins: a) participate in lipoprotein synthesis b) participate in lipoprotein transport c) regulate reactions of lipoproteins with enzymes d) are ligands for cell receptors d) are receptors for lipoproteins

3. Characteristic features of chylomicrons: a) transport triglycerides b) are synthesized by hepatocytes c) are atherogenic d) are synthesized by enterocytes d) their residues are absorbed by cells through receptors

4. Characteristic features of VLDL: a) transport endogenous triglycerides b) are the most atherogenic c) are synthesized by hepatocytes d) are a substrate for lipoprotein lipase

5. Characteristic features of VLDL: a) transport endogenous triglycerides b) are absorbed by cells through receptors c) are formed in the blood from VLDL d) are atherogenic d) are synthesized by hepatocytes

## **2. Assessment tools for conducting intermediate attestation in a discipline/practice**

Intermediate attestation is carried out in the form of an exam. Assessment tools for conducting intermediate attestation includes the following types of tasks: interview.

List of questions to prepare for the intermediate attestation.

№	Questions to prepare for the intermediate attestation	Tested competencies
1.	Pathophysiology as a fundamental and integrative academic discipline. Medical-disciplinary connection of pathophysiology with clinical and medical-biological disciplines. Subject and tasks of pathophysiology.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
2.	Stages of development of pathophysiology. The role of domestic and foreign scientists in the development of pathophysiology. Scientific direction of the Department of Pathophysiology, Clinical Pathophysiology of Volgograd Medical University.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
3.	Stages and phases of pathophysiological experiment. Studied problems in the experiment on animals by scientists of Voronezh State Medical University.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
4.	Modeling as the main and specific method of pathophysiology. Possibilities and limitations of pathophysiological experiment. Possibilities of clinical pathophysiology.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
5.	Methods of modeling the pathological process. The importance of the comparative-evolutionary method in the study of pathological processes and protective-adaptive reactions of a person.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
6.	Norm, health, transitional states of the body between health and disease. The concept of pre-disease. Contribution to the study of the state of pre-disease by VolGMU employees.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
7.	The concept of a pathological process, pathological reaction, pathological condition, typical pathological process.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
8.	The concept of "disease". Disease as a dialectical unity of damage and adaptive reactions of the body; stages of the disease.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
9.	The principle of determinism in pathology. Modern understanding of etiology. Etiotropic principle of disease prevention and therapy.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
10.	Characteristics of pathogenic factors of the external and internal environment. The importance of social factors in maintaining health and causing human diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
11.	Analysis of some concepts of general etiology (monocausalism, conditionalism, constitutionalism, psychosomatic trend and Freudianism in medicine).	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
12.	Alcoholism, substance abuse, drug addiction: characteristics of concepts, types, etiology, pathogenesis, manifestations, consequences. Features and prevalence of the studied pathology in the Volgograd region.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
13.	The relationship between structure and function in the pathogenesis of the disease.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
14.	Cause-and-effect relationships in the pathogenesis of diseases. The leading links of pathogenesis: the trigger, the main link and the principles of the "vicious circle".	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
15.	The role of the specific and non-specific in the pathogenesis of diseases. Primary and secondary damage.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
16.	Local and general reactions to damage, their relationship.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
17.	Protective, compensatory and restorative reactions of the body. Recovery mechanisms. The role of the nervous and endocrine systems in the mechanisms of recovery. Pathogenetic principles of disease therapy.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
18.	Disease outcomes. Complete and incomplete recovery. Remission, relapse, complications.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
19.	Dying as a staged process (preagony, agony, clinical and biological death). Pathophysiological foundations of resuscitation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
20.	Etiology, pathogenesis of chromosomal diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.

21.	Gene diseases: mono- and polygenic. Dominant, recessive and sex-linked hereditary diseases. General patterns of pathogenesis of hereditary diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
22.	Definition of the concept of "reactivity". Types, forms and mechanisms of reactivity.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
23.	Resistance of the body to damage: passive and active, primary and secondary, specific and non-specific. The relationship between reactivity and resistance.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
24.	Definition of the concept of "constitution of the body". Classification of constitutional types. The influence of the constitution on the occurrence and development of diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
25.	The influence of age, sex, state of the nervous, endocrine, immune and other systems of the body, as well as harmful environmental factors of the Volgograd region on the reactivity of the body.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
26.	Chronobiological aspects of adaptation. Biorhythms and their role in the formation of pathological reactivity.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
27.	Immunity and its place in pathology. Immunological tolerance. Types and mechanisms of formation of immunological tolerance. Vaccinations and the state of collective immunity in the Volgograd region.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
28.	Primary and secondary immunodeficiencies. Etiology and pathogenesis of acquired immunodeficiency syndrome	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
29.	The concept of "allergy". Etiology and general pathogenesis of allergic reactions. Principles of pathogenetic therapy of allergies.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
30.	Differences between immunity and allergy. Biological meaning of allergic reactions. Types of pseudoallergic reactions, features of their pathogenesis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
31.	Features of the pathogenesis of the reaginic allergic reaction.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
32.	Features of the pathogenesis of the cytotoxic allergic reaction.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
33.	Features of the pathogenesis of the immune complex allergic reaction.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
34.	Features of the pathogenesis of the delayed-type allergic reaction.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
35.	The concept of "cell damage". Causes and general mechanisms of cell damage.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
36.	The role of specific and non-specific manifestations of cell damage. Reversible and irreversible cell damage. Paranecrosis, necrobiosis, necrosis, autolysis. Markers of cytolysis and cell death.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
37.	Mechanisms of damage to cell membranes and cell enzymes. Features of the pathogenesis of free-radical damage and cell death.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
38.	Mechanisms of hypoxic damage and cell death.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
39.	Consequences of disorders of the genetic apparatus of the cell. The importance of apoptosis in norm and pathology.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
40.	Etiology and pathogenesis of arterial hyperemia. Types of arterial hyperemia. Pathological and protective-adaptive consequences of arterial hyperemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
41.	Etiology and pathogenesis of ischemia. Types of ischemia. Signs and consequences of ischemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
42.	Venous hyperemia, its causes, mechanisms of development, signs. Consequences of venous hyperemia: pathological and protective-compensatory.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
43.	Types of stasis. Causes and mechanisms of stasis development. Consequences of stasis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.

44.	The concept of "inflammation". Etiology of inflammation. The main components of the pathogenesis of inflammation. The role of reactivity in the development of inflammation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
45.	Types of inflammatory mediators. Their importance in the dynamics of the development and completion of inflammation. The relationship of various mediators.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
46.	Alteration as a component of the pathogenesis of the inflammatory process. Primary and secondary alteration in the inflammation focus.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
47.	Stages and mechanisms of development of microcirculatory disorders in the inflammation focus. The biological meaning of vascular reactions during inflammation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
48.	Mechanisms of exudation and formation of inflammatory edema. The biological role of inflammatory edema. Types of exudates.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
49.	Mechanisms of marginal standing and emigration of leukocytes. The role of adhesion molecules and chemoattractants in the sequence of emigration and chemotaxis of leukocytes to the site of inflammation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
50.	Types of phagocytosis, mechanisms of bacterial killing. Stages of phagocytosis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
51.	Mechanisms of proliferation and reparation in the inflammation focus.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
52.	Causes of phagocytosis insufficiency. The importance of incomplete phagocytosis for the development of inflammation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
53.	The role of the lymphatic system in the pathogenesis of inflammation using the example of the development of an infectious process in anthrax, tetanus and HIV infection.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
54.	Definition of the term "fever". Infectious and non-infectious fever. Differences between fever and hyperthermia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
55.	Etiology of fever. Types of pyrogens, their sources in the body. Mechanisms of pyrogen action.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
56.	Mechanisms of thermoregulation at different stages of fever. Mechanisms of antipyresis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
57.	Biological significance of fever. The concept of pyrotherapy. Principles of antipyretic therapy.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
58.	Causes and mechanisms of development of the main types of hypoxia. Urgent and long-term adaptive reactions to hypoxia; their mechanisms.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
59.	Hyperglycemic conditions. Mechanisms of development and pathogenetic significance of hyperglycemia in diabetes mellitus.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
60.	Etiology and pathogenesis of diabetes mellitus. Remote consequences of diabetes mellitus, mechanisms of their development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
61.	Diabetic comas (ketoacidotic, hyperosmolar, lactic acidotic), their pathogenetic features.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
62.	Causes and mechanisms of protein metabolism disorders. Positive and negative nitrogen balance. Disorders of the protein composition of blood plasma (hyper-, hypo- and dysproteinemia; paraproteinemia).	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
63.	The concept of "dyshydria". Principles of classification and main forms of dyshydria.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
64.	Pathogenetic factors of edema (triggers, main link, vicious circles). Protective and pathological role of edema. Principles of pathogenetic therapy of edema.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
65.	Causes, mechanisms and consequences of disorders of mechanical, dynamic and resorption insufficiency of lymph circulation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
66.	Types of general obesity. Etiology and pathogenesis of obesity.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
67.	Causes and mechanisms of atherosclerosis development. The	GPC-5.1.1, GPC-5.2.1,

	importance of changes in the lipid spectrum of the blood for the development of atherosclerosis.	GPC-5.3.1.
68.	The concept of "tumor growth". Types of tumor atypism. Etiology of tumors, general properties of carcinogens. Pathogenesis of tumors. Malignant and benign tumors.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
69.	Modern concepts of the molecular mechanisms of carcinogenesis. The importance of oncogenes, the role of oncoproteins in carcinogenesis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
70.	Interaction between a tumor and an organism. Mechanisms of antineoplastic resistance of the organism. Pathophysiological bases for the prevention and therapy of tumor growth.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
71.	Stages and mechanisms of stress development. The main manifestations of stress-reaction. Modern concepts of the pathophysiology of stress.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
72.	Cellular mechanisms of the protective-adaptive and damaging effects of stress. The role of the stress-limiting system in the development of the stress reaction.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
73.	Causes and mechanisms of collapse and coma development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
74.	The concept of "shock", criteria of shock. Etiology of shock. Paths of generalization in shock. The importance of the initial state and reactive properties of the body for the outcome of shock.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
75.	Characteristics of the stages of shock development. General pathogenesis of the extracellular stage of shock. The role of the lymphatic system in the pathogenesis of shock.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
76.	General pathogenesis of the cellular stage of shock development. Criteria for irreversible changes in shock.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
77.	Pathophysiological foundations of shock, collapse, coma therapy.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
78.	Features of the etiology and pathogenesis of nervous system pathology.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
79.	Pathophysiology of pain.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
80.	Biological significance of pain as a signal of danger and damage. Vegetative components of pain reactions.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
81.	Causes and mechanisms of neurodystrophy development. The influence of neurodystrophy on the course of the pathological process.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
82.	Typical forms of neurogenic movement disorders: paralysis, paresis, hyperkinesis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
83.	General etiology and pathogenesis of endocrine disorders.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
84.	Pathophysiology of the pituitary gland.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
85.	Pathophysiology of the thyroid and parathyroid glands.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
86.	Pathophysiology of the adrenal glands.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
87.	Pathophysiology of the sex glands.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
88.	The concept of circulatory failure; its forms, basic hemodynamic parameters and manifestations. Heart failure, its types. Etiology and pathogenesis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
89.	Compensatory hyperfunction of the heart. Mechanisms of urgent and long-term adaptation of the heart to overloads.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
90.	Ischemic heart disease. Causes and mechanisms of development of	GPC-5.1.1, GPC-5.2.1,

	ischemic heart disease. Myocardial infarction.	GPC-5.3.1.
91.	Causes and mechanisms of development of secondary ("symptomatic") arterial hypertension.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
92.	Etiology and pathogenesis of arterial hypertension (hypertension).	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
93.	Types, causes and mechanisms of cardiac arrhythmias.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
94.	Types of arterial hypotension. Causes and mechanisms of development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
95.	The concept of "anemia". Types of anemia. Principles of classification of anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
96.	Pathophysiology of posthemorrhagic anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
97.	Etiology and pathogenesis of hemolytic anemias.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
98.	Pathophysiology of iron deficiency anemias. The concept of sideroachrestic anemias.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
99.	Etiology and pathogenesis of B12-folate deficiency anemias.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
100.	Types of erythrocytosis. Causes and mechanisms of their development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
101.	Types of leukocytosis. Causes and mechanisms of their development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
102.	Types of leukopenia. Causes and mechanisms of their development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
103.	Types of leukemia. Causes and mechanisms of their development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
104.	Main disorders of hematocrit and circulating blood volume.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
105.	Disorders of osmotic resistance of blood, erythrocyte sedimentation rate and blood viscosity.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
106.	Types and mechanisms of development of hemorrhagic diathesis.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
107.	The concept of thrombophilia. Causes and mechanisms of development of thrombophilic conditions.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
108.	Etiology and pathogenesis of DIC of blood. The concept of thrombohemorrhagic syndrome.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
109.	The concept of "respiratory failure". Features of the pathogenesis of acute and chronic respiratory failure.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
110.	Features of the pathogenesis of pathophysiological forms of respiratory failure.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
111.	Causes and mechanisms of development of respiratory distress syndrome.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
112.	Etiology and pathogenesis of gastric ulcer and duodenal ulcer. Peculiarities of pathogenesis of symptomatic gastroduodenal ulcers.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
113.	Syndromes of intestinal digestion disorders. Causes and mechanisms of their development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
114.	The concept of "liver failure". Causes and mechanisms of liver failure development.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
115.	Causes and mechanisms of bile formation and bile secretion disorders. Types of jaundice, pathogenesis features.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
116.	Etiology and pathogenesis of hepatic coma.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
117.	Causes and mechanisms of development of acute renal failure.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
118.	Etiology and pathogenesis of chronic renal failure.	GPC-5.1.1, GPC-5.2.1,



		GPC-5.3.1.
119.	Causes and mechanisms of development of nephrotic syndrome.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
120.	Mechanisms of development and significance of azotemia, anemia, arterial hypertension and edema in renal diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
121.	Determination of types of temperature curves in fevers of various etiologies.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
122.	Study of blood smears in acute posthemorrhagic anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
123.	Study of blood smears in B12-folate deficiency anemia	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
124.	Study of blood smears in hemolytic anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
125.	Counting blood reticulocytes in anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
126.	Determination of the amount of hemoglobin in anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
127.	Determination of the color index in anemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
128.	Study of blood smears in acute leukemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
129.	Study of blood smears in chronic myeloid leukemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
130.	Study of blood smears in chronic lymphocytic leukemia.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
131.	Counting the number of leukocytes and the leukocyte formula in inflammation.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
132.	Determination of the nuclear shift of neutrophils in various diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
133.	Determination of ESR in various diseases.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
134.	Determination of the hematocrit value.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
135.	Determination of protein in lymph and blood by the refractometric method.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
136.	Determination of recalcification time.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
137.	Determination of prothrombin time.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
138.	Determination of osmotic resistance of erythrocytes.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
139.	Determination of types of gastric secretion.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.
140.	Determination of pathological components in urine.	GPC-5.1.1, GPC-5.2.1, GPC-5.3.1.

## 2.2. Example of an examination card.

Federal State Budgetary Educational Institution of Higher Education "Volgograd State Medical University" Ministry of Health of the Russian Federation

Department: Pathophysiology, Clinical Pathophysiology

Discipline: Pathophysiology

Specialist in the specialty 31.05.01 General Medicine, focus (profile) General Medicine

Academic year: 20\_\_-20\_\_

### Examination card No. 6

Examination questions:

1. The main method of pathophysiology. Stages and phases of the pathophysiological experiment.
2. The concept of "allergy". Etiology and general pathogenesis of allergic reactions. Principles of pathogenetic therapy of allergies.
3. Etiology and pathogenesis of diabetes mellitus.
4. Determination of pathological components in urine. M.P. Head of Department

Head of Department

R.A. Kudrin

**The full fund of assessment tools for the discipline/practice is available in the VolgSMU Electronic Information and Educational System at the link(s):**

<https://elearning.volgmed.ru/course/view.php?id=7364>

Considered at the department meeting Pathophysiology, Clinical Pathophysiology, protocol of «23» May 2025 г. № 13.

Head of the Department



R.A. Kudrin