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Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY

Head of the Department of
Human Physiology and Pathophysiology
_____ / Markelova E.V./
"17th" of April 2026

COLLECTION OF ASSESSMENT TOOLS

B1.C.14 Pathophysiology. Pathophysiology of human head and neck of Higher Education

Specialty	**31.05.03 Dentistry for international students (in English)** (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing health care in patients with dental pathology)
Mode of study	**Full-time**
Period of mastering the BEP	**5 years** (nominal length of study)
Department	of Human Physiology and Pathophysiology

Vladivostok, 2026

1. INTRODUCTION

1.1. Collection of Assessment Tools is a document that regulates the format, content, and types of assessment tools for continuous assessment, interim examination and final (state final) examination, and graded criteria for each type of assessment tools.

1.2. Assessment tools allows to evaluate the development of universal, general professional, and professional competencies (UCs, GPCs and PCs respectively) outlined in Federal State Educational Standard of Higher Education and defined in the basic educational program of higher education for the specialty 31.05.03 Dentistry for foreign students (English-language program), profile 02 "Healthcare" (in the field of providing health care in patients with dental pathology).

(BEP HE for the 31.05.03 Dentistry for foreign students (English-language program) specialty, section 3 Learning Outcomes Requirements of the Basic Educational Program of Higher Education)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	**Continuous assessment**	**Tests**
		Interview Questions
		Mini-Case Studies
2	**Interim assessment**	**Mini-Case Studies**
		Interview Questions

3. The contents of assessment tools for continuous and interim examination are prepared by the teacher of the course

Tests for continuous assessment

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		**ANSWER LEVEL 1 TEST QUESTIONS (ONE CORRECT ANSWER)**
		General etiology and pathogenesis. Reactivity (responsiveness) and resistance of the organism 1. Etiology is: a) The study of the causes of diseases b) The study of the mechanisms of disease development c) The study of disease symptoms d) The study of disease treatment **Answer: a** 2. Pathogenesis is: a) The cause of a disease b) The mechanism of disease development c) The outcome of a disease

d) Diagnosis
Answer: b

3. Organism reactivity is:
a) The ability to reproduce
b) The ability to respond with changes to environmental factors
c) The level of immunity
d) The rate of metabolism
Answer: b

4. Resistance is:
a) The ability to recover
b) The organism's resistance to the action of pathogenic factors
c) The level of leukocytes
d) The rate of regeneration
Answer: b

5. Passive resistance is:
a) Active destruction of a pathogen
b) Insusceptibility to a pathogen without the involvement of protective reactions
c) Inflammation
d) Allergy
Answer: b

6. Active resistance is provided by:
a) Biological barriers
b) The organism's defensive and compensatory reactions
c) Absence of a pathogen
d) Decreased temperature
Answer: b

7. Non-specific mechanisms of resistance include:
a) Antibodies
b) Phagocytosis
c) Allergic reactions
d) Autoimmunity
Answer: b

8. Increased organism reactivity:
a) Always decreases resistance
b) May increase active resistance
c) Does not affect resistance
d) Causes hypoxia
Answer: b

9. The doctrine of reactivity and resistance was developed by:
a) Pavlov
b) Mechnikov
c) Sechenov
d) Botkin
Answer: b

10. Typical pathological processes do not include:
a) Inflammation

b) Regeneration
c) Fever
d) Hypoxia
Answer: b

11. The main objective of pathophysiology is:
a) The study of disease symptoms
b) The study of general patterns of pathological processes
c) The treatment of diseases
d) Prevention
Answer: b

12. A pathognomonic sign is:
a) Specific to a particular disease
b) Common to all diseases
c) Not significant
d) Occurs only in animals
Answer: a

13. The relationship between reactivity and resistance is:
a) Always direct
b) Can be direct or inverse
c) Absent
d) Only inverse
Answer: b

14. Factors influencing reactivity do not include:
a) Age
b) Sex
c) Eye color
d) The state of the nervous system
Answer: c

15. Pathophysiology studies:
a) Only animal diseases
b) The patterns of pathological processes in humans
c) Only microbes
d) Only symptoms
Answer: b

16. The causative factor of a disease is:
a) The etiological factor
b) The pathogenetic factor
c) The symptomatic factor
d) The outcome
Answer: a

17. Classification of diseases by etiology is based on:
a) Symptoms
b) Causes of onset
c) Outcomes
d) Morphology
Answer: b

18. Typical pathological processes include:
a) Recovery
b) Necrosis
c) Growth
d) Cell division
Answer: b

19. The basis of the pathogenesis of infectious diseases is:
a) Allergy
b) The interaction between the pathogen and the organism
c) Hypoxia
d) Hyperthermia
Answer: b

20. The main function of pathophysiology in medicine is:
a) Treatment
b) Shaping the scientific thinking of a physician
c) Diagnosis
d) Prevention
Answer: b

Impairment of peripheral circulation and microcirculation

1. Which of the following is not a typical form of peripheral circulation disorder?
a) Ischemia
b) Stasis
c) Hyperthermia
d) Venous hyperemia
Answer: c

2. Ischemia is:
a) Decreased blood supply to tissue
b) Increased blood supply
c) Blood stasis
d) Hemorrhage
Answer: a

3. Venous hyperemia occurs due to:
a) Arterial spasm
b) Impaired venous blood outflow
c) Increased arterial blood inflow
d) Decreased pressure
Answer: b

4. Arterial hyperemia is:
a) Increased arterial blood inflow
b) Decreased blood inflow
c) Venous blood stasis
d) Ischemia
Answer: a

5. Stasis is:
a) Accelerated blood flow
b) Complete cessation of blood flow in microvessels

c) Hyperemia
d) Hemorrhage
Answer: b

6. The main components of microcirculation are:
a) Arteries
b) Arterioles, capillaries, venules
c) Veins
d) Lymphatic vessels
Answer: b

7. Impaired microcirculation leads to:
a) Hyperthermia
b) Tissue trophic disturbances
c) Hypertension
d) Hypoglycemia
Answer: b

8. A cause of thrombosis can be:
a) Hyperglycemia
b) Vascular endothelial damage
c) Hypothermia
d) Hyperthermia
Answer: b

9. Embolism is:
a) Vessel rupture
b) Vessel occlusion by particles carried by the bloodstream
c) Arterial spasm
d) Hypoxia
Answer: b

10. Hemorrhage is:
a) Blood escape from the vascular bed
b) Decreased circulating blood volume
c) Ischemia
d) Hyperemia
Answer: a

11. A cause of ischemia can be:
a) Vessel dilation
b) Arterial spasm or occlusion
c) Venous congestion
d) Hyperthermia
Answer: b

12. Which of the following is not a consequence of venous hyperemia?
a) Edema
b) Hypoglycemia
c) Cyanosis
d) Varicose veins
Answer: b

13. The main mechanism of arterial hyperemia is:
a) Vasospasm
b) Arteriolar dilation
c) Thrombosis
d) Stasis
Answer: b

14. Capillary stasis develops with:
a) Accelerated blood flow
b) Impaired blood rheological properties
c) Hyperthermia
d) Hypothermia
Answer: b

15. Hemorrhage is:
a) Hyperemia
b) Blood escape into tissues or body cavities
c) Ischemia
d) Stasis
Answer: b

16. Microcirculatory disorders can lead to:
a) Hyperthermia
b) Tissue necrosis
c) Hypertension
d) Hypoglycemia
Answer: b

17. Which of the following is not a cause of thrombosis?
a) Endothelial damage
b) Slowed blood flow
c) Hypothermia
d) Increased blood coagulability
Answer: c

18. A consequence of embolism is:
a) Hyperemia
b) Infarction
c) Hyperthermia
d) Hypoglycemia
Answer: b

19. Impaired microcirculation can be associated with:
a) Hyperthermia
b) Changes in blood viscosity
c) Hypoglycemia
d) Hypothermia
Answer: b

20. Which of the following is not a typical form of circulation disorder?
a) Ischemia
b) Hyperemia
c) Stasis

d) Hyperglycemia
Answer: d

Pathophysiology of hypo- and hyperoxia

1. Hypoxia is:
a) Oxygen deficiency in tissues
b) Oxygen excess
c) Carbon dioxide excess
d) Glucose excess
Answer: a

2. Hyperoxia is:
a) Oxygen deficiency
b) Oxygen excess in tissues
c) Carbon dioxide excess
d) Hypoglycemia
Answer: b

3. The cause of hypoxic hypoxia is:
a) Decreased partial pressure of oxygen in inspired air
b) Anemia
c) Impaired respiratory enzymes
d) Impaired blood flow
Answer: a

4. Hemic hypoxia is associated with:
a) Respiratory impairment
b) Decreased oxygen-carrying capacity of blood
c) Impaired blood flow
d) Hyperthermia
Answer: b

5. Circulatory hypoxia occurs with:
a) Anemia
b) Impaired circulation
c) Hyperventilation
d) Hyperthermia
Answer: b

6. Histotoxic hypoxia is caused by:
a) Anemia
b) Impaired blood flow
c) Blockade of tissue enzymes
d) Hypoglycemia
Answer: c

7. Oxygen deficiency leads to:
a) Hyperthermia
b) Impaired energy metabolism
c) Hypoglycemia
d) Hyperventilation
Answer: b

8. The main manifestation of hyperoxia is:
a) Hypothermia
b) Toxic effects of oxygen
c) Hypoglycemia
d) Anemia
Answer: b

9. Which of the following is not a consequence of hypoxia?
a) Acidosis
b) Hyperglycemia
c) Tissue necrosis
d) Organ dysfunction
Answer: b

10. In anemic hypoxia, hemoglobin level is:
a) Increased
b) Decreased
c) Unchanged
d) Absent
Answer: b

11. Which of the following is not a hypoxic state?
a) Ischemia
b) Hyperthermia
c) Anemia
d) Pulmonary edema
Answer: b

12. In hypoxic hypoxia, the following is impaired:
a) Oxygen supply to the body
b) Oxygen transport by blood
c) Oxygen utilization by tissues
d) Oxygen binding by hemoglobin
Answer: a

13. Tissue hypoxia develops with:
a) Hyperoxia
b) Impaired oxygen utilization by cells
c) Hypoglycemia
d) Hyperthermia
Answer: b

14. A compensatory reaction to hypoxia is:
a) Hypothermia
b) Increased pulmonary ventilation
c) Hypoglycemia
d) Hyperthermia
Answer: b

15. The main mechanism of hyperoxic injury is:
a) Hypoglycemia
b) Formation of reactive oxygen species
c) Hypothermia

d) Anemia
Answer: b

16. Which of the following is not a consequence of hyperoxia?
a) Lung injury
b) Hypoglycemia
c) Nervous system damage
d) Oxidative stress
Answer: b

17. Oxygen deficiency can lead to:
a) Hyperthermia
b) Impaired CNS function
c) Hypoglycemia
d) Hypertension
Answer: b

18. Hypoxia can be a consequence of:
a) Hyperthermia
b) Pulmonary edema
c) Hypoglycemia
d) Hyperoxia
Answer: b

19. Prevention of hypoxic states includes:
a) Lowering temperature
b) Normalizing respiration
c) Hypoglycemia
d) Hyperthermia
Answer: b

20. The main pathogenetic factor of hyperoxia is:
a) Hypoglycemia
b) Excessive oxygen supply
c) Hypothermia
d) Anemia
Answer: b

Physiology of inflammation. Acute phase response. Fever

1. Inflammation is:
a) A typical pathological process aimed at eliminating the damaging factor
b) An immune response to antigen
c) Hyperthermia
d) Hypoxia
Answer: a

2. Main signs of inflammation:
a) Redness, swelling, pain, increased temperature, impaired function
b) Hyperemia, hypoxia, hyperthermia
c) Anemia, leukopenia, hypothermia
d) Hypoglycemia, hyperthermia, hypothermia
Answer: a

3. The main role of inflammatory mediators:
a) Tissue destruction
b) Regulation of vascular and cellular reactions
c) Hyperthermia
d) Hypoxia
Answer: b

4. The acute phase of inflammation is characterized by:
a) Rapid development and pronounced vascular reactions
b) Chronic course
c) Absence of symptoms
d) Hypoglycemia
Answer: a

5. Which of the following is not an inflammatory mediator?
a) Histamine
b) Insulin
c) Prostaglandins
d) Bradykinin
Answer: b

6. Fever is:
a) An increase in body temperature due to a reset of thermoregulation
b) Hypothermia
c) Hypoglycemia
d) Hyperemia
Answer: a

7. The main mechanism of fever:
a) Activation of the sympathetic nervous system
b) Alteration of the thermoregulatory center under the influence of pyrogens
c) Hypoglycemia
d) Hyperemia
Answer: b

8. An endogenous pyrogen is:
a) Histamine
b) Interleukin-1
c) Insulin
d) Adrenaline
Answer: b

9. Hyperthermia is:
a) An increase in body temperature without resetting the thermoregulatory center
b) Fever
c) Hypothermia
d) Hypoglycemia
Answer: a

10. The difference between fever and hyperthermia:
a) In fever, the "set point" of the thermoregulatory center is altered
b) In hyperthermia, there is always an infection
c) In fever, there is no increase in temperature

d) In hyperthermia, the temperature decreases
Answer: a

11. A sign of the acute phase of inflammation is:
a) Increased C-reactive protein level
b) Hypoglycemia
c) Hyperthermia
d) Anemia
Answer: a

12. The main function of inflammation:
a) Tissue destruction
b) Limitation and elimination of the damaging factor
c) Hyperthermia
d) Hypoglycemia
Answer: b

13. Which of the following is not a cellular element of inflammation?
a) Neutrophils
b) Macrophages
c) Erythrocytes
d) Lymphocytes
Answer: c

14. Chronic inflammation is characterized by:
a) Rapid course
b) Prolonged course and predominance of proliferation
c) Hypoglycemia
d) Hyperthermia
Answer: b

15. Which of the following is not a complication of fever?
a) Seizures
b) Hypoglycemia
c) Dehydration
d) Organ dysfunction
Answer: b

16. The main mechanism of hyperthermia:
a) Activation of pyrogens
b) Impaired heat dissipation
c) Hypoglycemia
d) Hyperemia
Answer: b

17. A positive effect of fever is:
a) Hypoglycemia
b) Enhancement of the immune response
c) Hyperthermia
d) Hypoxia
Answer: b

18. Which of the following is not a negative effect of fever?
a) Organ dysfunction

b) Hyperglycemia
c) Seizures
d) Dehydration
Answer: b

19. A nonspecific acute phase protein is:
a) C-reactive protein
b) Insulin
c) Albumin
d) Hemoglobin
Answer: a

20. The main sign of inflammation:
a) Hypoglycemia
b) Redness
c) Hyperthermia
d) Hypoxia
Answer: b

Pathophysiology of immune reactivity disorders

1. Immune reactivity is:
a) The body's ability to respond with immune reactions to antigens
b) Hyperthermia
c) Hypoglycemia
d) Hyperemia
Answer: a

2. Immunodeficiency is:
a) Decreased immune reactivity
b) Enhanced immunity
c) Hyperthermia
d) Hypoglycemia
Answer: a

3. Hypersensitivity is:
a) A pathologically enhanced immune response
b) Reduced immunity
c) Hyperthermia
d) Hypoglycemia
Answer: a

4. Type I hypersensitivity reactions include:
a) Autoimmunity
b) Anaphylaxis
c) Cytotoxicity
d) Immune complex diseases
Answer: b

5. Antibodies involved in Type I reactions:
a) IgG
b) IgE
c) IgM

d) IgA
Answer: b

6. Type II hypersensitivity is associated with:
a) IgE
b) Cytotoxic antibody action
c) Immune complexes
d) T-lymphocytes
Answer: b

7. Type III hypersensitivity reactions include:
a) Anaphylaxis
b) Cytotoxicity
c) Immune complex-mediated diseases
d) Autoimmunity
Answer: c

8. Type IV hypersensitivity is:
a) Anaphylaxis
b) Cytotoxicity
c) Immune complex reactions
d) Cell-mediated immune response
Answer: d

9. An example of an autoimmune disease:
a) Influenza
b) Systemic lupus erythematosus
c) Malaria
d) Hyperthermia
Answer: b

10. Primary immunodeficiencies involve:
a) Congenital absence of T- or B-lymphocytes
b) AIDS
c) Hyperthermia
d) Hypoglycemia
Answer: a

11. Secondary immunodeficiency develops due to:
a) Congenital defects
b) Infections, tumors, immunosuppressive therapy
c) Hyperthermia
d) Hypoglycemia
Answer: b

12. Manifestations of Type I hypersensitivity include:
a) Urticaria
b) Anemia
c) Hyperthermia
d) Hypoglycemia
Answer: a

13. Type II hypersensitivity reactions include:
a) Anaphylaxis

b) Hemolytic anemia
c) Immune complex diseases
d) Hyperthermia
Answer: b

14. Immune complex diseases involve:
a) IgE
b) Antigen-antibody complex deposition
c) Autoimmunity
d) Hyperthermia
Answer: b

15. Cell-mediated reactions include:
a) Anaphylaxis
b) Cytotoxicity
c) Contact dermatitis
d) Hyperthermia
Answer: c

16. Consequences of immunodeficiency do not include:
a) Frequent infections
b) Hyperthermia
c) Tumors
d) Autoimmunity
Answer: b

17. Causes of secondary immunodeficiency include:
a) Congenital defects
b) HIV infection
c) Hyperthermia
d) Hypoglycemia
Answer: b

18. Manifestations of Type IV hypersensitivity include:
a) Anaphylaxis
b) Hemolytic anemia
c) Tuberculin skin test
d) Hyperthermia
Answer: c

19. Autoimmune diseases do not include:
a) Type 1 diabetes
b) Influenza
c) Hashimoto’s thyroiditis
d) Systemic lupus erythematosus
Answer: b

20. Immunoglobulins involved in allergies:
a) IgG
b) IgE
c) IgM
d) IgA
Answer: b

Pathophysiology of water- mineral metabolism and acid-base balance

1. Hyperhydration is:
a) Excess water in the body
b) Water deficiency
c) Excess sodium
d) Hypoglycemia
Answer: a

2. Dehydration is:
a) Water deficiency in the body
b) Excess water
c) Hypernatremia
d) Hypoglycemia
Answer: a

3. Hyponatremia is:
a) Decreased sodium concentration in plasma
b) Increased sodium
c) Hyperglycemia
d) Hypokalemia
Answer: a

4. Hyperkalemia is:
a) Decreased potassium
b) Increased potassium concentration in blood
c) Hypoglycemia
d) Hyponatremia
Answer: b

5. The main mechanism for maintaining acid-base balance is:
a) Liver
b) Buffer systems, lungs, kidneys
c) Pancreas
d) Spleen
Answer: b

6. Acidosis results from:
a) Increased blood pH
b) Decreased blood pH
c) Hypernatremia
d) Hypoglycemia
Answer: b

7. Alkalosis is:
a) Increased blood pH
b) Decreased blood pH
c) Hypernatremia
d) Hypoglycemia
Answer: a

8. The cause of metabolic acidosis is:
a) Accumulation of acids in the body
b) Loss of acids

c) Hypernatremia
d) Hypoglycemia
Answer: a

9. The cause of respiratory alkalosis is:
a) Hypoventilation
b) Hyperventilation of the lungs
c) Hypernatremia
d) Hypoglycemia
Answer: b

10. Which of the following is not a consequence of hyponatremia?
a) Seizures
b) Hyperglycemia
c) Cerebral edema
d) Weakness
Answer: b

11. The main blood buffer is:
a) Protein
b) Bicarbonate
c) Phosphate
d) Ammonium
Answer: b

12. Hypokalemia leads to:
a) Seizures
b) Cardiac rhythm disturbances
c) Hyperglycemia
d) Hyponatremia
Answer: b

13. A consequence of hyperhydration is:
a) Tissue edema
b) Hypoglycemia
c) Hyperthermia
d) Hyponatremia
Answer: a

14. The main compensatory mechanism for alkalosis is:
a) Hyperventilation
b) Decreased bicarbonate reabsorption by the kidneys
c) Hypoglycemia
d) Hyperthermia
Answer: b

15. Metabolic disturbances of acid-base balance include:
a) Respiratory acidosis
b) Metabolic acidosis
c) Respiratory alkalosis
d) Hypoglycemia
Answer: b

16. Which of the following is not a cause of hypokalemia?
a) Vomiting
b) Diarrhea
c) Hypernatremia
d) Use of diuretics
Answer: c

17. A consequence of dehydration is:
a) Blood thickening
b) Hypoglycemia
c) Hyperthermia
d) Hyponatremia
Answer: a

18. Which of the following is not among the main blood buffer systems?
a) Protein
b) Bicarbonate
c) Phosphate
d) Glucose
Answer: d

19. The main organ compensating for respiratory acidosis is:
a) Liver
b) Kidneys
c) Heart
d) Spleen
Answer: b

20. A complication of hyperkalemia is:
a) Hypoglycemia
b) Cardiac arrest
c) Hyperthermia
d) Hyponatremia
Answer: b

Pathophysiology of metabolism

1. Hyperglycemia is:
a) Increased blood glucose level
b) Decreased blood glucose
c) Hyponatremia
d) Hypoglycemia
Answer: a

2. Hypoglycemia is:
a) Decreased blood glucose level
b) Increased blood glucose
c) Hypernatremia
d) Hyperkalemia
Answer: a

3. The main cause of type 1 diabetes mellitus is:
a) Insulin resistance
b) Insulin deficiency

c) Hyperthermia
d) Hypoglycemia
Answer: b

4. In type 2 diabetes mellitus, the main pathogenetic factor is:
a) Insulin deficiency
b) Insulin resistance
c) Hyperthermia
d) Hypoglycemia
Answer: b

5. Ketoacidosis develops with:
a) Hypoglycemia
b) Insulin deficiency
c) Hypernatremia
d) Hyperkalemia
Answer: b

6. Hyperlipidemia is:
a) Increased blood lipids
b) Decreased blood lipids
c) Hypoglycemia
d) Hypernatremia
Answer: a

7. Atherosclerosis is associated with:
a) Hypoglycemia
b) Lipid metabolism disorder
c) Hyperthermia
d) Hyponatremia
Answer: b

8. Gout is associated with:
a) Hypoglycemia
b) Purine metabolism disorder
c) Hyperthermia
d) Hyponatremia
Answer: b

9. Ketoacidosis is accompanied by:
a) Alkalosis
b) Acidosis
c) Hypernatremia
d) Hypoglycemia
Answer: b

10. Which of the following is not a consequence of hyperglycemia?
a) Polyuria
b) Hyponatremia
c) Thirst
d) Weight loss
Answer: b

11. Hypoproteinemia is:
a) Decreased blood protein level
b) Increased blood protein
c) Hypoglycemia
d) Hypernatremia
Answer: a

12. A consequence of hypoproteinemia is:
a) Edema
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

13. Which of the following is a disorder of mineral metabolism?
a) Hypoglycemia
b) Hypercalcemia
c) Hyperthermia
d) Hyponatremia
Answer: b

14. Which of the following is not a consequence of hypercalcemia?
a) Arrhythmias
b) Hypoglycemia
c) Weakness
d) Kidney stones
Answer: b

15. Disorder of copper metabolism causes:
a) Wilson-Konovalov disease
b) Diabetes mellitus
c) Hypoglycemia
d) Hyperthermia
Answer: a

16. Disorder of iron metabolism is associated with:
a) Hypoglycemia
b) Anemia
c) Hyperthermia
d) Hyponatremia
Answer: b

17. Disorder of protein metabolism is associated with:
a) Hypoglycemia
b) Amyloidosis
c) Hyperthermia
d) Hyponatremia
Answer: b

18. Disorder of purine metabolism leads to:
a) Hypoglycemia
b) Gout
c) Hyperthermia

d) Hyponatremia
Answer: b

19. Which of the following is not a disorder of lipid metabolism?
a) Hyperlipidemia
b) Hypoglycemia
c) Atherosclerosis
d) Obesity
Answer: b

20. Which of the following is not a consequence of obesity?
a) Type 2 diabetes mellitus
b) Atherosclerosis
c) Hypoglycemia
d) Hypertension
Answer: c

Pathophysiology of blood system disorders

1. The main pathogenic factor of iron deficiency anemia is:
a) Decreased hemoglobin synthesis
b) Increased erythrocyte hemolysis
c) Vitamin B12 deficiency
d) Impaired globin synthesis
Answer: a

2. Acute blood loss leads to:
a) Hypochromic anemia
b) Normochromic anemia
c) Hyperchromic anemia
d) Megaloblastic anemia
Answer: b

3. The primary laboratory sign of hemolytic anemia is:
a) Elevated reticulocytes
b) Decreased leukocytes
c) Increased platelets
d) Decreased bilirubin
Answer: a

4. A cause of secondary erythrocytosis is:
a) Hypoxia
b) Hyperthermia
c) Iron deficiency
d) Blood loss
Answer: a

5. A key manifestation of thrombocytopenia is:
a) Bleeding
b) Hyperthermia
c) Anemia
d) Hypertension
Answer: a

6. The main mechanism of disseminated intravascular coagulation (DIC):
a) Activation of the blood clotting system
b) Reduced fibrinolysis
c) Increased platelet count
d) Hypervolemia
Answer: a

7. Agranulocytosis is characterized by:
a) Severe reduction of neutrophils
b) Increased erythrocytes
c) Elevated hematocrit
d) Lymphocytosis
Answer: a

8. The primary laboratory sign of leukemia is:
a) Presence of blast cells in the blood
b) Anemia
c) Thrombocytosis
d) Reticulocytosis
Answer: a

9. Hemophilia is caused by a deficiency of:
a) Factor VIII
b) Factor II
c) Factor V
d) Factor IX
Answer: a

10. Hypercoagulability increases the risk of:
a) Thrombosis
b) Bleeding
c) Anemia
d) Leukopenia
Answer: a

11. The main route of leukocyte extravasation from blood vessels is:
a) Diapedesis
b) Filtration
c) Diffusion
d) Exocytosis
Answer: a

12. The cause of resorptive lymphatic insufficiency is:
a) Structural changes in the interstitium
b) Compression of lymphatic vessels
c) Hypervolemia
d) Hypothermia
Answer: a

13. A sign of chronic post-hemorrhagic anemia is:
a) Hypochromic erythrocytes
b) Hyperbilirubinemia
c) Leukocytosis

d) Lymphocytosis
Answer: a

14. The main mechanism of megaloblastic anemia development is:
a) Vitamin B12 deficiency
b) Iron deficiency
c) Folic acid deficiency
d) Hypoxia
Answer: a

15. A sign of hemolytic jaundice is:
a) Elevated indirect bilirubin
b) Elevated direct bilirubin
c) Hypercholesterolemia
d) Hyperkalemia
Answer: a

16. The primary defense factor against bleeding is:
a) Platelets
b) Erythrocytes
c) Leukocytes
d) Plasma
Answer: a

17. A cause of aplastic anemia is:
a) Bone marrow damage
b) Blood loss
c) Hemolysis
d) Hypoxia
Answer: a

18. A sign of chronic leukemia is:
a) Leukocytosis
b) Anemia
c) Thrombocytopenia
d) All of the above
Answer: d

19. Key manifestations of hemorrhagic syndrome include:
a) Petechiae
b) Hyperthermia
c) Hypotension
d) Hypertension
Answer: a

20. In DIC syndrome, blood tests show:
a) Decreased fibrinogen
b) Elevated glucose
c) Leukocytosis
d) Hypernatremia
Answer: a

Pathophysiology of cardiovascular diseases

1. The main causes of arterial hypertension include:
a) Renal diseases
b) Hypoglycemia
c) Anemia
d) Hypothermia
Answer: a

2. Leading pathogenic factors of atherosclerosis are:
a) Hypercholesterolemia
b) Hyponatremia
c) Hypokalemia
d) Hypoglycemia
Answer: a

3. Complications of myocardial infarction include:
a) Heart failure
b) Hyperthermia
c) Anemia
d) Hypothermia
Answer: a

4. The main mechanism of edema development in heart failure is:
a) Increased venous pressure
b) Decreased oncotic pressure
c) Hypervolemia
d) Hypoglycemia
Answer: a

5. Causes of chronic heart failure include:
a) Myocardial infarction
b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

6. In acute left ventricular failure, the following develops:
a) Pulmonary edema
b) Ascites
c) Peripheral edema
d) Hypertension
Answer: a

7. Key manifestations of arterial hypertension include:
a) Increased blood pressure
b) Hypothermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

8. Key signs of angina include:
a) Chest pain
b) Hyperthermia
c) Anemia

d) Hypothermia
Answer: a

9. Causes of aortic aneurysm development include:
a) Atherosclerosis
b) Hypokalemia
c) Hypernatremia
d) Hypoglycemia
Answer: a

10. The main mechanism of ischemic heart disease is:
a) Atherosclerotic narrowing of coronary arteries
b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

11. Manifestations of heart failure include:
a) Dyspnea
b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

12. Causes of secondary hypertension include:
a) Kidney diseases
b) Hypoglycemia
c) Anemia
d) Hypothermia
Answer: a

13. The main pathogenic factor of hypertensive crisis is:
a) Sudden increase in blood pressure
b) Hypoglycemia
c) Hypothermia
d) Hyponatremia
Answer: a

14. Signs of heart failure include:
a) Tachycardia
b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

15. Complications of venous thrombosis include:
a) Pulmonary embolism
b) Hyperthermia
c) Anemia
d) Hypothermia
Answer: a

16. Mitral valve insufficiency leads to:
a) Blood stasis in the pulmonary circulation

b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

17. The main sign of shock is:
a) Decreased blood pressure
b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

18. Causes of hypovolemic shock include:
a) Massive blood loss
b) Hyperthermia
c) Hypoglycemia
d) Hyponatremia
Answer: a

19. Laboratory signs of myocardial infarction include:
a) Increased troponin
b) Hypernatremia
c) Hypokalemia
d) Hypoglycemia
Answer: a

20. The main risk factor for atherosclerosis is:
a) Hypercholesterolemia
b) Hypoglycemia
c) Hyponatremia
d) Hyperthermia
Answer: a

Pathophysiology of respiratory system disorders

1. A cause of obstructive respiratory failure is:
a) Collapse of bronchioles
b) Hyperthermia
c) Anemia
d) Hypoglycemia
Answer: a

2. Which breathing pattern develops during laryngeal stenosis?
a) Rapid shallow breathing
b) Slow deep breathing with labored inspiration
c) Rapid deep breathing
d) Slow deep breathing with labored expiration
Answer: a

3. In bronchial asthma, the following is characteristic:
a) Decreased Tiffeneau index
b) Elevated hemoglobin
c) Hypoglycemia

d) Hyperthermia
Answer: a

4. The main cause of tachypnea is:
a) Increased excitability of the respiratory center
b) Hyperoxia
c) Hypothermia
d) Hypoglycemia
Answer: a

5. During oligopnea, alveolar ventilation:
a) Decreases
b) Increases
c) Remains unchanged
d) Rises
Answer: a

6. Impaired lung diffusion capacity is caused by:
a) Thickening of the alveolar-capillary membrane
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

7. The primary cause of acute respiratory distress syndrome (ARDS) is:
a) Impaired surfactant synthesis
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

8. Kussmaul breathing is characterized by:
a) Deep and noisy breathing
b) Rapid shallow breathing
c) Slow breathing
d) Hyperthermia
Answer: a

9. A laboratory sign of hypoxia is:
a) Decreased pO_2 in arterial blood
b) Elevated glucose
c) Hypernatremia
d) Hypokalemia
Answer: a

10. In pulmonary emphysema, the following is observed:
a) Reduced lung elasticity
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

11. The main pathogenetic mechanism in bronchial asthma is:
a) Bronchospasm

b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

12. Manifestations of respiratory failure include:
a) Dyspnea
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

13. The primary indicator of lung ventilation is:
a) Vital capacity (VC)
b) Glucose level
c) Hypernatremia
d) Hypoglycemia
Answer: a

14. In chronic respiratory failure, blood tests show:
a) Elevated hemoglobin
b) Hypernatremia
c) Hypoglycemia
d) Hyperthermia
Answer: a

15. During bronchial narrowing, airflow velocity:
a) Decreases
b) Remains unchanged
c) Increases
d) Hyperthermia
Answer: a

16. Narrowing of the upper airways primarily impedes:
a) Inspiration
b) Expiration
c) Both inspiration and expiration
d) Hyperthermia
Answer: c

17. The surface area for gas exchange in the lungs is approximately:
a) 50–100 m^2
b) 10–20 m^2
c) 100–150 m^2
d) 1–2 m^2
Answer: a

18. The primary route of infection spread in pneumonia is:
a) Bronchogenic
b) Contact
c) Lymphogenic
d) Hematogenous
Answer: a

19. Inspiratory dyspnea is characteristic of:
a) Croup
b) Bronchial asthma
c) Bronchitis
d) Anemia
Answer: a

20. Tachypnea is observed in:
a) Fever
b) Hypoglycemia
c) Hyperthermia
d) Hypernatremia
Answer: a

Pathophysiology of digestive system and excretory system disorders

1. A protective factor of the gastric mucosa is:
a) Mucus-bicarbonate barrier
b) Pepsin
c) Hydrochloric acid
d) Bile acids
Answer: a

2. Gastrin is secreted by:
a) Antral region of the stomach
b) Fundic region of the stomach
c) Duodenal mucosa
d) Pancreas
Answer: a

3. The main etiological factor of peptic ulcer disease is:
a) *H. pylori* infection
b) Viruses
c) Rickettsiae
d) Chlamydiae
Answer: a

4. A risk factor for peptic ulcer disease is:
a) Smoking
b) Hypernatremia
c) Hypoglycemia
d) Hyperthermia
Answer: a

5. Functional dyspepsia is defined as:
a) Disorder of the stomach and duodenum
b) Disorder of the esophagus
c) Disorder of the intestine
d) Disorder of the biliary tract
Answer: a

6. A main characteristic of functional dyspepsia is:
a) Impaired gastric motility
b) Hyperthermia

c) Hypoglycemia
d) Hypernatremia
Answer: a

7. An etiological factor of functional dyspepsia is:
a) Heredity
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

8. The main cariogenic microorganism is:
a) *Streptococcus mutans*
b) *Staphylococcus aureus*
c) *Escherichia coli*
d) *Lactobacillus*
Answer: a

9. The initial stage of caries development is:
a) Adhesion of streptococci to enamel
b) Aggregation of bacterial cells
c) Formation of acidic products
d) Formation of glucans
Answer: a

10. In gingivitis, the following is observed:
a) Increase in Gram-negative flora
b) Decrease in microbial count
c) Hyperthermia
d) Hypoglycemia
Answer: a

11. A measure to eliminate cariogenic conditions is:
a) Oral hygiene
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

12. For the treatment of gingivitis, the following is used:
a) Antimicrobial agents
b) Vaccination
c) Serum
d) Hyperthermia
Answer: a

13. A manifestation of chronic gastritis is:
a) Decreased gastric juice secretion
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

14. The main mechanism of diarrhea is:
a) Increased fluid secretion in the intestine
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

15. In acute pancreatitis, the following is elevated in blood:
a) Amylase
b) Glucose
c) Sodium
d) Potassium
Answer: a

16. The main symptom of renal failure is:
a) Oliguria
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

17. A cause of nephrotic syndrome is:
a) Glomerulonephritis
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

18. The main laboratory sign of nephrotic syndrome is:
a) Proteinuria
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

19. A sign of acute glomerulonephritis is:
a) Hematuria
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

20. The main symptom of chronic renal failure is:
a) Anemia
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

Pathophysiology of endocrine diseases

1. Hypopituitarism is caused by pathology of:
a) Adenohypophysis
b) Adrenal glands

c) Thyroid gland
d) Parathyroid glands
Answer: a

2. The main pathogenic factor of hypopituitarism is:
a) Deficiency of pituitary tropic hormones
b) Insulin deficiency
c) Hormone hypersecretion
d) Hypoglycemia
Answer: a

3. A cause of hypothyroidism is:
a) Autoimmune thyroiditis
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

4. The main symptom of hypothyroidism is:
a) Bradycardia
b) Tachycardia
c) Hyperthermia
d) Hypoglycemia
Answer: a

5. A sign of hyperthyroidism is:
a) Tachycardia
b) Bradycardia
c) Hyperthermia
d) Hypoglycemia
Answer: a

6. The primary laboratory sign of diabetes mellitus is:
a) Hyperglycemia
b) Hypoglycemia
c) Hypernatremia
d) Hyperthermia
Answer: a

7. Complications of diabetes mellitus include:
a) Ketoacidosis
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

8. The main mechanism of acromegaly development is:
a) Excess growth hormone (GH)
b) Insulin deficiency
c) Hyperthermia
d) Hypoglycemia
Answer: a

9. A sign of Addison disease is:
a) Skin hyperpigmentation
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

10. The main pathogenic factor of Cushing's syndrome is:
a) Excess cortisol
b) Insulin deficiency
c) Hyperthermia
d) Hypoglycemia
Answer: a

11. A cause of hyperparathyroidism is:
a) Parathyroid gland tumor
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

12. The main symptom of hypoparathyroidism is:
a) Seizures
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

13. A sign of hyperaldosteronism is:
a) Hypernatremia
b) Hypokalemia
c) Hypoglycemia
d) Hyperthermia
Answer: a

14. The primary laboratory sign of pheochromocytoma is:
a) Elevated blood catecholamines
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

15. A sign of hypogonadism is:
a) Delayed puberty
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

16. The main symptom of hyperinsulinism is:
a) Hypoglycemia
b) Hyperthermia
c) Hypernatremia

d) Hypokalemia
Answer: a

17. A sign of hypercortisolism is:
a) Central obesity
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

18. The main mechanism of diabetic coma development is:
a) Hyperglycemia
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

19. A complication of hypothyroidism is:
a) Myxedema
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

20. The primary sign of thyrotoxic crisis is:
a) Sharp increase in thyroid hormone levels
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

Pathophysiology of nervous system disorders

1. The main causes of nervous system damage include:
a) Hypoxia
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

2. The main mechanism of seizure development is:
a) Neuronal hyperexcitability
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

3. Manifestations of paresis include:
a) Partial reduction of muscle strength
b) Complete loss of movement
c) Hyperthermia
d) Hypoglycemia
Answer: a

4. The main mechanism of paralysis:
a) Complete loss of motor function
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

5. A sign of central nervous system damage is:
a) Increased tendon reflexes
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

6. The main mechanism of neurosis:
a) Impaired higher nervous activity
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

7. Manifestations of hyperkinesis include:
a) Involuntary movements
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

8. The main mechanism of parabiosis:
a) Decreased neuronal excitability
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

9. A disorder of sensitivity is:
a) Anesthesia
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

10. The main mechanism of tic development:
a) Pathological activity of specific neurons
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

11. A sign of peripheral nervous system damage is:
a) Decreased tendon reflexes
b) Hyperthermia
c) Hypoglycemia

d) Hypernatremia
Answer: a

12. The main mechanism of demyelination:
a) Destruction of the myelin sheath
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

13. Manifestations of autonomic nervous system damage include:
a) Impaired sweating
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

14. The main mechanism of neuropathic pain:
a) Pathological activity of sensory neurons
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

15. A cause of impaired synaptic transmission is:
a) Neurotransmitter deficiency
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

16. The main mechanism of pathological excitation generator:
a) Persistent focus of neuronal hyperactivity
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

17. Manifestations of impaired higher nervous activity include:
a) Neuroses
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

18. The main mechanism of central paralysis:
a) Damage to the cerebral cortex
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

19. A sign of spinal cord damage is:
a) Impaired motor and sensory function

b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

20. The main mechanism of epilepsy:
a) Generation of pathological discharges in the cerebral cortex
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

Pathophysiology of disorders of oral cavity

1. The main cariogenic microorganism is:
a) *Streptococcus mutans*
b) *Staphylococcus aureus*
c) *Lactobacillus*
d) *Escherichia coli*
Answer: a

2. The initial stage of caries development is:
a) Adhesion of streptococci to enamel
b) Aggregation of bacterial cells
c) Formation of acidic products
d) Formation of glucans
Answer: a

3. A local cariogenic factor is:
a) Dental plaque and bacteria
b) Heredity
c) Hyperthermia
d) Hypoglycemia
Answer: a

4. A general cariogenic factor is:
a) Poor nutrition
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

5. A measure to eliminate cariogenic conditions is:
a) Oral hygiene
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

6. The main pathogenic factor in pulpitis development is:
a) Penetration of microorganisms from a carious cavity
b) Hyperthermia
c) Hypoglycemia

d) Hypernatremia
Answer: a

7. In acute pulpitis, the following develops:
a) Pain
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

8. The main symptom of periodontitis is:
a) Pain on biting
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

9. A complication of pulpitis is:
a) Periodontitis
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

10. The main risk factor for periodontitis is:
a) Dental plaque
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

11. A manifestation of gingivitis is:
a) Gum bleeding
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

12. The main laboratory sign of periodontitis is:
a) Increased number of rod-shaped bacteria and spirochetes
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

13. A measure to prevent caries is:
a) Limiting carbohydrate intake
b) Hyperthermia
c) Hypoglycemia
d) Hypernatremia
Answer: a

14. The main pathogenic factor in stomatitis is:
a) Mucosal damage

		b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a** 15. In oral candidiasis, the following is observed: a) White plaque on the mucosa b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a** 16. The main symptom of glossitis is: a) Inflammation of the tongue b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a** 17. A manifestation of cheilitis is: a) Inflammation of the lips b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a** 18. The main symptom of sialadenitis is: a) Inflammation of the salivary gland b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a** 19. A complication of periodontitis is: a) Tooth loss b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a** 20. The main pathogenic factor in xerostomia is: a) Decreased saliva secretion b) Hyperthermia c) Hypoglycemia d) Hypernatremia **Answer: a**
I		**ANSWER LEVEL 2 TEST QUESTIONS (MULTIPLE CORRECT ANSWERS)**
		General etiology and pathogenesis. Reactivity (responsiveness) and resistance of the organism 1. Internal factors influencing disease development include: a) Age b) Heredity

c) Environmental temperature
d) Sex
Answer: a, b, d

2. Typical pathological processes include:
a) Inflammation
b) Regeneration
c) Fever
d) Hypoxia
Answer: a, c, d

3. Types of organism reactivity include:
a) Individual
b) Group
c) Pathological
d) Hyperthermia
Answer: a, b, c

4. Manifestations of changes in resistance include:
a) Immunodeficiency
b) Hypersensitivity
c) Hyperthermia
d) Allergy
Answer: a, b, d

5. Links of pathogenesis include:
a) Primary factor
b) Leading factor
c) Outcome
d) Compensatory reactions
Answer: a, b, d

6. Non-specific protective factors of the organism include:
a) Phagocytosis
b) Antibodies
c) Lysozyme
d) Skin coverings
Answer: a, c, d

7. Conditions for disease occurrence include:
a) Heredity
b) Nutrition
c) Infectious agent
d) Climatic conditions
Answer: b, d

8. Consequences of changes in reactivity include:
a) Allergy
b) Immunodeficiency
c) Hyperthermia
d) Autoimmune diseases
Answer: a, b, d

9. Main functions of pathophysiology include:
a) Study of symptoms
b) Study of disease development mechanisms
c) Prevention
d) Formation of scientific thinking
Answer: b, d

10. External etiological factors include:
a) Radiation
b) Heredity
c) Infection
d) Hypoxia
Answer: a, c, d

Impairment of peripheral circulation and microcirculation

1. Causes of thrombosis include:
a) Endothelial damage
b) Accelerated blood flow
c) Increased blood coagulability
d) Slowed blood flow
Answer: a, c, d

2. Consequences of venous hyperemia include:
a) Edema
b) Cyanosis
c) Hypoglycemia
d) Varicose veins
Answer: a, b, d

3. Disorders of microcirculation include:
a) Stasis
b) Thrombosis
c) Hyperthermia
d) Ischemia
Answer: a, b, d

4. Causes of embolism include:
a) Thrombus
b) Fat droplet
c) Hypoglycemia
d) Air bubble
Answer: a, b, d

5. Consequences of ischemia include:
a) Necrosis
b) Hypertrophy
c) Atrophy
d) Sclerosis
Answer: a, c, d

6. Typical forms of circulation disorders include:
a) Ischemia
b) Hyperemia

c) Hyperglycemia
d) Stasis
Answer: a, b, d

7. Blood changes in hypoxia include:
a) Erythrocytosis
b) Decreased hemoglobin
c) Increased hemoglobin
d) Change in hemoglobin dissociation curve
Answer: a, c, d

8. Causes of venous hyperemia include:
a) Venous thrombosis
b) Vein compression
c) Arterial dilation
d) Venous valve insufficiency
Answer: a, b, d

9. Consequences of thrombosis include:
a) Ischemia
b) Infarction
c) Hypoglycemia
d) Embolism
Answer: a, b, d

10. Causes of stasis include:
a) Increased blood viscosity
b) Accelerated blood flow
c) Slowed blood flow
d) Endothelial damage
Answer: a, c, d

Pathophysiology of hypo- and hyperoxia

1. Types of hypoxia include:
a) Hypoxic
b) Hemic
c) Hyperthermic
d) Circulatory
Answer: a, b, d

2. Compensatory reactions to hypoxia include:
a) Increased pulmonary ventilation
b) Erythrocytosis
c) Decreased cardiac output
d) Increased cardiac output
Answer: a, b, d

3. Consequences of hypoxic states include:
a) Acidosis
b) Tissue necrosis
c) Hypoglycemia

d) Organ dysfunction
Answer: a, b, d

4. Causes of hypoxic hypoxia include:
a) Decreased partial pressure of oxygen
b) Impaired lung ventilation
c) Anemia
d) Pulmonary edema
Answer: a, b, d

5. Causes of hemic hypoxia include:
a) Anemia
b) Carbon monoxide poisoning
c) Decreased hemoglobin
d) Hyperventilation
Answer: a, b, c

6. Causes of circulatory hypoxia include:
a) Heart failure
b) Shock
c) Thrombosis
d) Hypoglycemia
Answer: a, b, c

7. Causes of histotoxic hypoxia include:
a) Cyanide poisoning
b) Impaired respiratory enzymes
c) Hyperthermia
d) Sepsis
Answer: a, b, d

8. Consequences of hyperoxia include:
a) Lung damage
b) CNS damage
c) Hypoglycemia
d) Oxidative stress
Answer: a, b, d

9. Blood changes in hypoxia include:
a) Erythrocytosis
b) Increased hemoglobin
c) Hypoglycemia
d) Change in hemoglobin dissociation curve
Answer: a, b, d

10. Prevention of hypoxic states includes:
a) Normalization of respiration

b) Elimination of hypoxia causes
c) Hypoglycemia
d) Oxygen therapy
Answer: a, b, d

Physiology of inflammation. Acute phase response. Fever

1. Main signs of inflammation include:
a) Redness
b) Swelling
c) Hypoglycemia
d) Pain
Answer: a, b, d

2. Inflammatory mediators include:
a) Histamine
b) Prostaglandins
c) Insulin
d) Bradykinin
Answer: a, b, d

3. Cellular elements of inflammation include:
a) Neutrophils
b) Erythrocytes
c) Macrophages
d) Lymphocytes
Answer: a, c, d

4. Signs of the acute phase of inflammation include:
a) Increased C-reactive protein levels
b) Leukocytosis
c) Hypoglycemia
d) Elevated temperature
Answer: a, b, d

5. Complications of fever include:
a) Seizures
b) Dehydration
c) Hypoglycemia
d) Organ dysfunction
Answer: a, b, d

6. Positive effects of fever include:
a) Enhanced immune response
b) Suppression of microbial growth
c) Hypoglycemia
d) Accelerated metabolism
Answer: a, b, d

7. Negative effects of fever include:
a) Organ dysfunction
b) Seizures
c) Hypoglycemia

d) Dehydration
Answer: a, b, d

8. Endogenous pyrogens include:
a) Interleukin-1
b) Interleukin-6
c) Insulin
d) Tumor necrosis factor
Answer: a, b, d

9. Types of inflammatory exudate include:
a) Serous
b) Fibrinous
c) Hemorrhagic
d) Hypoglycemic
Answer: a, b, c

10. Mechanisms of hyperthermia include:
a) Impaired heat dissipation
b) Overheating
c) Hypoglycemia
d) Intense physical exertion
Answer: a, b, d

Pathophysiology of immune reactivity disorders. Pathophysiology of hypersensitivity reactions

1. Hypersensitivity reactions include:
a) Type I (anaphylactic)
b) Type II (cytotoxic)
c) Type III (immune complex-mediated)
d) Hyperthermic
Answer: a, b, c

2. Manifestations of Type I hypersensitivity include:
a) Anaphylaxis
b) Urticaria
c) Bronchial asthma
d) Anemia
Answer: a, b, c

3. Manifestations of Type II hypersensitivity include:
a) Hemolytic anemia
b) Autoimmune thyroiditis
c) Urticaria
d) Cytopenia
Answer: a, b, d

4. Manifestations of Type III hypersensitivity include:
a) Systemic lupus erythematosus
b) Glomerulonephritis
c) Contact dermatitis

d) Rheumatoid arthritis
Answer: a, b, d

5. Manifestations of Type IV hypersensitivity include:
a) Contact dermatitis
b) Tuberculin skin test reaction
c) Anaphylaxis
d) Transplant rejection
Answer: a, b, d

6. Primary immunodeficiencies include:
a) Agammaglobulinemia
b) DiGeorge syndrome
c) AIDS
d) Congenital thymic aplasia
Answer: a, b, d

7. Secondary immunodeficiencies include:
a) HIV infection
b) Cancer
c) Congenital agammaglobulinemia
d) Immunosuppressive therapy
Answer: a, b, d

8. Autoimmune diseases include:
a) Systemic lupus erythematosus
b) Type 1 diabetes mellitus
c) Influenza
d) Hashimoto's thyroiditis
Answer: a, b, d

9. Immunoglobulins involved in allergies include:
a) IgA
b) IgE
c) IgG
d) IgM
Answer: b, c

10. Consequences of immunodeficiency include:
a) Frequent infections
b) Tumors
c) Hypoglycemia
d) Autoimmunity
Answer: a, b, d

Pathophysiology of water-mineral metabolism and acid-base balance

1. Causes of dehydration include:
a) Vomiting
b) Diarrhea
c) Burns
d) Hypoglycemia
Answer: a, b, c

2. Causes of hyperhydration include:
a) Excessive fluid administration
b) Renal failure
c) Hypoglycemia
d) Hyperthermia
Answer: a, b

3. Manifestations of hyponatremia include:
a) Seizures
b) Cerebral edema
c) Weakness
d) Hyperthermia
Answer: a, b, c

4. Consequences of hyperkalemia include:
a) Cardiac arrhythmia
b) Cardiac arrest
c) Hypoglycemia
d) Seizures
Answer: a, b

5. Blood buffer systems include:
a) Bicarbonate
b) Phosphate
c) Protein
d) Glucose
Answer: a, b, c

6. Causes of metabolic acidosis include:
a) Accumulation of lactic acid
b) Renal failure
c) Hypoglycemia
d) Hyperthermia
Answer: a, b

7. Causes of respiratory alkalosis include:
a) Hyperventilation
b) Psychogenic stress
c) Hypoglycemia
d) Hypothermia
Answer: a, b

8. Consequences of dehydration include:
a) Hemoconcentration
b) Hypotension
c) Hypoglycemia
d) Hyperthermia
Answer: a, b

9. Causes of hypokalemia include:
a) Vomiting
b) Diarrhea
c) Use of diuretics

d) Hyperthermia
Answer: a, b, c

10. Organs involved in acid-base compensation include:
a) Kidneys
b) Lungs
c) Liver
d) Spleen
Answer: a, b

Pathophysiology of metabolism

1. Causes of hyperglycemia include:
a) Diabetes mellitus
b) Stress
c) Hypothyroidism
d) Hyperthyroidism
Answer: a, b, d

2. Causes of hypoglycemia include:
a) Insulin overdose
b) Starvation
c) Pancreatic tumors
d) Hyperthermia
Answer: a, b, c

3. Complications of diabetes mellitus include:
a) Microangiopathy
b) Macroangiopathy
c) Hypoglycemia
d) Atherosclerosis
Answer: a, b, d

4. Manifestations of ketoacidosis include:
a) Acidosis
b) Dehydration
c) Hypernatremia
d) Impaired consciousness
Answer: a, b, d

5. Consequences of hypoproteinemia include:
a) Edema
b) Immunodeficiency
c) Hypoglycemia
d) Hyperthermia
Answer: a, b

6. Disorders of mineral metabolism include:
a) Hypercalcemia
b) Hypocalcemia
c) Hypernatremia
d) Hypoglycemia
Answer: a, b, c

7. Disorders of purine metabolism include:
a) Gout
b) Hyperuricemia
c) Hypoglycemia
d) Hyperthermia
Answer: a, b

8. Disorders of lipid metabolism include:
a) Hyperlipidemia
b) Atherosclerosis
c) Obesity
d) Hypoglycemia
Answer: a, b, c

9. Consequences of obesity include:
a) Type 2 diabetes mellitus
b) Atherosclerosis
c) Hypoglycemia
d) Hypertension
Answer: a, b, d

10. Diseases associated with iron metabolism disorders include:
a) Anemia
b) Hemochromatosis
c) Hypoglycemia
d) Hyperthermia
Answer: a, b

Pathophysiology of blood system disorders

1. Which laboratory signs are characteristic for iron deficiency anemia?
a) Hypochromia of erythrocytes
b) Decreased hemoglobin concentration
c) Increased reticulocytes
d) Macrocytosis
Answer: a, b

2. Which conditions can be accompanied by thrombocytopenia?
a) Aplastic anemia
b) DIC syndrome
c) Hemophilia
d) Acute blood loss
Answer: a, b

3. Which changes are characteristic for hemolytic anemia?
a) Increased indirect bilirubin
b) Increased reticulocytes
c) Hyperchromia of erythrocytes
d) Decreased leukocytes
Answer: a, b

4. Which laboratory parameters are characteristic for acute leukemia?
a) Blastemia
b) Anemia

c) Thrombocytopenia
d) Lymphocytosis
Answer: a, b, c

5. Which causes can lead to hypovolemia?
a) Acute blood loss
b) Profuse vomiting
c) Hyperthermia
d) Tachycardia
Answer: a, b

6. Which signs are characteristic for DIC syndrome?
a) Thrombocytopenia
b) Decreased fibrinogen
c) Prolonged APTT
d) Hypernatremia
Answer: a, b, c

7. Which conditions are hypercoagulable?
a) Thrombosis
b) DIC syndrome (initial stage)
c) Hemophilia
d) Pregnancy
Answer: a, b, d

8. Which laboratory parameters are characteristic for megaloblastic anemia?
a) Macrocytosis
b) Hyperchromia of erythrocytes
c) Decreased vitamin B12
d) Leukopenia
Answer: a, b, c

9. Which clinical manifestations are characteristic for hemorrhagic syndrome?
a) Petechiae
b) Gum bleeding
c) Jaundice
d) Hematuria
Answer: a, b, d

10. Which causes can lead to agranulocytosis?
a) Use of cytostatics
b) Viral infections
c) Hyperthermia
d) Autoimmune processes
Answer: a, b, d

Pathophysiology of cardiovascular diseases

1. Which factors contribute to the development of arterial hypertension?
a) Obesity
b) Chronic stress
c) Hypothyroidism

d) Renal failure
Answer: a, b, d

2. Which complications are typical for myocardial infarction?
a) Acute heart failure
b) Arrhythmias
c) Pericarditis
d) Hypoglycemia
Answer: a, b, c

3. Which laboratory signs are characteristic for myocardial infarction?
a) Increased troponin
b) Increased LDH activity
c) Leukopenia
d) Increased creatine phosphokinase
Answer: a, b, d

4. Which are risk factors for atherosclerosis?
a) Hypercholesterolemia
b) Arterial hypertension
c) Smoking
d) Hyponatremia
Answer: a, b, c

5. Which pathogenetic mechanisms underlie the development of heart failure?
a) Decreased myocardial contractility
b) Increased preload
c) Increased afterload
d) Myocardial hypertrophy
Answer: a, b, c

6. Which manifestations are typical for chronic heart failure?
a) Dyspnea
b) Ascites
c) Peripheral edema
d) Tachycardia
Answer: a, b, c, d

7. Which causes can lead to the development of hypovolemic shock?
a) Acute blood loss
b) Profuse vomiting
c) Diarrhea
d) Hypernatremia
Answer: a, b, c

8. Which mechanisms contribute to the development of arrhythmias?
a) Electrolyte disturbances
b) Myocardial hypoxia
c) ATP deficiency
d) Hyperthermia
Answer: a, b, c

9. Which signs are characteristic for angina?
a) Chest pain

b) Pain radiating to the left arm
c) Short duration of attack
d) Hypoglycemia
Answer: a, b, c

10. Which conditions can lead to the development of pulmonary thromboembolism?
a) Deep vein thrombosis
b) Immobilization
c) Varicose veins
d) Hyponatremia
Answer: a, b, c

Pathophysiology of respiratory system disorders

1. Which causes can lead to the development of respiratory failure?
a) Airway obstruction
b) Damage to the respiratory center
c) Impaired gas diffusion
d) Hyperglycemia
Answer: a, b, c

2. Which laboratory signs are characteristic for hypoxia?
a) Decreased pO_2 in arterial blood
b) Increased lactate
c) Hypernatremia
d) Decreased oxygen saturation
Answer: a, b, d

3. Which manifestations are characteristic for bronchial asthma?
a) Expiratory dyspnea
b) Bronchospasm
c) Increased mucus secretion
d) Hyponatremia
Answer: a, b, c

4. Which mechanisms underlie the development of pulmonary emphysema?
a) Destruction of elastic fibers
b) Increased expiratory resistance
c) Mucus hypersecretion
d) Alveolar enlargement
Answer: a, b, d

5. Which causes can lead to the development of acute respiratory distress syndrome (ARDS)?
a) Severe pneumonia
b) Inhalation of toxic gases
c) Sepsis
d) Hypoglycemia
Answer: a, b, c

6. Which manifestations are characteristic for respiratory failure?
a) Dyspnea
b) Cyanosis

c) Tachycardia
d) Hypernatremia
Answer: a, b, c

7. Which laboratory signs are characteristic for hypercapnia?
a) Increased pCO_2
b) Decreased pH
c) Hyponatremia
d) Increased HCO_3^-
Answer: a, b, d

8. Which conditions can lead to the development of inspiratory dyspnea?
a) Laryngeal stenosis
b) Croup
c) Bronchial asthma
d) Hypernatremia
Answer: a, b

9. Which factors contribute to the development of tachypnea?
a) Fever
b) Hypoxia
c) Acidosis
d) Hypernatremia
Answer: a, b, c

10. Which mechanisms underlie the development of alveolar hypoventilation?
a) Depression of the respiratory center
b) Airway obstruction
c) Reduced lung compliance
d) Hypernatremia
Answer: a, b, c

Pathophysiology of digestive system and excretory system disorders

1. Which causes can lead to the development of peptic ulcer disease?
a) Helicobacter pylori infection
b) Long-term use of NSAIDs
c) Smoking
d) Hypernatremia
Answer: a, b, c

2. Which manifestations are characteristic of chronic gastritis?
a) Dyspepsia
b) Decreased gastric juice secretion
c) Anemia
d) Hypernatremia
Answer: a, b, c

3. Which laboratory signs are characteristic of acute pancreatitis?
a) Increased amylase
b) Increased lipase
c) Hypoglycemia

d) Leukocytosis
Answer: a, b, d

4. Which causes can lead to the development of diarrhea?
a) Infections
b) Malabsorption
c) Hypersecretion
d) Hypernatremia
Answer: a, b, c

5. Which manifestations are characteristic of nephrotic syndrome?
a) Proteinuria
b) Hypoalbuminemia
c) Edema
d) Hypernatremia
Answer: a, b, c

6. Which laboratory signs are characteristic of acute glomerulonephritis?
a) Hematuria
b) Proteinuria
c) Leukocyturia
d) Hypernatremia
Answer: a, b, c

7. Which manifestations are characteristic of chronic renal failure?
a) Anemia
b) Hyperphosphatemia
c) Hyperkalemia
d) Hypernatremia
Answer: a, b, c

8. Which causes can lead to the development of oliguria?
a) Acute renal failure
b) Dehydration
c) Heart failure
d) Hypernatremia
Answer: a, b, c

9. Which manifestations are characteristic of cholestasis?
a) Jaundice
b) Increased alkaline phosphatase
c) Hypocholesterolemia
d) Increased bile acids
Answer: a, b, d

10. Which causes can lead to the development of constipation?
a) Hypodynamia
b) Fiber deficiency
c) Endocrine diseases
d) Hypernatremia
Answer: a, b, c

Pathophysiology of endocrine diseases

1. What causes type 2 diabetes mellitus?
a) Obesity
b) Insulin resistance
c) Heredity
d) Hypernatremia
Answer: a, b, c

2. Manifestations of hypothyroidism include:
a) Bradycardia
b) Edema
c) Dry skin
d) Tachycardia
Answer: a, b, c

3. Complications of diabetes mellitus include:
a) Ketoacidosis
b) Microangiopathy
c) Macroangiopathy
d) Hypernatremia
Answer: a, b, c

4. Laboratory signs of hyperthyroidism include:
a) Elevated T4
b) Decreased TSH
c) Tachycardia
d) Hypernatremia
Answer: a, b, c

5. Causes of hyperparathyroidism include:
a) Parathyroid gland tumor
b) Chronic renal failure
c) Vitamin D deficiency
d) Hypernatremia
Answer: a, b

6. Manifestations of Addison disease include:
a) Skin hyperpigmentation
b) Hypotension
c) Weakness
d) Hypernatremia
Answer: a, b, c

7. Laboratory signs of acromegaly include:
a) Elevated growth hormone (GH)
b) Hyperglycemia
c) Hypercalcemia
d) Hypernatremia
Answer: a, b

8. Complications of hyperinsulinism include:
a) Hypoglycemia
b) Seizures
c) Loss of consciousness

d) Hypernatremia
Answer: a, b, c

9. Manifestations of hypogonadism include:
a) Delayed puberty
b) Osteoporosis
c) Infertility
d) Hypernatremia
Answer: a, b, c

10. Causes of thyrotoxicosis include:
a) Graves disease
b) Toxic adenoma
c) Thyroid hormone overdose
d) Hypernatremia
Answer: a, b, c

Pathophysiology of nervous system disorders

1. Which causes can lead to the development of seizures?
a) Hypoxia
b) Hypoglycemia
c) Electrolyte disturbances
d) Hypernatremia
Answer: a, b, c

2. Which manifestations are characteristic for central paralysis?
a) Increased muscle tone
b) Hyperreflexia
c) Pathological reflexes
d) Hypotonia
Answer: a, b, c

3. Which causes can lead to the development of demyelinating diseases?
a) Autoimmune processes
b) Viral infections
c) Hereditary factors
d) Hypernatremia
Answer: a, b, c

4. Which manifestations are characteristic for neuroses?
a) Anxiety
b) Sleep disturbances
c) Irritability
d) Hypernatremia
Answer: a, b, c

5. Which causes can lead to the development of stroke?
a) Arterial hypertension
b) Atherosclerosis
c) Thromboembolism
d) Hypernatremia
Answer: a, b, c

6. Which manifestations are characteristic for peripheral nervous system lesions?
a) Decreased reflexes
b) Muscle weakness
c) Muscle atrophy
d) Hypernatremia
Answer: a, b, c

7. Which causes can lead to impaired synaptic transmission?
a) Neurotransmitter deficiency
b) Receptor blockade
c) Damage to the presynaptic membrane
d) Hypernatremia
Answer: a, b, c

8. Which manifestations are characteristic for epilepsy?
a) Seizures
b) Loss of consciousness
c) Aura
d) Hypernatremia
Answer: a, b, c

9. Which causes can lead to the development of neuropathic pain?
a) Nerve damage
b) Inflammation
c) Nerve compression
d) Hypernatremia
Answer: a, b, c

10. Which manifestations are characteristic for spinal cord lesions?
a) Impaired motor function
b) Impaired sensation
c) Impaired pelvic organ function
d) Hypernatremia
Answer: a, b, c

Pathophysiology of disorders of oral cavity

1. Which microorganisms play a leading role in the development of caries?
a) *Streptococcus mutans*
b) *Lactobacillus*
c) *Staphylococcus aureus*
d) *Escherichia coli*
Answer: a, b

2. Which local factors contribute to the development of caries?
a) Dental plaque
b) Poor hygiene
c) Increased saliva viscosity
d) Hypernatremia
Answer: a, b, c

3. Which manifestations are characteristic for gingivitis?
a) Gum bleeding
b) Gum redness

		c) Gum swelling d) Hypernatremia **Answer: a, b, c** 4. Which causes can lead to the development of periodontitis? a) Dental plaque b) Malocclusion c) Genetic predisposition d) Hypernatremia **Answer: a, b, c** 5. Which complications are characteristic for pulpitis? a) Periodontitis b) Abscess c) Phlegmon d) Hypernatremia **Answer: a, b, c** 6. Which manifestations are characteristic for stomatitis? a) Ulcers on the mucosa b) Pain while eating c) Mucosal redness d) Hypernatremia **Answer: a, b, c** 7. Which caries prevention measures are most effective? a) Regular tooth brushing b) Sugar restriction c) Use of fluoride-containing toothpaste d) Hypernatremia **Answer: a, b, c** 8. Which symptoms are characteristic for oral candidiasis? a) White plaque on the mucosa b) Burning sensation c) Pain when swallowing d) Hypernatremia **Answer: a, b, c** 9. Which causes can lead to the development of xerostomia? a) Decreased saliva secretion b) Use of certain medications c) Diabetes mellitus d) Hypernatremia **Answer: a, b, c** 10. Which manifestations are characteristic for cheilitis? a) Lip inflammation b) Cracks on the lips c) Dry lips d) Hypernatremia **Answer: a, b, c**
I		**ANSWER LEVEL 3 TEST QUESTIONS (MATCHING QUESTIONS)**

General etiology and pathogenesis. Reactivity (responsiveness) and resistance of the organism

1. Match the definition with the term:

A. Study of the causes of diseases	1. Etiology
B. Mechanisms of disease development	2. Pathogenesis
C. The ability of the body to respond to influences	3. Reactivity
D. The body's resistance to disease	4. Resistance

Answer:
A – 1 (Etiology)
B – 2 (Pathogenesis)
C – 3 (Reactivity)
D – 4 (Resistance)

2. Match the form of reactivity and its characteristic:

Characteristic	Form of Reactivity
A. Increased reaction	1. Hyperergy
B. Decreased reaction	2. Hypoergy
C. Absence of reaction	3. Anergy
D. Perverted reaction	4. Dysergy

Answer:
A–1, B–2, C–3, D–4

3. Match the example and the type of resistance:

Example	Type of Resistance
A. Skin barrier	1. Nonspecific
B. Immunity to measles after illness	2. Specific
C. Phagocytosis	3. Nonspecific
D. Antibodies to influenza virus	4. Specific

Answer:
A–1, B–2, C–3, D–4

4. Match the disease type with the example:

Example	Disease Type
A. Influenza (Flu)	1. Infectious
B. Diabetes	2. Non-infectious
C. Tuberculosis	3. Infectious
D. Myocardial Infarction	4. Non-infectious

Answer:
A–1, B–2, C–3, D–4

5. Match the stage of pathogenesis and its characteristic:

Stage	Characteristic
A. Primary	1. Initial
B. Main (Leading)	2. Determines development
C. Compensatory	3. Protective
D. Outcome	4. Completion

Answer:
A–1, B–2, C–3, D–4

6. Match the example and the type of etiological factor:

Example	Type of Factor
A. Influenza virus	1. Biological
B. Radiation	2. Physical
C. Poison	3. Chemical
D. Trauma	4. Physical

Answer:
A–1, B–2, C–3, D–4

7. Match the example and the type of disease cause:

Example	Type of Cause
A. Hypothermia	1. External
B. Heredity	2. Internal
C. Immunity	3. Internal
D. Ecology	4. External

Answer:
A–1, B–2, C–3, D–4

8. Match the characteristic and the type of symptom:

Characteristic	Type of Symptom
A. Only for one disease	1. Pathognomonic
B. For many diseases	2. Nonspecific
C. Characteristic for a group of diseases	3. Specific
D. Has no diagnostic value	4. Incidental

Answer:
A–1, B–2, C–3, D–4

9. Match the example and the type of pathogenic effect:

Example	Type of Effect
A. Viral infection	1. Exogenous
B. Hypoxia	2. Endogenous
C. Trauma	3. Exogenous
D. Hereditary disease	4. Endogenous

Answer:

A–1, B–2, C–3, D–4

10. Match the scientist and his contribution to pathophysiology:

Scientist	Contribution
A. I.I. Mechnikov	1. Doctrine of phagocytosis
B. R. Virchow	2. Cellular theory
C. I.P. Pavlov	3. Physiology of digestion
D. S.P. Botkin	4. Doctrine of chronic infections

Answer:
A–1, B–2, C–3, D–4

Impairment of peripheral circulation and microcirculation

1. Match the disorder with its definition:

Disorder	Definition
A. Ischemia	1. Insufficient blood supply
B. Venous hyperemia	2. Impaired blood outflow
C. Arterial hyperemia	3. Increased blood inflow
D. Stasis	4. Cessation of blood flow

Answer: A–1, B–2, C–3, D–4

2. Match the disorder with its possible cause:

Disorder	Cause
A. Ischemia	1. Arterial spasm
B. Venous hyperemia	2. Venous thrombosis
C. Arterial hyperemia	3. Arteriolar dilation
D. Stasis	4. Increased blood viscosity

Answer: A–1, B–2, C–3, D–4

3. Match the consequence with the disorder:

Consequence	Disorder
A. Necrosis	1. Ischemia
B. Edema	2. Venous hyperemia
C. Infarction	3. Thrombosis
D. Varicose veins	4. Venous hyperemia

Answer: A–1, B–2, C–3, D–4

4. Match the vascular element with its function:

Element	Function
A. Arteriole	1. Blood inflow regulation

B. Capillary	2. Metabolic exchange
C. Venule	3. Blood outflow
D. Lymphatic capillary	4. Fluid drainage

Answer: A–1, B–2, C–3, D–4

5. Match the type of embolism with its cause:

Embolism Type	Cause
A. Thromboembolism	1. Thrombus
B. Fat embolism	2. Fat droplet
C. Gas embolism	3. Air bubble
D. Microbial embolism	4. Microorganisms

Answer: A–1, B–2, C–3, D–4

6. Match the type of bleeding with its characteristic:

Bleeding Type	Characteristic
A. Arterial	1. Bright red, pulsating
B. Venous	2. Dark red, non-pulsating
C. Capillary	3. Steady oozing
D. Parenchymal	4. From organ parenchyma

Answer: A–1, B–2, C–3, D–4

7. Match the microcirculation phase with its function:

Phase	Function
A. Arterial	1. Blood delivery
B. Capillary	2. Metabolic exchange
C. Venous	3. Blood outflow
D. Lymphatic	4. Tissue drainage

Answer: A–1, B–2, C–3, D–4

8. Match the disorder with its laboratory indicator:

Disorder	Indicator
A. Hypoxia	1. Decreased pO_2
B. Thrombosis	2. Elevated D-dimer
C. Venous hyperemia	3. Increased hematocrit
D. Stasis	4. Increased blood viscosity

Answer: A–1, B–2, C–3, D–4

9. Match the type of hyperemia with its mechanism:

Hyperemia Type	Mechanism
A. Arterial	1. Arteriolar dilation
B. Venous	2. Impaired venous outflow

C. Collateral	3. Opening of bypass vessels
D. Post-ischemic	4. Blood flow restoration after ischemia

Answer: A–1, B–2, C–3, D–4

10. Match the pathological process with its outcome:

Process	Outcome
A. Ischemia	1. Necrosis
B. Venous hyperemia	2. Edema
C. Thrombosis	3. Infarction
D. Stasis	4. Trophic ulcers

Answer: A–1, B–2, C–3, D–4

Pathophysiology of hypo- and hyperoxia

1. Match the type of hypoxia with its cause:

Type of Hypoxia	Cause
A. Hypoxic	1. Decreased pO_2 in inhaled air
B. Hemic	2. Decreased hemoglobin
C. Circulatory	3. Impaired blood circulation
D. Histotoxic	4. Blockade of tissue enzymes

Answer: A–1, B–2, C–3, D–4

2. Match the manifestation of hypoxia with the target organ:

Manifestation	Target Organ
A. Impaired consciousness	1. Brain
B. Arrhythmias	2. Heart
C. Dyspnea	3. Lungs
D. Seizures	4. Brain

Answer: A–1, B–2, C–3, D–4

3. Match the example with the type of hypoxia:

Example	Type of Hypoxia
A. Anemia	1. Hemic
B. Infarction	2. Circulatory
C. Cyanide poisoning	3. Histotoxic
D. High altitude	4. Hypoxic

Answer: A–1, B–2, C–3, D–4

4. Match the compensatory reaction with its mechanism:

Reaction	Mechanism
A. Increased respiration	1. Enhanced O_2 delivery
B. Erythrocytosis	2. Increased blood O_2 capacity
C. Tachycardia	3. Increased cardiac output
D. Vasodilation	4. Improved tissue perfusion

Answer: A–1, B–2, C–3, D–4

5. Match the condition with its characteristic:

Condition	Characteristic
A. Hypoxia	1. Oxygen deficiency
B. Hyperoxia	2. Oxygen excess
C. Acidosis	3. Decreased pH
D. Alkalosis	4. Increased pH

Answer: A–1, B–2, C–3, D–4

6. Match the type of hypoxia with the laboratory sign:

Type of Hypoxia	Sign
A. Hypoxic	1. Decreased pO_2
B. Hemic	2. Decreased hemoglobin
C. Circulatory	3. Increased lactate
D. Histotoxic	4. Normal pO_2, lactate↑

Answer: A–1, B–2, C–3, D–4

7. Match the manifestation of hyperoxia with the target organ:

Manifestation	Target Organ
A. Seizures	1. Brain
B. Fibrosis	2. Lungs
C. Oxidative stress	3. Cells
D. Visual impairment	4. Eyes

Answer: A–1, B–2, C–3, D–4

8. Match the condition with its possible cause:

Condition	Cause
A. Hypoxia	1. Pulmonary edema
B. Hyperoxia	2. Prolonged oxygen therapy
C. Acidosis	3. Impaired respiration

D. Alkalosis 4. Hyperventilation

Answer: A–1, B–2, C–3, D–4

9. Match the disease with the type of hypoxia:

Disease	Type of Hypoxia
A. Chronic obstructive pulmonary disease	1. Hypoxic
B. Iron-deficiency anemia	2. Hemic
C. Heart failure	3. Circulatory
D. Cyanide poisoning	4. Histotoxic

Answer: A–1, B–2, C–3, D–4

10. Match the laboratory indicator with the condition:

Indicator	Condition
A. Decreased pO_2	1. Hypoxia
B. Increased pO_2	2. Hyperoxia
C. Increased lactate	3. Acidosis
D. Increased pH	4. Alkalosis

Answer: A–1, B–2, C–3, D–4

Physiology of inflammation. Acute phase response. Fever

1. Match the sign with the stage of inflammation:

Sign	Stage
A. Redness	1. Alteration
B. Swelling	2. Exudation
C. Pain	3. Proliferation
D. Loss of function	4. Exudation

Answer: A–1, B–2, C–2, D–4

2. Match the mediator with its action:

Mediator	Action
A. Histamine	1. Vasodilation
B. Prostaglandin E2	2. Fever
C. Bradykinin	3. Pain
D. Leukotrienes	4. Chemotaxis

Answer: A–1, B–2, C–3, D–4

3. Match the type of exudate with its characteristic:

Exudate Type	Characteristic
A. Serous	1. Clear, liquid

B. Fibrinous	2. Fibrin strands
C. Purulent	3. Leukocytes
D. Hemorrhagic	4. Erythrocytes

Answer: A–1, B–2, C–3, D–4

Pathophysiology of immune reactivity disorders. Pathophysiology of hypersensitivity reactions

1. Match the type of hypersensitivity with an example:

Type of Hypersensitivity	Example
A. Type I (Anaphylactic)	1. Anaphylactic shock
B. Type II (Cytotoxic)	2. Hemolytic anemia
C. Type III (Immune complex)	3. Systemic lupus erythematosus
D. Type IV (Cell-mediated)	4. Contact dermatitis

Answer: A–1, B–2, C–3, D–4

2. Match the immunoglobulin with the type of reaction:

Immunoglobulin	Type of Reaction
A. IgE	1. Type I allergy
B. IgG	2. Cytotoxicity
C. IgM	3. Immune complex reactions
D. IgA	4. Secretory immunity

Answer: A–1, B–2, C–3, D–4

3. Match the immunopathological process with an example:

Process	Example
A. Immunodeficiency	1. HIV infection
B. Hypersensitivity	2. Anaphylaxis
C. Autoimmunity	3. Systemic lupus erythematosus
D. Immune complex disease	4. Glomerulonephritis

Answer: A–1, B–2, C–3, D–4

4. Match the cell with its immune function:

Cell	Function
A. B-lymphocyte	1. Antibody synthesis
B. T-killer	2. Destruction of infected cells
C. Macrophage	3. Phagocytosis
D. T-helper	4. Regulation of immune response

Answer: A–1, B–2, C–3, D–4

5. Match the disease with the type of immunopathology:

Disease	Type
A. AIDS	1. Immunodeficiency
B. Urticaria	2. Hypersensitivity
C. Type 1 diabetes	3. Autoimmunity
D. Glomerulonephritis	4. Immune complex disease

Answer: A–1, B–2, C–3, D–4

6. Match the cause with the type of immunodeficiency:

Cause	Type of Immunodeficiency
A. HIV	1. Secondary
B. Congenital agammaglobulinemia	2. Primary
C. Cancer	3. Secondary
D. Genetic T-cell defects	4. Primary

Answer: A–1, B–2, C–3, D–4

7. Match the example with the type of allergic reaction:

Example	Type
A. Anaphylaxis	1. Type I
B. Hemolytic anemia	2. Type II
C. Serum sickness	3. Type III
D. Contact dermatitis	4. Type IV

Answer: A–1, B–2, C–3, D–4

8. Match the organ with its role in immunity:

Organ	Role
A. Bone marrow	1. Maturation of B-cells
B. Thymus	2. Maturation of T-cells
C. Lymph nodes	3. Immune response
D. Spleen	4. Blood filtration

Answer: A–1, B–2, C–3, D–4

9. Match the laboratory indicator with the pathology:

Indicator	Pathology
A. Decreased IgG	1. Immunodeficiency
B. Elevated IgE	2. Allergy
C. Antinuclear antibodies	3. Autoimmunity
D. Immune complexes in urine	4. Immune complex disease

Answer: A–1, B–2, C–3, D–4

10. Match the type of immunity with its characteristic:

Type of Immunity	Characteristic
A. Innate	1. Non-specific
B. Adaptive	2. Specific
C. Active	3. Post-vaccination
D. Passive	4. Antibody transfer

Answer: A–1, B–2, C–3, D–4

Pathophysiology of water- mineral metabolism and acid-base balance

1. Match the disorder with its definition:

Disorder	Definition
A. Hyperhydration	1. Excess water
B. Dehydration	2. Water deficiency
C. Hyponatremia	3. Decreased sodium
D. Hyperkalemia	4. Increased potassium

Answer: A–1, B–2, C–3, D–4

2. Match the condition with its possible cause:

Condition	Cause
A. Dehydration	1. Diarrhea
B. Hyperhydration	2. Renal failure
C. Hypokalemia	3. Diuretic use
D. Hyperkalemia	4. Renal failure

Answer: A–1, B–2, C–3, D–4

3. Match the buffer system with its component:

Buffer System	Component
A. Bicarbonate	1. HCO_3^-
B. Phosphate	2. HPO_4^{2-}
C. Protein	3. Hemoglobin
D. Ammonium	4. NH_4^+

Answer: A–1, B–2, C–3, D–4

4. Match the acid-base disorder with its cause:

Disorder	Cause
A. Metabolic acidosis	1. Renal failure
B. Metabolic alkalosis	2. Vomiting
C. Respiratory acidosis	3. Hypoventilation
D. Respiratory alkalosis	4. Hyperventilation

Answer: A–1, B–2, C–3, D–4

5. Match the laboratory indicator with the disorder:

Indicator	Disorder
A. Decreased pH	1. Acidosis
B. Increased pH	2. Alkalosis
C. Decreased HCO_3^-	3. Metabolic acidosis
D. Increased pCO_2	4. Respiratory acidosis

Answer: A–1, B–2, C–3, D–4

6. Match the complication with the water-electrolyte imbalance:

Complication	Imbalance
A. Seizures	1. Hyponatremia
B. Cardiac arrhythmia	2. Hyperkalemia
C. Cerebral edema	3. Hyponatremia
D. Cardiac arrest	4. Hyperkalemia

Answer: A–1, B–2, C–3, D–4

7. Match the organ with its role in acid-base regulation:

Organ	Role
A. Lungs	1. Excretion of CO_2
B. Kidneys	2. Reabsorption of HCO_3^-
C. Liver	3. Lactate metabolism
D. Skin	4. Water evaporation

Answer: A–1, B–2, C–3, D–4

8. Match the disorder with its clinical manifestation:

Disorder	Manifestation
A. Hyponatremia	1. Seizures
B. Hyperkalemia	2. Arrhythmia
C. Dehydration	3. Dry skin
D. Hyperhydration	4. Edema

Answer: A–1, B–2, C–3, D–4

9. Match the disorder with its laboratory sign:

Disorder	Sign
A. Hyponatremia	1. Decreased Na^+
B. Hyperkalemia	2. Increased K^+
C. Metabolic acidosis	3. Decreased HCO_3^-
D. Respiratory alkalosis	4. Decreased pCO_2

Answer: A–1, B–2, C–3, D–4

10. Match the compensatory mechanism with the acid-base disorder:

Mechanism	Disorder
A. Increased breathing	1. Metabolic acidosis
B. Reduced HCO_3^- reabsorption	2. Metabolic alkalosis
C. Increased H^+ excretion	3. Respiratory acidosis
D. Reduced breathing	4. Respiratory alkalosis

Answer: A–1, B–2, C–3, D–4

Pathophysiology of metabolism

1. Match the disorder with its definition:

Disorder	Definition
A. Hyperglycemia	1. Increased glucose
B. Hypoglycemia	2. Decreased glucose
C. Hyperlipidemia	3. Increased lipids
D. Hypoproteinemia	4. Decreased proteins

Answer: A–1, B–2, C–3, D–4

2. Match the disease with the metabolic disorder:

Disease	Metabolic Disorder
A. Type 1 diabetes mellitus	1. Carbohydrate metabolism
B. Atherosclerosis	2. Lipid metabolism
C. Gout	3. Purine metabolism
D. Wilson-Konovalov disease	4. Copper metabolism

Answer: A–1, B–2, C–3, D–4

3. Match the complication with the disease:

Complication	Disease
A. Ketoacidosis	1. Diabetes mellitus
B. Atherosclerosis	2. Hyperlipidemia
C. Edema	3. Hypoproteinemia
D. Hypocalcemia	4. Mineral metabolism disorder

Answer: A–1, B–2, C–3, D–4

4. Match the laboratory indicator with the disorder:

Indicator	Disorder
A. Increased glucose	1. Hyperglycemia
B. Decreased glucose	2. Hypoglycemia
C. Increased cholesterol	3. Hyperlipidemia

D. Decreased albumin	4. Hypoproteinemia	

Answer: A–1, B–2, C–3, D–4

5. Match the disease with its cause:

Disease	Cause
A. Type 2 diabetes mellitus	1. Insulin resistance
B. Wilson-Konovalov disease	2. Copper metabolism disorder
C. Gout	3. Purine metabolism disorder
D. Hemochromatosis	4. Iron metabolism disorder

Answer: A–1, B–2, C–3, D–4

6. Match the manifestation with the disease:

Manifestation	Disease
A. Polyuria	1. Diabetes mellitus
B. Seizures	2. Hypocalcemia
C. Arterial hypertension	3. Obesity
D. Edema	4. Hypoproteinemia

Answer: A–1, B–2, C–3, D–4

7. Match the disorder with its complication:

Disorder	Complication
A. Hyperglycemia	1. Ketoacidosis
B. Hypoproteinemia	2. Edema
C. Hypercalcemia	3. Arrhythmias
D. Hyperuricemia	4. Gout

Answer: A–1, B–2, C–3, D–4

8. Match the metabolic disorder with its laboratory marker:

Disorder	Marker
A. Hyperglycemia	1. Glucose↑
B. Hyperlipidemia	2. Cholesterol↑
C. Hypoproteinemia	3. Albumin↓
D. Hypercalcemia	4. Calcium↑

Answer: A–1, B–2, C–3, D–4

9. Match the disease with its complication:

Disease	Complication
A. Diabetes mellitus	1. Angiopathy
B. Gout	2. Arthritis

C. Obesity	3. Atherosclerosis
D. Hypocalcemia	4. Seizures

Answer: A–1, B–2, C–3, D–4

10. Match the mineral metabolism disorder with its manifestation:

Disorder	Manifestation
A. Hypercalcemia	1. Arrhythmias
B. Hypocalcemia	2. Seizures
C. Hypernatremia	3. Thirst
D. Hyponatremia	4. Seizures

Answer: A–1, B–2, C–3, D–4

Pathophysiology of blood system disorders

1. Match the type of anemia with the laboratory sign:

Anemia	Laboratory Sign
A. Iron-deficiency	1. Hypochromia, microcytosis
B. B12-deficiency	2. Macrocytosis, neutrophil hypersegmentation
C. Hemolytic	3. Reticulocytosis, elevated indirect bilirubin
D. Aplastic	4. Pancytopenia

Answer: A–1, B–2, C–3, D–4

2. Match the pathology with the mechanism:

Pathology	Mechanism
A. Hemophilia A	1. Factor VIII deficiency
B. Thrombocytopenia	2. Decreased platelet count
C. DIC syndrome	3. Massive microthrombus formation
D. Polycythemia	4. Excessive erythrocyte production

Answer: A–1, B–2, C–3, D–4

3. Match the symptom with the pathology:

Symptom	Pathology
A. Hemarthrosis	1. Hemophilia
B. Petechiae	2. Thrombocytopenia
C. Jaundice	3. Hemolytic anemia

D. Hepatosplenomegaly	4. Leukemia	

Answer: A–1, B–2, C–3, D–4

4. Match the indicator with the disorder:

Indicator	Disorder
A. Decreased ferritin	1. Iron-deficiency anemia
B. Elevated LDH	2. Hemolysis
C. Blasts in blood	3. Acute leukemia
D. Decreased fibrinogen	4. DIC syndrome

Answer: A–1, B–2, C–3, D–4

5. Match the term with its definition:

Term	Definition
A. Erythropoiesis	1. Erythrocyte formation
B. Hemostasis	2. Bleeding cessation
C. Leukopenia	3. Decreased leukocytes
D. Thrombocytosis	4. Increased platelets

Answer: A–1, B–2, C–3, D–4

Pathophysiology of cardiovascular diseases

1. Match the pathology with the mechanism:

Pathology	Mechanism
A. Myocardial infarction	1. Myocardial ischemia
B. Hypertensive crisis	2. Sudden blood pressure rise
C. Heart failure	3. Reduced cardiac output
D. Atherosclerosis	4. Plaque formation in vessels

Answer: A–1, B–2, C–3, D–4

2. Match the symptom with the pathology:

Symptom	Pathology
A. Leg edema	1. Chronic heart failure
B. Chest pain	2. Angina pectoris
C. Exertional dyspnea	3. Pulmonary hypertension
D. Dizziness	4. Orthostatic hypotension

Answer: A–1, B–2, C–3, D–4

3. Match the diagnostic test with the pathology:

Test	Pathology
A. ECG	1. Arrhythmias
B. Coronary angiography	2. Coronary artery disease
C. Echocardiography	3. Heart valve defects
D. Ambulatory BP monitoring	4. Hypertension

Answer: A–1, B–2, C–3, D–4

4. Match the term with its definition:

Term	Definition
A. Preload	1. End-diastolic volume
B. Afterload	2. Resistance to ejection
C. Ischemia	3. Insufficient blood supply
D. Myocardial hypertrophy	4. Increased heart mass

Answer: A–1, B–2, C–3, D–4

5. Match the complication with the pathology:

Complication	Pathology
A. Cardiogenic shock	1. Myocardial infarction
B. Pulmonary embolism	2. Deep vein thrombosis
C. Aortic aneurysm	3. Atherosclerosis
D. Pulmonary edema	4. Acute left ventricular failure

Answer: A–1, B–2, C–3, D–4

Pathophysiology of respiratory system disorders

1. Match the symptom with the pathology:

Symptom	Pathology
A. Expiratory dyspnea	1. Bronchial asthma
B. Hemoptysis	2. Lung cancer
C. Cyanosis	3. Chronic hypoxia
D. Chest pain	4. Pleuritis

Answer: A–1, B–2, C–3, D–4

2. Match the diagnostic test with the pathology:

Test	Pathology
A. Spirometry	1. COPD
B. Radiography	2. Pneumonia
C. Bronchoscopy	3. Foreign body in bronchi
D. Blood gas analysis	4. Hypoxia

Answer: A–1, B–2, C–3, D–4

3. Match the mechanism with the pathology:

Mechanism	Pathology
A. Bronchial obstruction	1. Bronchial asthma
B. Thickened alveolar membrane	2. Pulmonary fibrosis
C. Reduced surfactant	3. ARDS (Adult Respiratory Distress Syndrome)
D. Mucus hypersecretion	4. Chronic bronchitis

Answer: A–1, B–2, C–3, D–4

4. Match the term with its definition:

Term	Definition
A. Hypoxia	1. Oxygen deficiency in tissues
B. Hypercapnia	2. Elevated CO_2 in blood
C. Apnea	3. Cessation of breathing
D. Tachypnea	4. Rapid breathing

Answer: A–1, B–2, C–3, D–4

Pathophysiology of digestive system and excretory system disorders

1. Match the disease with the main pathogenetic factor:

Disease	Factor
A) Peptic ulcer disease	1) *H. pylori*
B) Acute pancreatitis	2) Activation of pancreatic enzymes
C) Chronic gastritis	3) Impaired gastric juice secretion
D) Glomerulonephritis	4) Immune complexes

Answer: A–1, B–2, C–3, D–4

2. Match the symptom with the disease:

Symptom	Disease
A) Epigastric pain on an empty stomach	1) Peptic ulcer disease
B) Steatorrhea	2) Chronic pancreatitis
C) Hematuria	3) Glomerulonephritis
D) Ascites	4) Liver cirrhosis

Answer: A–1, B–2, C–3, D–4

3. Match the laboratory indicator with the disease:

Indicator	Disease
A) Increased amylase	1) Acute pancreatitis
B) Proteinuria	2) Nephrotic syndrome
C) Increased bilirubin	3) Obstructive jaundice
D) Increased creatinine	4) Renal failure

Answer: A–1, B–2, C–3, D–4

4. Match the complication with the disease:

Complication	Disease
A) Bleeding	1) Peptic ulcer disease
B) Peritonitis	2) Ulcer perforation
C) Hepatic encephalopathy	3) Liver cirrhosis
D) Uremia	4) Renal failure

Answer: A–1, B–2, C–3, D–4

5. Match the term with its definition:

Term	Definition
A) Dyspepsia	1) Digestive disorder
B) Oliguria	2) Decreased urine output
C) Proteinuria	3) Protein in urine
D) Hematuria	4) Blood in urine

Answer: A–1, B–2, C–3, D–4

Pathophysiology of endocrine diseases

1. Match the disease with the hormonal disorder:

Disease	Hormonal Disorder
A) Type 1 diabetes mellitus	1) Insulin deficiency
B) Cushing's disease	2) Excess cortisol
C) Hypothyroidism	3) Thyroid hormone deficiency
D) Acromegaly	4) Excess growth hormone

Answer: A–1, B–2, C–3, D–4

2. Match the symptom with the disease:

Symptom	Disease
A) Hyperpigmentation	1) Addison's disease
B) Central obesity	2) Cushing's syndrome
C) Seizures	3) Hypoparathyroidism
D) Tachycardia	4) Thyrotoxicosis

Answer: A–1, B–2, C–3, D–4

3. Match the laboratory indicator with the disease:

Indicator	Disease
A) Hyperglycemia	1) Diabetes mellitus
B) Increased TSH	2) Primary hypothyroidism
C) Hypocalcemia	3) Hypoparathyroidism
D) Increased cortisol	4) Cushing's syndrome

Answer: A–1, B–2, C–3, D–4

4. Match the complication with the disease:

Complication	Disease
A) Ketoacidosis	1) Type 1 diabetes mellitus
B) Myxedema	2) Hypothyroidism
C) Osteoporosis	3) Hyperparathyroidism
D) Hypoglycemic coma	4) Insulinoma

Answer: A–1, B–2, C–3, D–4

5. Match the hormone with its function:

Hormone	Function
A) Insulin	1) Decrease blood glucose
B) Cortisol	2) Stimulate gluconeogenesis
C) Thyroid hormones	3) Accelerate metabolism
D) Parathyroid hormone	4) Increase blood calcium

Answer: A–1, B–2, C–3, D–4

Pathophysiology of nervous system disorders

1. Match the symptom with the lesion localization:

Symptom	Localization
A) Central paralysis	1) Cerebral cortex
B) Peripheral paralysis	2) Anterior horns of the spinal cord
C) Hyperreflexia	3) Central nervous system
D) Hyporeflexia	4) Peripheral nervous system

Answer: A–1, B–2, C–3, D–4

2. Match the disease with the mechanism:

Disease	Mechanism
A) Epilepsy	1) Generation of pathological discharges
B) Multiple sclerosis	2) Demyelination
C) Botulism	3) Blockade of acetylcholine release
D) Parkinson's disease	4) Dopamine deficiency

Answer: A–1, B–2, C–3, D–4

3. Match the manifestation with the disease:

Manifestation	Disease
A) Seizures	1) Epilepsy
B) Hand tremor	2) Parkinson's disease
C) Ataxia	3) Cerebellar lesion
D) Hypesthesia	4) Polyneuropathy

Answer: A–1, B–2, C–3, D–4

4. Match the disorder with the cause:

Disorder	Cause
A) Brain hypoxia	1) Acute blood loss
B) Brain hypoglycemia	2) Insulin overdose
C) Discirculatory encephalopathy	3) Cerebral vessel atherosclerosis
D) Facial nerve paralysis	4) Lesion of cranial nerve VII

Answer: A–1, B–2, C–3, D–4

5. Match the term with its definition:

Term	Definition
A) Aura	1) Seizure precursor
B) Allodynia	2) Pain from mild stimuli
C) Hyperkinesis	3) Involuntary movements
D) Apraxia	4) Impaired purposeful movements

Answer: A–1, B–2, C–3, D–4

Pathophysiology of oral cavity disorders

1. Match the disease with the main risk factor:

Disease	Risk Factor
A) Caries	1) Dietary carbohydrates
B) Periodontitis	2) Dental plaque
C) Gingivitis	3) Poor hygiene
D) Candidiasis	4) Immunodeficiency

Answer: A–1, B–2, C–3, D–4

2. Match the symptom with the disease:

Symptom	Disease
A) Gum bleeding	1) Gingivitis
B) Pain on biting	2) Periodontitis
C) White plaque on mucosa	3) Candidiasis
D) Mouth ulcers	4) Stomatitis

Answer: A–1, B–2, C–3, D–4

3. Match the complication with the disease:

Complication	Disease
A) Abscess	1) Periodontitis
B) Tooth loss	2) Periodontitis
C) Tooth perforation	3) Caries
D) Phlegmon	4) Pulpitis

Answer: A–1, B–2, C–3, D–4

4. Match the microorganism with the disease:

Microorganism	Disease
A) *Streptococcus mutans*	1) Caries
B) *Porphyromonas gingivalis*	2) Periodontitis
C) *Candida albicans*	3) Candidiasis
D) *Treponema denticola*	4) Periodontitis

Answer: A–1, B–2, C–3, D–4

5. Match the preventive measure with the disease:

Measure	Disease
A) Use of fluoride toothpaste	1) Caries
B) Professional tooth cleaning	2) Periodontitis
C) Sugar restriction	3) Caries
D) Antifungal drugs	4) Candidiasis

Answer: A–1, B–2, C–3, D–4

Assessment criteria

"Very good" - more than 80% correct answers of questions of every level
"Good" - 70-80% correct answers of questions of every level
"Satisfactory" - 60-70% correct answers of questions of every level
"Unsatisfactory" - less than 60% correct answers of questions of every level

Interview questions

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		**ANSWER THE QUESTIONS** **General etiology and pathogenesis. Reactivity (responsiveness) and resistance of the organism** **1.** Give definitions for the concepts "etiology" and "pathogenesis." What is the difference and relationship between them? **2.** Characterize the main types of organism reactivity and provide examples of their manifestations in pathology. **3.** What is organism resistance? What mechanisms provide nonspecific and specific resistance? **4.** Describe the role of conditions and predisposing factors in the onset of diseases. Provide examples. **5.** Explain the significance of the doctrine of typical pathological processes for clinical medicine. **Impairment of peripheral circulation and microcirculation** **1.** List the main typical forms of peripheral circulation disorders and characterize them. **2.** Explain the mechanisms of development of venous and arterial hyperemia, their causes, and consequences. **3.** What is stasis? Characterize its pathogenesis and clinical significance. **4.** Describe the structure of the microcirculatory bed and the functions of its main components. **5.** What are the main causes and consequences of thrombosis and embolism in the microcirculation system? **Pathophysiology of hypo- and hyperoxia** **1.** Classify the main types of hypoxia and describe their pathogenesis. **2.** What compensatory mechanisms are activated in the body during hypoxia? **3.** Explain the pathogenesis of hyperoxic tissue damage and its clinical manifestations. **4.** What are the laboratory signs and consequences of prolonged hypoxia for various organs and systems?

5. Provide examples of diseases accompanied by different types of hypoxia and characterize their clinical significance.

Physiology of inflammation. Acute phase response. Fever

1. Define inflammation and list its main classical signs.
2. Characterize the stages of inflammation and the leading cellular and humoral mechanisms at each stage.
3. Explain the concept of the "acute phase response" and its significance in the pathogenesis of inflammation.
4. Explain the differences between fever and hyperthermia, their mechanisms of development, and clinical significance.
5. What are the positive and negative effects of fever on the body?

Pathophysiology of immune reactivity disorders. Pathophysiology of hypersensitivity reactions

1. List the main types of immune reactivity disorders and provide examples of each.
2. Classify hypersensitivity reactions and characterize their pathogenesis.
3. Explain the difference between primary and secondary immunodeficiencies, provide examples.
4. Describe the mechanisms of development of autoimmune diseases and their clinical significance.
5. What are the main manifestations and laboratory signs of type I allergic reactions?

Pathophysiology of water- mineral metabolism and acid-base balance

1. List the main types of water-electrolyte imbalances and their causes.
2. Characterize the mechanisms of development of hyponatremia and hyperkalemia, their consequences for the body.
3. Explain the role of buffer systems, lungs, and kidneys in maintaining acid-base balance.
4. Classify the main types of acid-base disorders and provide examples of their causes.
5. What are the clinical manifestations and laboratory signs of dehydration and hyperhydration?

Pathophysiology of metabolism

1. List the main types of metabolic disorders and provide examples of diseases associated with them.
2. Characterize the pathogenesis of type 1 and type 2 diabetes mellitus, their main differences.
3. Explain the mechanisms of development of hyper- and hypoglycemia, their consequences for the body.
4. Describe the pathogenesis and clinical significance of lipid and purine metabolism disorders.
5. What are the main manifestations and complications of hypoproteinemia and mineral metabolism disorders?

Pathophysiology of blood system disorders

1. Define anemia. What are the main pathogenic mechanisms of development of various forms of anemia?
2. List the main types of anemia by pathogenesis and provide examples of each group (iron-deficiency, B12-deficiency, hemolytic, aplastic).
3. Characterize the changes in peripheral blood in acute and chronic posthemorrhagic anemia.
4. Describe the mechanism of development and clinical manifestations of hemolytic anemias. What laboratory signs are typical for this group?
5. Define erythrocytosis. List the main causes and pathogenesis of primary and secondary erythrocytosis.
6. List the main types of leukopenia, their causes and pathogenesis. What consequences can occur with pronounced leukopenia?
7. Characterize the main types of leukocytosis, their causes and mechanism of development. How does a leukemoid reaction differ from leukemia?
8. Provide a classification of leukemias. What are the main pathogenic mechanisms and clinical manifestations of acute and chronic leukemia?
9. Describe the mechanism of development of thrombocytopenia. What clinical manifestations and complications are characteristic of thrombocytopenic syndrome?
10. Explain the mechanism of development of DIC syndrome. What are its main stages, laboratory signs, and clinical consequences?

Pathophysiology of cardiovascular diseases

1. Define arterial hypertension. What are the main pathogenetic mechanisms of its formation?
2. List the main causes and mechanisms of development of chronic heart failure.
3. Characterize the pathogenesis and clinical manifestations of ischemic heart disease (IHD).
4. Describe the mechanism of development of myocardial infarction and its main complications.
5. Explain the pathogenesis and consequences of atherosclerosis for the cardiovascular system.
6. Describe the main forms of cardiac arrhythmias, their pathogenesis, and clinical significance.
7. List the types of shock encountered in clinical practice and characterize their pathogenesis.
8. Characterize the main causes and mechanisms of development of thrombosis and embolism in the circulatory system.
9. What are the pathogenetic mechanisms of the development of edema in heart failure?
10. List the main laboratory and instrumental signs of acute and chronic heart failure.

Pathophysiology of respiratory system disorders

1. Define respiratory failure. Classify its main types and causes.
2. Characterize the pathogenesis of obstructive and restrictive ventilation disorders of the lungs.

3. Describe the mechanism of development of hypoxia in respiratory pathology.
4. Explain the pathogenesis of bronchial asthma and the main clinical manifestations of this disease.
5. List the causes and mechanisms of development of acute respiratory distress syndrome (ARDS).
6. Characterize the main manifestations and laboratory signs of hypercapnia and hypoxemia.
7. List the main complications of chronic respiratory failure.
8. Describe the pathophysiology of pulmonary emphysema and its consequences for the body.
9. What are the mechanisms of development of inspiratory and expiratory dyspnea?
10. List the main methods of laboratory and instrumental diagnosis of respiratory function disorders.

Pathophysiology of digestive system and excretory system disorders

1. Define peptic ulcer disease of the stomach and duodenum. Characterize the main pathogenetic mechanisms of its development.
2. List the main causes and mechanisms of development of chronic gastritis.
3. Describe the pathogenesis and clinical manifestations of acute and chronic pancreatitis.
4. Characterize the pathogenesis and manifestations of malabsorption syndrome.
5. List the main causes and mechanisms of development of acute and chronic renal failure.
6. Characterize the pathogenesis of nephrotic syndrome and its main laboratory signs.
7. Explain the mechanism of development and consequences of cholestasis.
8. List the causes and pathogenesis of the development of diarrhea and constipation.
9. Characterize the pathogenesis and manifestations of glomerulonephritis.
10. List the main complications of diseases of the digestive and excretory systems and their pathophysiological mechanisms.

Pathophysiology of endocrine diseases

1. Define type 1 and type 2 diabetes mellitus. Characterize their pathogenesis and main differences.
2. List the main causes and mechanisms of development of hypo- and hyperthyroidism.
3. Describe the pathogenesis and clinical manifestations of Cushing's disease and Addison's disease.
4. Characterize the pathogenesis of hyper- and hypoparathyroidism, their main manifestations.
5. Explain the mechanism of development of complications in diabetes mellitus (angiopathies, ketoacidosis, etc.).
6. List the main causes and manifestations of acromegaly and gigantism.
7. Characterize the pathogenesis and manifestations of hypogonadism.

		8. List the main causes and mechanisms of development of hyperinsulinism and hypoglycemia. **9.** Characterize the pathogenesis of thyrotoxicosis and its clinical manifestations. **10.** List the main methods of laboratory diagnosis of endocrine gland dysfunction. **Pathophysiology of nervous system disorders** **1.** Define stroke. Classify its main types and pathogenesis. **2.** Characterize the pathogenesis and manifestations of seizure syndrome. **3.** List the main causes and mechanisms of development of demyelinating diseases. **4.** Describe the pathogenesis of neuroses and their main clinical manifestations. **5.** Characterize the pathogenesis and manifestations of epilepsy. **6.** List the main causes and mechanisms of development of paralysis and paresis. **7.** Explain the pathogenesis and manifestations of neuropathic pain. **8.** List the main causes and manifestations of higher nervous activity disorders. **9.** Characterize the pathogenesis and manifestations of peripheral nervous system lesions. **10.** List the main methods of laboratory and instrumental diagnosis of nervous system dysfunction. **Pathophysiology of oral cavity disorders** **1.** Define dental caries. Characterize the main etiological and pathogenetic factors of its development. **2.** List the main causes and mechanisms of development of gingivitis and periodontitis. **3.** Describe the pathogenesis and manifestations of pulpitis and periodontitis. **4.** List the main manifestations and complications of stomatitis. **5.** Describe the pathogenesis of oral candidiasis and its clinical manifestations. **6.** List the main methods of prevention of caries and periodontal diseases. **7.** Characterize the pathogenesis and manifestations of cheilitis and glossitis. **8.** List the main causes and manifestations of xerostomia. **9.** Describe the pathogenesis and manifestations of sialadenitis. **10.** List the main complications of oral cavity diseases and their pathophysiological mechanisms.

Assessment criteria

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is

able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Standardized case studies and checklists for **B1.C.14 Pathophysiology. Pathophysiology of human head and neck** course

Case Study No. 1

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A 58-year-old male patient, a smoker with a 30-year history, presented with progressive dyspnea, cough with sputum, and cyanosis of the lips and nail beds. His medical history includes COPD. On examination: SaO_2 — 82%, pO_2 — 52 mmHg, Hb — 180 g/L, hematocrit — 55%. Chest X-ray shows emphysematous changes in the lungs.
Q	1	Question: Determine the type of hypoxia in the patient. Justify your answer.
Q	2	Question: What compensatory mechanisms have developed in the patient?
Q	3	Question: Why has the patient developed cyanosis?
Q	4	Question: Which therapeutic principles are indicated for the patient? Justify your answer.

Case Study No.1 Checklist

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A 58-year-old male patient, a smoker with a 30-year history, presented with progressive dyspnea, cough with sputum, and cyanosis of the lips and nail beds. His medical history includes COPD. On examination: SaO_2 — 82%, pO_2 — 52 mmHg, Hb — 180 g/L, hematocrit — 55%. Chest X-ray shows emphysematous changes in the lungs.
Q	1	Question: Determine the type of hypoxia in the patient. Justify your answer.
A		Correct answer:

		The patient has respiratory (respiratory) hypoxia. Signs: Decreased pO_2 (52 mmHg, normal range 80–100 mmHg) and SaO_2 (82%) — evidence of hypoxemia. The cause is chronic airway obstruction (COPD), confirmed by X-ray. Hypercapnia (increased pCO_2) is typical for respiratory hypoxia, but it is not indicated in this case.
Q	2	Question: What compensatory mechanisms have developed in the patient?
A		Correct answer: Polycythemia (Hb — 180 g/L, hematocrit — 55%) — compensatory increase in red blood cells to improve the oxygen-carrying capacity of the blood. Tachypnea — increased respiratory rate to enhance alveolar ventilation. Stimulation of erythropoiesis — activation of renal erythropoietin in response to hypoxia.
Q	3	Question: Why has the patient developed cyanosis?
A		Correct answer: Cyanosis is caused by the accumulation of deoxygenated hemoglobin in the capillaries (more than 50 g/L). In hypoxemia ($pO_2 < 60$ mmHg), hemoglobin oxygen saturation decreases, which is visually manifested as bluish discoloration of the mucous membranes and nail beds
Q	4	Question: Which therapeutic principles are indicated for the patient? Justify your answer.
A		Correct answer: Oxygen therapy (controlled) — to correct hypoxemia. Bronchodilators — to reduce airway obstruction. Antibiotics (in case of infection) — to prevent complications.
R2	Very good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
R1	Good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
	Satisfactory	given to a student who gives a full correct answer, demonstrates sufficient knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, knows and uses professional terminology, but whose answer was slightly inaccurate without being incorrect
R0	Fail	given to a student who provides no answer or only fragments of an answer, demonstrates the lack of knowledge, and cannot provide an answer even with external help

Case Study No. 2

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems

I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS Patient M., 29 years old, presented to a nurse with complaints of a temperature of 37.4°C, a cough with copious mucopurulent sputum (with a foul odor, mostly in the morning, producing about 300 ml daily), shortness of breath during minor physical activity, weakness, and malaise. Occasional hemoptysis is noted. He has been ill for 4 years, hospitalized multiple times, with periodic worsening of his condition. Objective findings: General condition is satisfactory. Pale skin, cyanosis of the lips, underdeveloped subcutaneous fat. Clubbing of the fingers and toes ("drumstick fingers"), watch-glass nails, and the index finger is longer than the ring finger. Barrel-shaped chest. Respiratory rate (RR) — 22/min. Percussion reveals dullness over the lower lung fields. Auscultation shows weakened breath sounds and occasional moist rales in the lower lung fields. Heart sounds are muffled. Pulse — 95/min, rhythmic. Blood pressure — 130/60 mmHg. No abdominal pathology detected.
Q	1	Question: What pathological process, in your opinion, is observed in the patient based on these manifestations?
Q	2	Question: Using the clinical manifestations, outline the symptom groups characteristic of this pathological process.
Q	3	Question: List possible complications.
Q	4	Question: Prescribe corrective methods based on the above data.

Case Study No.2 Checklist

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS Patient M., 29 years old, presented to a nurse with complaints of a temperature of 37.4°C, a cough with copious mucopurulent sputum (with a foul odor, mostly in the morning, producing about 300 ml daily), shortness of breath during minor physical activity, weakness, and malaise. Occasional hemoptysis is noted. He has been ill for 4 years, hospitalized multiple times, with periodic worsening of his condition. Objective findings: General condition is satisfactory. Pale skin, cyanosis of the lips, underdeveloped subcutaneous fat. Clubbing of the fingers and toes ("drumstick fingers"), watch-glass nails, and the index finger is longer than the ring finger. Barrel-shaped chest. Respiratory rate (RR) — 22/min. Percussion reveals dullness over the lower lung fields. Auscultation shows weakened breath

		sounds and occasional moist rales in the lower lung fields. Heart sounds are muffled. Pulse — 95/min, rhythmic. Blood pressure — 130/60 mmHg. No abdominal pathology detected.
Q	1	Question: What pathological process, in your opinion, is observed in the patient based on these manifestations?
A		Correct answer: Exacerbation of bronchiectasis. Respiratory failure stage II. Hereditary connective tissue dysplasia syndrome (undifferentiated variant). The diagnosis of bronchiectasis is confirmed by: Subjective findings: Intoxication syndrome, low-grade fever, dyspnea, morning cough with copious sputum. Chronic disease course with recurrent exacerbations. Objective findings: Physical exam: Barrel-shaped chest, respiratory rate (RR) 22/min, pale skin, acrocyanosis, reduced subcutaneous fat, clubbing of fingers/toes, "watch-glass" nails, index finger longer than ring finger. Percussion: Dullness over lower lung fields. Auscultation: Diminished breath sounds, moist rales. Respiratory failure criteria: PaO_2 55 mmHg, SaO_2 77%, dyspnea on mild exertion, increased RR (22/min), tachycardia (95 bpm), acrocyanosis. Connective tissue dysplasia signs: Barrel-shaped chest, clubbing, "watch-glass" nails, index finger longer than ring finger.
Q	2	Question: Using the clinical manifestations, outline the symptom groups characteristic of this pathological process.
A		Correct answer: Blood test: Leukocytosis with left shift, elevated ESR. Sputum analysis: Microscopic and bacteriological examination to identify pathogens and antibiotic sensitivity. Chest X-ray: Hyperlucent lungs (emphysema), deformed lung pattern, honeycombing in lower lobes. CT scan: Confirmation of bronchiectasis (varicose, cystic, or cylindrical forms).
Q	3	Question: List possible complications.
A		Correct answer: Status asthmaticus (severe asthma attack). Respiratory failure progression.
Q	4	Question: Prescribe corrective methods based on the above data.
A		Correct answer: Treatment principles: Bed rest during acute phase. Diet №15: High-protein (meat, fish, cottage cheese) and vitamin-rich (fruits, vegetables, juices, syrups). Antibiotic therapy: Based on sputum culture results (e.g., amoxicillin-clavulanate, ciprofloxacin). Expectorants: Acetylcysteine or ambroxol to improve mucus clearance. Alkaline fluids: Mineral water (e.g., Borjomi) to thin secretions. Vitamins B and C: To support immunity and tissue repair. Breathing exercises: To enhance lung function. Bronchial lavage: To remove excess secretions.

R2	Very good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
R1	Good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
	Satisfactory	given to a student who gives a full correct answer, demonstrates sufficient knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, knows and uses professional terminology, but whose answer was slightly inaccurate without being incorrect
R0	Fail	given to a student who provides no answer or only fragments of an answer, demonstrates the lack of knowledge, and cannot provide an answer even with external help

Case Study No.3

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A 70-year-old male patient was admitted with complaints of paroxysmal cough with sputum production, palpitations, leg edema, heaviness in the right hypochondrium, and dyspnea during minor physical exertion. History: Suffers from chronic bronchitis for 15 years, with exacerbations 2–3 times per year. Smoked for over 30 years (1–2 packs/day). Objective findings: Warm diffuse cyanosis, low-grade fever, distended neck veins. Respiratory rate (RR): 22/min. Auscultation: Diminished vesicular breath sounds, expiratory wheezing, and occasional fine crackles with prolonged expiration. Cardiac exam: Rightward heart border enlargement, muffled heart sounds, accentuated second heart sound over the pulmonary artery. Blood pressure (BP): 110/90 mmHg. Liver palpable 2 cm below the costal margin. Leg edema. Spirometry: Post-bronchodilator FEV1 — 45% of predicted; FEV1/FVC — 65% of predicted. Blood gas analysis: PaO_2 — 35 mmHg, SaO_2 — 70%.
Q	1	Question: What pathological process is observed in the patient?
Q	2	Question: Outline symptom groups characteristic of this process.
Q	3	Question: List pathophysiological changes in this process.
Q	4	Question: Prescribe corrective methods.

Case Study No.3 Checklist

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-9	Able to evaluate morphofunctional and physiological conditions as well as pathological processes in the human body to solve professional problems
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A 70-year-old male patient was admitted with complaints of paroxysmal cough with sputum production, palpitations, leg edema, heaviness in the right hypochondrium, and dyspnea during minor physical exertion. History: Suffers from chronic bronchitis for 15 years, with exacerbations 2–3 times per year. Smoked for over 30 years (1–2 packs/day). Objective findings: Warm diffuse cyanosis, low-grade fever, distended neck veins. Respiratory rate (RR): 22/min. Auscultation: Diminished vesicular breath sounds, expiratory wheezing, and occasional fine crackles with prolonged expiration. Cardiac exam: Rightward heart border enlargement, muffled heart sounds, accentuated second heart sound over the pulmonary artery. Blood pressure (BP): 110/90 mmHg. Liver palpable 2 cm below the costal margin. Leg edema. Spirometry: Post-bronchodilator FEV1 — 45% of predicted; FEV1/FVC — 65% of predicted. Blood gas analysis: PaO_2 — 35 mmHg, SaO_2 — 70%.
Q	1	Question: What pathological process is observed in the patient?
A		Correct answer: Diagnosis: Chronic obstructive pulmonary disease (COPD), Stage III (severe), Group D (high risk, frequent exacerbations), bronchitic phenotype. Chronic cor pulmonale, decompensated stage. Chronic heart failure, Stage IIB (Strazhesko-Vasilenko classification), Class III (NYHA). Confirmation of COPD: Symptoms: Dyspnea, productive cough, chronic bronchitis history, smoking. Spirometry: Post-bronchodilator FEV1/FVC = 65%, FEV1 = 45% (GOLD 2007 criteria). Group D: Severe spirometry, >2 annual exacerbations, mMRC dyspnea scale grade 3 (dyspnea after walking ~100 meters). Bronchitic phenotype: Excessive mucus production, diffuse cyanosis, severe airway obstruction, decompensated cor pulmonale. Respiratory failure criteria: PaO_2 <40 mmHg, SaO_2 <75%, dyspnea, cyanosis, reduced BP, increased RR. Chronic cor pulmonale: Signs of right heart failure: jugular vein distension, hepatomegaly, peripheral edema. Decompensation: hemodynamic instability in systemic circulation.
Q	2	Question:

		Outline symptom groups characteristic of this process.
A		Correct answer: Additional Examinations: Blood tests: Complete blood count (leukocytosis, elevated ESR). Biochemistry: total protein, liver enzymes (AST, ALT), bilirubin, cholesterol, triglycerides, CRP. Sputum analysis: Cytology, bacterial culture. Spirometry and blood gas analysis: Repeat to confirm severity. Chest X-ray: Exclude other causes, assess cardiopulmonary changes. ECG and Echocardiography: ECG: Right atrial hypertrophy (peaked P waves in II, III, aVF), right ventricular hypertrophy (right axis deviation, R wave in V1–V3, RBBB). Echo: Right ventricular dilation, pulmonary hypertension, tricuspid regurgitation. Abdominal ultrasound: Liver size/structure. CT/MRI of lungs: Detailed assessment of parenchymal changes.
Q	3	Question: List pathophysiological changes in this process.
A		Correct answer: Mucus hypersecretion (chronic inflammation). Ciliary dysfunction (impaired mucus clearance). Bronchial obstruction (airflow limitation). Parenchymal destruction and emphysema (loss of alveolar elasticity). Gas exchange impairment (hypoxemia, hypercapnia). Pulmonary hypertension (hypoxic vasoconstriction). Cor pulmonale (right ventricular hypertrophy/failure). Systemic effects (cachexia, muscle wasting).
Q	4	Question: Prescribe corrective methods.
A		Correct answer: General Measures: Bed rest during exacerbation. Smoking cessation (nicotine replacement therapy). Diet: High-protein, vitamin-rich (fruits, vegetables), alkaline fluids (mineral water). Pharmacotherapy: Bronchodilators: LAMA (tiotropium) + LABA (salmeterol) for maintenance. Short-acting β_2-agonists (salbutamol) for acute relief. Corticosteroids: Inhaled (budesonide) or oral (prednisone) during exacerbations. Antibiotics: Amoxicillin-clavulanate or azithromycin for infections. Diuretics: Furosemide (40 mg/day) to reduce edema. Mucolytics: Acetylcysteine (600 mg/day). Oxygen therapy: Long-term (LTOT) to maintain SpO_2 ≥88–92%. Supportive Care: Pulmonary rehabilitation: Breathing exercises, physical therapy. Vaccination: Influenza and pneumococcal vaccines. Rationale: Focus on reducing exacerbations, improving gas exchange, and managing right heart failure.
R2	Very good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve

		objectives during professional activity, and knows and uses professional terminology correctly
R1	Good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
	Satisfactory	given to a student who gives a full correct answer, demonstrates sufficient knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, knows and uses professional terminology, but whose answer was slightly inaccurate without being incorrect
R0	Fail	given to a student who provides no answer or only fragments of an answer, demonstrates the lack of knowledge, and cannot provide an answer even with external help

Topics of discussion:

1. The role of free-radical reactions and oxidative stress in the pathogenesis of human diseases.
2. Modern theory of mechanisms behind chronic inflammation and its consequences for the body.
3. Pathophysiology of hypoxia: universal and specific mechanisms of adaptation and damage.
4. Mechanisms and significance of apoptosis and necrosis in the development of pathology.
5. Immunopathology: autoimmune and allergic reactions and their role in disease development.
6. Disorders of the hemostatic system: thrombosis, coagulopathies, and their pathogenesis.
7. Pathogenesis of heart failure: current perspectives on compensation and decompensation mechanisms.
8. Stress as a cause of pathology: the role of neuroendocrine regulation and adaptation mechanisms.
9. Tumor growth: molecular mechanisms, systemic manifestations, and challenges of treatment.
10. Biological rhythms and pathology: the impact of circadian rhythm disorders on disease development.

4. Assessment criteria for learning outcomes

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.