

Department of Normal Physiology  
Examination questions for international students studying in English

1. The subject of Normal Physiology. Physiology as the base of clinical medicine.
2. The internal environment of the organism. Homeostasis.
3. The main fluid compartments of the body, their composition.
4. The osmotic pressure of the body fluids, its significance for fluid exchange between cells and extracellular space. Influence of osmotic pressure changes on the cells state: cellular dehydration and cellular edema. Isotonic solutions.
5. The oncotic pressure of blood plasma and its significance for fluid exchange between intravascular and interstitial spaces.
6. Hydrogen index (pH) as a strict homeostatic constant. Normal levels of blood pH. Maintenance pH constancy by buffer systems, respiratory compensation and kidney functioning.
7. Information exchange between the cell and the environment. Types of signals. Basic types of intercellular communication involving signal molecules.
8. Chemical signaling. Classification of molecular receptors. Types of signal molecules (ligands).
9. Ligand-receptor interactions. Basic ways of signal transmission involving membrane receptors. Second messengers, their function. Ligands acting through membrane receptors.
10. Intercellular signal transmission involving intracellular receptors. Ligands acting through intracellular receptors.
11. Basic physiological effects of ligand-receptor interaction at a cellular level.
12. Blood functions. Composition of blood.
13. Blood proteins and their functions.
14. Red blood cells (erythrocytes), their specific properties. Normal amount of RBC. Erythrocytopenia and erythrocytosis. Types of hemolysis. Osmotic resistance of red blood cells.
15. Hemoglobin and its types. Structure, properties and functions of adult hemoglobin (Hb A). Normal amount of hemoglobin in men and women. Color index and its calculation. Mean hemoglobin content in one red blood cell (MCH). Role of iron for hemoglobin formation. Daily requirement in iron.
16. Red blood cells formation (erythropoiesis) and destruction. The role of erythropoietin, vitamins and other factors. Anemias. The erythrocytes Sedimentation Rate (ESR), its diagnostic value.
17. White blood cells (WBC), their total amount. Properties of WBC. Types of leucocytes, their functions. Percentage of leucocytes types (leucocyte formula).
18. Granular and agranular leucocytes, their functions. Phagocytosis. The concept of cell-mediated and humoral immunity.
19. Leucocytosis and leucopenia. Physiological and absolute leucocytosis. Shifts of the leucocyte formula.
20. Platelets, their structure and functions. Normal amount of platelets. Concept of primary and secondary hemostasis.
21. Blood types. ABO system antigens and antibodies, their characteristics.

22. Blood typing in ABO system using standard and monoclonal sera. Transfusion reactions resulting from mismatched blood transfusion. Tests performed before blood preparations transfusion.
23. Rhesus system of blood antigens, its characteristics. The difference of Rh system from ABO system. Possible reasons of anti-rhesus antibodies formation. Consequences of the first and subsequent transfusions of blood mismatched in Rh system. Blood typing in the Rh system.
24. The types of membrane ion channels. Membrane permeability for ions. Main concentration gradients across the cell membrane.
25. The resting potential and mechanisms of its maintaining. Main factors determining resting potential level.
26. Receptor potential, mechanism of its origin (in mechanoreceptors as the example). Properties of receptor potential.
27. Action potential generation, its phases and mechanisms of development. Comparison of receptor potential and action potential. Laws according to which receptor potential and action potential response.
28. Excitability alteration during action potential. Refractory period, its reasons and physiological significance.
29. Nerve fibers and their structural elements. Types of nerve fibers. Mechanisms of action potential propagation along myelinated and unmyelinated nerve fibers.
30. Classification of synapses. Structure of synapse and properties of synaptic membranes. Specific proteins of vesicle and postsynaptic membranes involved in exocytosis.
31. Mechanism of synaptic transmission through neuromuscular junction. Postsynaptic (end plate) potential. Role of acetylcholinesterase. Properties of synapses.
32. Main properties of skeletal muscles. Structure of skeletal muscle tissue and cells. Sarcomere. Structural proteins of myofilaments and their functions.
33. Mechanism of skeletal muscle contraction. Single cross bridge cycle. Relaxation of skeletal muscle.
34. Whole muscle contraction. Periods of muscle twitch. Summation of contractions (tetanus), its types.
35. Factors determining the force of contraction. Fast and slow muscle fibers, their comparison. Muscle tone.
36. Smooth muscles, their physiological properties. Main factors causing smooth muscle contraction. Ways of intracellular  $\text{Ca}^{2+}$  concentration increase.
37. The smooth muscle contraction and relaxation mechanisms. Comparison of smooth muscle contraction to the skeletal muscle one.
38. The central nervous system, its structure and functions. Role of the central nervous system in integration of body functions and interaction of an organism with the environment.
39. Neuron, its physiological properties and functions. Functions of neuron's structural elements (soma, axon, dendrites). Functions of glial cells.
40. Integration of neurons into neuron chains. Types and functions of neuron chains. General principles of excitation conduction in neuron chains (divergence, convergence, reverberation).

41. Reflex principle of the nervous system functioning. A reflex arch, its components. Types of reflexes. The feedback and its significance. Multilevel organization of a reflex.
42. Inhibition processes in the nervous system. Inhibitory neurotransmitters. Mechanisms of inhibitory synapses functioning.
43. Types of inhibition in the central nervous system. Primary inhibition (pre- and postsynaptic) and secondary (pessimal and inhibition after excitation). Types of postsynaptic inhibition.
44. Physiologic principles of coordination in the central nervous system (reciprocal inhibition, common final way, dominance, feedback).
45. Nervous centers and their properties (temporal and spatial summation, rhythm transformation, tone of nervous center, plasticity, high fatigability).
46. Spinal cord, its general structure and functions. Main spinal cord reflexes. Consequences of the spinal cord damage. Spinal shock.
47. The spinal level of muscle tone maintaining. Muscle tone changes in case of damage of various parts of reflex arch.
48. Medulla and pons. The vital centers of medulla. The main nuclei of medulla and pons, their functions.
49. Midbrain. The main midbrain structures and nuclei, their functions. Decerebrate rigidity and reasons of its origin.
50. Reticular formation of the brain stem, its functions. Ascending and descending effects on CNS functions. Participation of the reticular formation in regulation of motor and other functions of the organism.
51. Cerebellum, its functions. Participation of the cerebellum in muscle tone, posture and movements regulation. Basic symptoms of the cerebellum function disorder.
52. Thalamus, its functions. Functional characteristics of thalamic nuclei. Its role in pain sensation formation, sensory and other functions.
53. Hypothalamus. Main centers of hypothalamus and their functions. Integration of somatic, autonomic and endocrine functions.
54. Basal nuclei, their main structures and functions. Participation in execution of complex movements.
55. Limbic system, its structures and functions. Participation in formation of motivations and emotions.
56. The autonomic nervous system. General structure and functions. Characteristics of afferent, central and efferent parts of autonomic nervous system reflex arch in comparison with the somatic nervous system.
57. Sympathetic and parasympathetic parts of the autonomic nervous system, peculiarities of their reflex arches. Preganglionic and ganglionic autonomic neurons, their neurotransmitters. Receptor types of ganglionic neurons and effector cells.
58. The effects of sympathetic and parasympathetic parts of autonomic nervous system on functions of organs and systems. Synergism and relative antagonism of their effects.
59. Main autonomic reflexes. Autonomic nervous centers, their tone. Interaction of somatic and autonomic systems in regulation of organism functioning.

60. The endocrine system significance for the organism. The structures of the endocrine system (glands of internal secretion, diffuse elements) and its functions. Participation of the endocrine system in regulation of homeostasis, growth and development, reproduction, utilization of energy.
61. General characteristic and mechanisms of hormone action. The types of hormone mechanism of action depending on hormone's chemical structure. Receptors for hormones and basic ways of signal transmission to the cell.
62. The structure and functions of the pituitary gland (hypophysis). Associations between the pituitary gland and hypothalamus. Hormones of the hypothalamus and pituitary gland, their role. Interaction of nervous and humoral mechanisms of functional regulation at a hypothalamic level.
63. Regulation of the pituitary and hypothalamic hormones secretion. The most common manifestations of pituitary and hypothalamic endocrine functions disorders: diabetes insipidus, acromegaly, etc.
64. Thyroid gland. Thyroid hormones, mechanisms of their action and their effects. Influence of thyroid hormones on the CNS growth and development. Regulation of hormone secretion. Characteristic manifestations of excessive and insufficient secretion of hormones.
65. Adrenal glands. Hormones of the three zones of adrenal cortex. Effects and mechanisms of hormones action. Regulation of hormones secretion. The role of glucocorticoids in stress.
66. Hormones of the adrenal medulla. Effects and mechanisms of hormone action. Regulation of hormone secretion.
67. Endocrine function of sex glands. Mechanism of hormone action and their effects. Characteristic manifestations of hormones excess and insufficiency.
68. The role of calcitonin, parathyroid hormone and vitamin D<sub>3</sub> in regulation of calcium and phosphorus homeostasis in the organism. Daily needs in calcium, factors affecting it.
69. Pancreatic hormones and their role in regulation of carbohydrate, fat and protein metabolism. Regulation of hormone secretion. Mechanisms of hormone action. The concept of hyper- and hypoglycemia.
70. Participation of endocrine glands in adaptive activity of the organism. General adaptation syndrome and stress: nervous and hormonal mechanisms of their development.
71. Hemodynamics. Circles of blood circulation. Functional classification of vessels. Main factors contributing to the blood flow in vessels.
72. The basic law of hemodynamics – correlation between blood pressure, volume velocity of blood flow and peripheral resistance. Main factors determining vascular resistance to the blood flow.
73. Blood pressure, its types. Blood pressure in different parts of vascular system. Main factors that determine arterial blood pressure (BP) level. Normal values of BP, age-related BP changes.
74. Volume and linear velocities of blood flow in different parts of the vascular system. Factors determining these velocities.
75. Arterial pulse, its origin and clinical-physiological characteristics (rate, rhythmicity, filling, tension and velocity). Sphygmography; sphygmogram analysis. The velocity of pulse wave propagation.

76. Microcirculatory system, its structural and functional characteristics. Mechanisms of transcapillary exchange of fluid and various substances between blood and tissues. Starling's equation. Fluid filtration and reabsorption in capillaries.
77. Mechanisms of lymph formation and outflow. Functions of the lymphatic system. Factors causing the predominance of filtration over reabsorption and contributing to the interstitial edema development.
78. Myocardial metabolism and blood supply at rest and at exercise. The coronary blood flow in the right and left ventricles of the heart during the systole and diastole.
79. The structure and functions of the heart conducting system. Automaticity of the heart. Action potential of the conducting system cells, its phases and ion mechanisms. The role of the slow diastolic depolarization phase, ion currents during this phase.
80. Physiologic properties of the heart muscle cells. Action potential of contractile cardiomyocytes, its phases and ion mechanisms. Excitation-contraction coupling, the role of  $\text{Ca}^{2+}$  ions.
81. Time relationships of excitation, excitability and contraction of the heart muscle. The role of long absolute refractory period of myocardium. The concept of an extrasystole.
82. Laws of the heart muscle contraction (Frank-Starling and Anrep's laws, "all-or-nothing" law, positive (or Bowditch) staircase). The concept of pre- and afterload.
83. Sequence of phases and periods of the cardiac cycle. The state of valves, change of blood pressure and blood volumes in the heart chambers during different phases of the cardiac cycle.
84. Systolic (stroke) volume and minute volume (cardiac output) of the blood at rest and at exercise. Indices of myocardial contractility (the ejection fraction and the velocity of pressure increase during isovolumetric contraction).
85. Electrocardiography. Electrocardiographic leads. Calibration. The origin of ECG components. Order of ECG analysis, basic standards (PQ and QRS duration, ST segment position). Calculation of heart rate using mean duration of RR interval.
86. Heart sounds, their origin. Auscultation and phonocardiography, their diagnostic significance. Polycardiography (synchronous registration of ECG, phonocardiogram and sphygmogram).
87. Classification of regulation mechanisms of the heart function. Intracardial mechanisms of regulation of the heart function.
88. Extracardial mechanisms of heart regulation. Effects of sympathetic and parasympathetic nerves on the heart function. Receptors, ion and molecular mechanisms of effects of autonomic system neurotransmitters and hormones on the rate and force of heart contractions.
89. Reflex mechanisms of heart regulation. Reflex changes of the heart function in response to the stimulation of vascular (aortic arch and carotid sinus) and other reflexogenic zones.
90. Humoral mechanisms of heart regulation: the effect of catecholamines, acetylcholine,  $\text{Ca}^{2+}$  and  $\text{K}^{+}$  ions and other substances.

91. Reflex mechanisms of regulation of blood circulation. Vasomotor center, its afferent and efferent connections. Main reflexogenic zones. Influence of baro- and chemoreceptors on vasomotor center activity and blood pressure level.
92. Short-term (fast) reflex mechanisms of blood pressure regulation by changing the heart function and peripheral resistance.
93. Long-term mechanisms of blood pressure regulation. Renin-angiotensin-aldosterone system (RAAS). The role of kidneys in long-term regulation of the circulating blood volume and blood pressure.
94. Systemic humoral regulation of blood circulation by catecholamines, vasopressin, natriuretic hormone and other vasoactive substances.
95. Local mechanisms regulating circulation. The effect of nervous, metabolic, myogenic mechanisms and factors secreted by endothelium on the tone of smooth muscle cells of vessels walls.
96. The main stages of respiration. Functions of respiratory airways and lungs.
97. Nervous and humoral mechanisms of regulation of the respiratory airways.
98. Respiratory muscles. Biomechanics of an inspiration and expiration. Elastic recoil of the lungs and chest wall. Factors creating elastic recoil of the lungs.
99. Intrapleural pressure, its changes during respiration. The reason of negative pressure in intrapleural space. Surfactant, its influence on surface tension and elastic recoil of the lungs, and therefore on intrapleural pressure.
100. Lung volumes and capacities. Spirometry, spirometry. Anatomic and physiologic dead spaces. Lung volumes and capacities. Indices of lung ventilation; air flow rate indices.
101. Main types of ventilation disturbances: obstructive and restrictive lung disorders; their main causes and indices.
102. Oxygen and carbon dioxide content in atmospheric, expired and alveolar air,  $pO_2$  and  $pCO_2$  of alveolar air and arterial blood. Partial pressures calculation.
103. Gases exchange in the lungs. Factors affecting  $O_2$  and  $CO_2$  diffusion between alveolar air and blood. Diffusion ability of the lungs for oxygen.
104. Inequality of blood flow and ventilation in the lungs due to effect of gravity. Ventilation/perfusion (V/Q) ratio in different zones of the lungs. Blood flow adjustment to the level of ventilation: effect of alveolar  $pO_2$  decrease on the local pulmonary blood flow.
105. Oxygen transport in blood.  $O_2$  capacity of the blood, its calculation using Hb content. Oxyhemoglobin dissociation curve. Factors affecting the affinity of hemoglobin to oxygen ( $pCO_2$ ;  $H^+$ ;  $t$ ; 2,3-DPG). Shifts of the curve to the right and to the left.
106. Carbon dioxide transport in blood. The role of carbonic anhydrase.
107. Gas exchange between the blood and tissues;  $pO_2$  and  $pCO_2$  of venous blood, interstitial fluid and cells. The oxygen utilization quotient of the whole body at rest and at exercise.
108. Respiratory center, its parts and functions. Mechanisms of the respiratory periodicity.
109. Central and peripheral chemoreceptors for  $H^+$  ions,  $CO_2$  and  $O_2$  in the organism. Changes of  $O_2$ ,  $CO_2$  and  $H^+$  levels resulting in increase of chemoreceptors activity and stimulation of the respiratory center. Other factors stimulating the

- respiratory center of the brainstem. Mechanism of the first inspiration of a newborn.
110. Relationship between lung ventilation and acid-base balance. Influence of pH ( $H^+$  ions) on lung ventilation; influence of ventilation on  $CO_2$  level and blood  $H^+$  ions concentration. The respiratory compensation of acid-base balance metabolic disorders.
  111. Receptors of respiratory airways, lungs and respiratory muscles. Reflex reactions to their stimulation. Hering-Breuer's reflexes.
  112. The functional reserves of cardiorespiratory system. Calculation of maximal heart rate and maximal cardiac output. Cardiac output as a limiting factor of cardiorespiratory system reserves in a healthy person.
  113. Indices of the heart functional reserves. Coronary blood flow, its maximal level. Oxygen utilization quotient of the heart at rest and at exercise. ECG signs of the heart ischemia.
  114. Main indices of gas exchange reserves: maximal oxygen consumption, oxygen debt, threshold of anaerobic exchange.
  115. General characteristic of nutrition and digestion processes. Nutritional motivations. Physiological mechanisms of hunger and satiety. Appetite.
  116. Digestive and non-digestive functions of the digestive system.
  117. Peculiarities of functional regulation of the digestive system.
  118. Digestion in the oral cavity. Salivation. Composition, properties and functions of saliva. Regulation of saliva secretion.
  119. Digestion in the stomach. Functions of the stomach. Gastric cells types and their functions. The composition and properties of gastric juice. The intrinsic factor for vitamin  $B_{12}$  absorption.
  120. Functions of hydrochloric acid of gastric juice. Mechanism of gastric HCl secretion. Regulation of HCl secretion. Phases of gastric secretion.
  121. Digestion in duodenum. The role of the pancreas for digestion. Composition and properties of pancreatic juice. Pancreatic enzymes, mechanisms of their activation.
  122. Regulation of pancreatic juice secretion.
  123. Bile, its main components. Functions of bile. Enterohepatic circulation of bile salts. Regulation of bile excretion.
  124. Digestion in the jejunum and ileum. Composition and properties of the intestinal juice.
  125. Digestion and absorption of nutrients in small intestine. Mechanisms and sites of intestinal absorption of digestion products.
  126. Digestion in large intestine. The significance of large intestine microflora for the organism.
  127. Energy balance and metabolism. Anabolic and catabolic processes. Plastic and energy role of proteins, fats and carbohydrates.
  128. Basal metabolic rate (BMR), its normal level. Main factors that influence BMR. The standard conditions for BMR measurement.
  129. Total metabolic rate, its components. Specific dynamic action of food. Increase of metabolic rate by physical activity. Energy consumption in various kinds of working activity.

130. Methods of metabolic rate measurement (direct and indirect calorimetry, calculation by tables and formulas).
131. Body mass as an objective indicator of energy income and expenditure balance. Body mass index.
132. Basic principles of healthy nutrition as a component of healthy life. Compiling diets. Essential nutritional substances.
133. Temperature of the human body. The temperature “core” and the “shell” of the body. Measurement of body temperature. Normal range of core (axillary) temperature. Hypo- and hyperthermia. Fever and its reasons; pyrogens.
134. Heat loss of the body. Types of the heat loss and their characteristics. Regulation of heat loss.
135. Sources of heat production in the organism. Contractile and non-contractile thermogenesis. Regulation of heat production.
136. Thermoregulation center. Peripheral and central thermoreceptors. The “set-point” of the temperature control mechanism. Physiological and behavioral mechanisms of body temperature control.
137. The excretory system. The excretory organs: general characteristics of excretion processes in the skin, respiratory system, gastrointestinal tract and kidneys. Excretory and non-excretory functions of kidneys.
138. The structure of a kidney. Nephron as a morphological and functional unit of the kidney. Types of nephrons, their structure and functions. Peculiarities of kidney’s blood supply. Basic processes of urine formation.
139. Glomerular filtration. The structure of the glomerular filtration membrane. Net filtration pressure, its calculation. Glomerular filtration rate. The composition of filtrate (primary urine).
140. Reabsorption in proximal tubule of nephron, its mechanisms. The transport maximum and the threshold of excretion (for glucose as an example).
141. Reabsorption in the loop of Henle: countercurrent multiplier system and its mechanisms.
142. Reabsorption in the distal tubule and collecting duct. Tubular secretion.
143. Regulation of kidney’s function by hormones (ADH, aldosterone, atrial natriuretic peptide). Effects of hormones on kidney functioning and their mechanisms of action.
144. Regulation of renal blood flow and glomerular filtration rate. The myogenic mechanisms of glomerular blood flow regulation. The tubular-glomerular feedback. Juxtaglomerular apparatus, its role.
145. The concept of sense organs, analyzers, sensory systems. I.P. Pavlov’s theory of analyzers. General principles of analyzers structure, their classification.
146. Peripheral (receptor) part of analyzer. Types of sensory receptors. Analog and discrete encoding in receptors. Adaptation of receptors. Fast and slow adapting receptor types.
147. Visual system. General structure and functions. Peculiarities of the structure and properties of the eye. The optic system of the eye. Accommodation and its mechanisms.
148. Normal refraction of the eye and errors of refraction. Principles of correction. Types of the eye abnormalities associated with age. Visual acuity.

149. The structure and functions of the eye retina. Photochemical processes in photoreceptors of the retina under the action of light. Functions of pigment, horizontal, bipolar and ganglion cells of the retina.
150. Conducting pathways of the visual system. Primary and secondary visual cortex. Basic principles of color vision.
151. The auditory system. Basic characteristics of the sound and their perception. The sound-conducting apparatus. The structure and properties of the outer and middle ears.
152. The sound-perceiving apparatus. The structure and functions of the inner ear. Organ of Corti. Mechanism of hair cells excitation.
153. Mechanisms of sound perception and analysis. Primary and secondary auditory cortex. Tonotopical representation of sounds in auditory system.
154. The vestibular system, its structure and functions. Mechanisms of detection of linear and angular accelerations. Vestibular-ocular reflexes (nystagmus).
155. The olfactory system. Reception of smells. Conducting pathways and central parts of the olfactory system. Steps in transduction in the olfactory receptor neurons.
156. The taste system. Taste reception. Conducting pathways and central parts of the taste system. Taste perception. Basic types of taste.
157. The somatosensory system. Skin sensitivity. Types of receptors. Somatosensory cortex.
158. Pain. Nociceptors. Neurotransmitters. Fast and slow pain, nervous fibers carrying sensations of fast and slow pain. Referred pain.
159. The innate types of behavior: unconditioned reflexes and instincts.
160. The acquired behavioral reactions: conditioned reflexes. The terms of classical conditioned reflex formation. Mechanism of conditioned reflex formation. Temporary connection. The dynamic stereotype.
161. The adaptive role of conditioned reflexes. Inhibition of conditioned reflexes. Unconditioned and conditioned types of inhibition.
162. Memory. Classifications of memory types. Characteristics and basic neurophysiological mechanisms of short-term memory.
163. Characteristics and basic neurophysiological mechanisms of long-term memory. Role of hippocampus and other structures in long-term memory formation. Difference of declarative and procedural memory mechanisms. Amnesia and its types.
164. The general biological types of higher nervous activity according to Hippocrates and according to the criteria of differentiation by I.P. Pavlov. The human types of higher nervous activity based on predomination of certain signaling system.
165. Physiology of sleep. Sleep phases, changes of the somatic and autonomic functions of the organism during sleep. Sleep functions.
166. Localization of functions in the cerebral cortex. The motor, sensory and associative cortex areas, their functions. Functional asymmetry and dominance of the cerebral cortex. The dominant hemisphere for speech, calculation and abstract thinking.
167. The first and second signaling systems. Speech and its functions. The role of sensory (Wernicke's) and motor (Broca's) centers in speech function. The basic types of aphasia.

168. Emotions, their types. The role of the cerebral cortex, limbic system in formation of emotions. Autonomic and somatic component of emotions. Emotional stress.
169. Motivations, their classification. Mechanisms of motivation formation.

### THE INVESTIGATION METHODS of physiological functions evaluation

1. Methods of taking capillary blood. Measures for HIV-infection prophylaxis while performing blood tests.
2. Methods of red blood cells and white blood cells counting.
3. Methods of hemoglobin amount evaluation. Calculation of a color index.
4. Methods of blood typing in ABO system using the standard and monoclonal sera.
5. Method of blood typing in Rhesus system using universal anti-rhesus serum.
6. Evaluation of the main indices of red blood cells: MCV (Mean Corpuscular Volume) and MCH (mean corpuscular hemoglobin).
7. Method of erythrocyte sedimentation rate (ESR) determination.
8. Electromyography.
9. Evaluation of the force of muscle contraction: dynamometry.
10. Electrocardiography. General order of ECG analysis (calibration, rhythm, heart rate, waves and intervals).
11. Phonocardiography. Heart sounds and their origin.
12. Method of arterial pressure measurement.
13. Methods of pulse evaluation. Sphygmography.
14. Spirometry. Peakflowmetry.
15. Evaluation of the flow-volume curve.
16. Determination of normal values of basal metabolic rate using tables.
17. Methods of metabolic rate determination: direct and indirect calorimetry.
18. Calculation of the respiratory quotient. Calculation of energy expenditure using the caloric equivalent of oxygen.
19. Terms of basal metabolic rate determination.
20. Principles of compiling diets.
21. Methods of body temperature measurement.
22. Methods of investigation of basic tendon reflexes: knee, ankle and elbow reflexes.
23. Electroencephalography. Types of EEG activity ( $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$ -rhythms), their frequencies.
24. Methods of visual system investigation: visual acuity, perimetry, color vision evaluation.
25. Methods of auditory system investigation. Audiometry. Weber's and Rinne's tests.
26. Methods of taste investigation. Determination of the taste sensitivity thresholds (concentration of solutions).
27. Methods of determination of glomerular filtration rate. The final urine amount and composition.
28. Methods of evaluation of the sympathetic and parasympathetic systems' tone. Orthostatic and clinostatic tests.
29. Physiological methods of endocrine system functioning evaluation (height, habitus, body mass, body temperature and others).
30. Physiological methods of memory evaluation.