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Sumy State University

**TEST PROBLEMS IN PHYSIOLOGY
STATE LICENSING EXAMINATION
KROK – 1**

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3

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Department of physiology and pathophysiology with a course of medical biology

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INTRODUCTION

The collection that we offer has been worked out for the students mastering base physiology, training for the test examination “Krok – 1. General medical training”, and studying at higher medical educational establishments of III – IV levels of accreditation, subordinate of Ministry of public health of Ukraine, and at the medical faculties of the universities of the system of Ministry of education and science, youth and sports of Ukraine.

Each test has only one right or the best answer, which must be chosen from the list of suggested variants. In the end of the book there are keys of right answers to the test tasks. The control over the correctness of answers to the test tasks is a very important element of education, because it increases the motivation of students for study, makes it possible to understand what need additional attention, helps to find weak points in training.

Individual work with the tests will help students to prepare for the licensed integrated examination “Krok – 1. Medicine”. It must be borne in mind that the examination consists of 200 test questions.

1. EXCITABLE STRUCTURE

1. A hypertensive glucose solution was introduced to a patient. It will intensify water movement:

- A. From the cell to the intercellular liquid.
- B. From the intercellular liquid to the cell.
- C. From the intercellular liquid to the capillaries.
- D. There will no changes of water movement.
- E. From the capillaries to the intercellular liquid.

2. An isolated muscle of a frog is rhythmically irritated with electric impulses. Every next impulse is in period of relaxation from the previous contraction. What contraction of the muscle occurs?

- A. Tonic.
- B. Asynchronous.
- C. Single.
- D. Waved tetanus.
- E. Continuous (smooth) tetanus.

3. In course of an experiment a skeletal muscle is being stimulated by a series of

electric impulses. What type of muscle contraction will arise, if every subsequent impulse comes in the period of relaxation of single muscle contraction?

- A. Partial tetanus.
- B. Asynchronous tetanus.
- C. Muscle contracture.
- D. Holotetanus.
- E. A series of single contractions.

4. Ions cells have been blocked in the excitative cell. It doesn't change significantly the quiet potential, but the cell has lost its capacity to the generation of AP (action potential). What canals have been blocked?

- A. Chlorine.
- B. Sodium.
- C. Sodium and potassium.
- D. Calcium.
- E. Potassium.

5. The action of electric current on the excitable cell caused depolarization of its membrane. Movement of what ions through the membrane

caused depolarization?

- A.** Cl^-
- B.** Ca^{2+}
- C.** Na^+
- D.** HCO_3^-
- E.** K^+

6. *The penetration of the irritable cell membrane for potassium ions has been increased experimentally. What changes of membrane electric status can occur?*

- A.** Local response.
- B.** No change.
- C.** Depolarization.
- D.** Hyperpolarization.
- E.** Action potential.

7. *The permeability of the irritable cell membrane has been increased for potassium ions during an experiment. What changes of membrane electric status can occur?*

- A.** Hyperpolarization.
- B.** Depolarization.
- C.** No changes.
- D.** Local response.
- E.** Action potential.

8. *What will the reduction of the muscles of the upper extremity be at an attempt*

to lift a load beyond one's strength?

- A.** Isometric.
- B.** Isotonic.
- C.** Auxotonic.
- D.** Phase.
- E.** Single.

9. *The irritation of what force is it necessary to inflict on a nervous fibre to entail excitation in the phase of relative refractivity?*

- A.** Under-threshold.
- B.** Above-threshold.
- C.** Threshold.
- D.** Under-threshold prolonged.
- E.** Threshold prolonged.

10. *The toxin produced by Clostridium botulinum blocked the entrance of calcium ions into the nerve endings of the axons of motoneurons. Poisoning with it is dangerous to life by:*

- A.** Vomiting development.
- B.** Cardiac arrest.
- C.** Disorder of vascular tone.
- D.** Respiratory standstill.
- E.** Development of diarrhea.

11. *During the examination of a sportsman after an*

intensive physical activity the incoordination of movement was detected. At the same time the force of muscle contraction was the same. The reason for it can be the diminution of conduction of excitement speed. What structures does it take place in first of all?

- A.** Conduction tracts.
- B.** Nervous-muscular synapses.
- C.** Efferent nerves.
- D.** Afferent nerves.
- E.** Central synapses.

12. *Skeletal muscles are irritated with a series of electro pulses in an experiment. Every next impulse is in the period of the shortening of a single muscular contraction. What type of muscular contraction will arise?*

- A.** Smooth tetanus.
- B.** Toothed tetanus.
- C.** Asynchronous tetanus.
- D.** A series of single contractions.
- E.** Muscle contracture.

13. *Complete demyelination of fibers of conductive ascending tracks of a patient*

is revealed. Formation of what sensation will worsen the least?

- A.** Acoustic.
- B.** Proprioceptive.
- C.** Aftervision.
- D.** Tactile.
- E.** Temperature.

14. *As a result of blockage of the ionic channels of the cell membrane its membrane resting potential diminished from -90 to -70 mV. What channels were blocked?*

- A.** Sodium.
- B.** Potassium.
- C.** Calcium.
- D.** Magnesium.
- E.** Chloric.

15. *During the research of an isolated excitable cell it was stated that the threshold of the stimulation force of the cell diminished substantially. What was the reason for it?*

- A.** Blockage of energy production in the cell.
- B.** Inactivation of membrane sodium channels.
- C.** Inactivation of membrane calcium channels.
- D.** Activation of membrane potassium channels.

E. Activation of membrane sodium channels.

16. *As a result of the action of electric current on an excitable cell there was the depolarization of its membrane. The movement of what ions through the cell membrane plays a basic part in the development of depolarization?*

- A.** K^+
- B.** HCO_3^-
- C.** Ca^{2+}
- D.** Cl^-
- E.** Na^+

17. *It is necessary to estimate the level of the excitability of tissue in an experiment. What parameter is it necessary to define for this purpose?*

- A.** Threshold of depolarization.
- B.** Resting potential.
- C.** Duration of action potential.
- D.** Amplitude of action potential.
- E.** Critical level of depolarization.

18. *It is necessary to esti-*

mate the level of the nerve excitability of a patient. What parameter is it necessary to define for this purpose?

- A.** Resting potential.
- B.** Threshold force of the irritant.
- C.** Critical level of depolarization.
- D.** Amplitude of action potential.
- E.** Duration of action potential.

19. *As a result of activation the ionic channels of external membrane of an excitable cell its resting potential was considerably increased. What channels were activated?*

- A.** Fast calcium.
- B.** Sodium.
- C.** Potassium.
- D.** Slow calcium.
- E.** Sodium and calcium.

20. *The processes of energy production were completely blocked in an excitable cell. How will the membranous resting potential change as a result of it?*

- A.** Will increase insignificantly.

- B.** Will diminish insignificantly.
- C.** Will diminish substantially.
- D.** Will disappear.
- E.** Will increase substantially.

21. *A neuromuscular preparation of a frog was processed with poison. After that the capacity of the muscle for contraction in reply to direct stimulation was preserved, but the one in reply to nerve stimulation was lost. What does the poison block?*

- A.** Processes of energy production.
- B.** Coupling of excitation and contraction in the muscle.
- C.** Sodium channels.
- D.** Potassium channels.
- E.** Nervous-muscle synapse.

22. *An isolated muscle of a frog is rhythmically irritated by electric impulses in an experiment. Every next impulse is in the period of relaxation of the previous contraction. What contraction will arise?*

- A.** Asynchronous.
- B.** Single.

- C.** Toothed tetanus.
- D.** Smooth tetanus.
- E.** Tonic.

23. *A tissue is acted on by an electric impulse of cathode direction with the amplitude of 70% threshold. What will the changes of membrane potential be as a result of it?*

- A.** Partial depolarization.
- B.** Hyperpolarization.
- C.** Action potential.
- D.** There will be no changes.
- E.** Inhibitor postsynaptic potential.

24. *The ionic channels of an excitable cell were blocked, as a result of which its resting potential disappeared completely soon after. What channels were blocked?*

- A.** Potassium and sodium.
- B.** Sodium.
- C.** Potassium.
- D.** Chloric.
- E.** Calcium.

25. *The ionic channels of an excitable cell were blocked. It did not change the level of the resting potential substantially, but the cell lost the capacity to the generation*

of action potential. What channels were blocked?

- A.** Sodium.
- B.** Potassium.
- C.** Sodium and potassium.
- D.** Chloric.
- E.** Calcium.

26. *It is necessary to get the increase of the membranous resting potential (hyperpolarization) in an experiment on an isolated excitable cell. What ionic channels will be activated for this purpose?*

- A.** Potassium and sodium.
- B.** Sodium.
- C.** Potassium.
- D.** Calcium.
- E.** Sodium and calcium.

27. *In the experiment under the influence of chemical substances in the muscles the reaction of Ca^{2+} -pump is weakened. Which phenomena will be observed?*

- A.** Prolonged relaxation.
- B.** Prolonged duration of the AP.
- C.** Decreased AP.
- D.** Activation of the sodium-potassium pump.
- E.** Decreased speed of the AP distribution.

28. *During the heart transplantation the viability of myocardial cells is determined. The determination of which parameter of the myocardium is the most important?*

- A.** Heart temperature.
- B.** Concentration of the oxygen in the heart vessels.
- C.** Concentration of calcium-ions in myofibrils.
- D.** Rest potential of cardiomyocytes.
- E.** Concentration of Ca-ions in heart vessels.

29. *During the registration of the action potential of cardiomyocytes, the duration of the plateau phase is prolonged. It is provided by:*

- A.** Activation of the fast calcium canals.
- B.** Activation of the sodium canals.
- C.** Activation of the slow calcium canals.
- D.** Inactivation of the potassium canals.
- E.** Inactivation of the slow calcium canals.

30. *Water follows the os-*

motric gradient to the area where is more:

- A. Aminoacids and proteins.
- B. Natrium, potassium, hydrogen, glucose.
- C. Active ions of hydrogen.
- D. Bilirubin.
- E. Urea.

31. *During an experiment the myotatic reflex has been studied in frog. After extension in a skeletal muscle its reflectory contraction was absent. The reason for it might be a dysfunction on the following receptors:*

- A. Articular.
- B. Muscle spindles.
- C. Golgi tendon organs.
- D. Tactile.
- E. Nociceptors.

2. REGULATION OF ORGANISM FUNCTIONS

32. *A patient after hypertension stroke has no voluntary movements in his right arm and leg, muscle tone in these extremities is increased. What type of dysfunction of nervous system is it?*

- A. Peripheral paralysis.
- B. Reflex paresis.
- C. Central paralysis.
- D. Central paresis.
- E. Peripheral paresis.

33. *During an experiment the dorsal roots of the spinal cord of an animal have been*

cut. What changes will be observed in the innervations zone?

- A. Loss motor functions.
- B. Increase in muscle tone.
- C. Loss of sensitivity and motor functions.
- D. Sensitivity loss.
- E. Decrease in muscle tone.

34. *A patient after trauma has developed paralysis, algesthia impairment on the right; there are no paralyses on the left but temperature and pain sensitivity are also*

impaired. What is the cause of this?

- A.** Brainstem injury.
- B.** Midbrain injury.
- C.** Cerebellum injury.
- D.** Motor zone brain cortex injury.
- E.** Unilateral right-side spinal cord injury.

35. *When a patient with traumatic impairment of the brain was examined, it was discovered, that he had stopped to distinguish displacement of a object on a skin. What part of the brain was damaged?*

- A.** Posterior central gurus.
- B.** Occipital zone of the cortex.
- C.** Parietal zone of the cortex.
- D.** Frontal central gurus.
- E.** Frontal zone.

36. *A patient becomes quickly tired during his work. In vertical position with closed eyes he is dizzying and loosing equilibrium. Skeletal muscle tone is reduced. Which of the below mentioned brain structures is damaged?*

- A.** Hypothalamus.

- B.** Precentral gyrus of cerebral hemispheres cortex.
- C.** Thalamus.
- D.** Cerebellum.
- E.** Basal ganglia.

37. *Glutamate decarboxylation results in formation of inhibitory transmitter in CNS. Name it:*

- i.** Asparagine.
- ii.** Glutathione.
- iii.** Serotonin.
- iv.** Histamine.
- v.** GABA.

38. *A 50-year-old patient was injured on the occipital region of the head. The closed skull's trauma was diagnosed. She was taken to the hospital. The medical examination deregulation of walking and balance, trembling of arms. What part of brain was injured?*

- A.** The inter-brain.
- B.** The spinal cord.
- C.** The medulla oblongata.
- D.** The mind-brain.
- E.** The cerebellum.

39. *In the experiment the part of animal's brain was*

destroyed. After this the animal rejected food and died after some time from exhaustion. Which part of brain was destroyed?

- A.** Lateral hypothalamus.
- B.** Ventromedial hypothalamus.
- C.** Specific nucleus of hypothalamus.
- D.** Reticular formation of the brain.
- E.** Non-specific nucleus of hypothalamus.

40. *A 32-year-old patient consulted a doctor about the absence of lactation after parturition. Such disorder might be explained by the deficit of the following hormone:*

- A.** Vasopressin.
- B.** Thyrocalcitonin.
- C.** Glucagon.
- D.** Somatotropin.
- E.** Prolactin.

41. *Central receptors for glucose localize in*

- A.** Posterior hypothalamus.
- B.** Pons.
- C.** Cerebellum.
- D.** Cerebral hemispheres.
- E.** Anterior hypothalamus.

42. *A patient complaining of weight loss (10 kg during 2 months), palpitation and exophthalmoses came to the endocrinologist. For the hyperfunction of what endocrine gland (glands) are there complaints the most typical?*

- A.** Ovaria.
- B.** Parathyroid glands.
- C.** Adrenal glands.
- D.** Thyroid.
- E.** Pancreas.

43. *As a result of damage to certain structures of brainstem an animal lost orientation reflexes. What structures were damaged?*

- A.** Quadritubercular bodies.
- B.** Red nuclei.
- C.** Medial nuclei of reticular formation.
- D.** Vestibular nuclei.
- E.** Black substance.

44. *As a result of spinal-cord trauma a 33-year-old man has a disturbed pain and temperature sensitivity that is caused by damage of the following tract:*

- A.** Lateral spinocortical.
- B.** Anterior spinocerebellar.
- C.** Posterior spinocerebellar.

D. Medial spinocortical.

E. Spinothalamic.

45. Careless student occasionally met his dean. The concentration of what hormone will most likely increase in the blood of the student?

A. Somatotropin.

B. Thyrotropin-releasing hormone.

C. Cortisol.

D. Corticotropin.

E. Adrenalin.

46. *Decreased concentration of the glucose leads to the increased secretion of:*

A. Adrenalin.

B. Acetylcholine.

C. Histamine.

D. Serotonin.

E. Dopamine.

47. *Examination of a patient revealed hyperkalemia and hyponatremia. Low secretion of which hormone may cause such change?*

A. Vasopressin.

B. Aldosterone.

C. Parathormone.

D. Cortisol.

E. Natriuretic.

48. *Parents of a 10-year-old boy consulted a doctor about extension of hair-covering, growth of beard and moustache, low voice. Intensified secretion of which hormone must be assumed?*

A. Somatotropin.

B. Testosterone.

C. Oestrogen.

D. Cortisol.

E. Progesterone.

49. *There is only one hormone among the neuro-hormones which refers to the derivatives of amino acids according to classification. Point it out:*

A. Melatonin.

B. Vasopressin.

C. Oxytocin.

D. Thyroliberin.

E. Somatotropin

50. *When a patient with traumatic impairment of the brain was examined, it was discovered that he had stopped to distinguish displacement of an object on the skin. What part of the brain was damaged?*

A. Parietal zone of the cor-

- tex.
- B.** Posterior central gurus.
 - C.** Occipital zone of the cortex.
 - D.** Frontal central gurus.
 - E.** Frontal zone.
- 51.** *A frog reacts by generalized convulsions in reply to all irritations after the introduction of the solution of a chemical agent. What agent was introduced?*
- A.** Strychnine.
 - B.** Adrenaline.
 - C.** Acetylcholine.
 - D.** Serotonin
 - E.** Dopamine
- 52.** *A boy of 12-years-old is 180 cm tall. The reason for it is the disorder of hormone secretion. What kind of hormone is it?*
- A.** Somatotropin.
 - B.** Thyroxin.
 - C.** Thyretropin.
 - D.** Gonadotropin.
 - E.** Insulin.
- 53.** *A hemorrhage into the brainstem of a patient of 70 is diagnosed. The examination found out the increased of the tone of flexor muscles and the*

decline of the tone of extensor muscles. The irritations of what structures of brain can explain the changes in the tone of muscles?

- A.** Substantia nigra.
 - B.** Vestibular nuclei.
 - C.** Quadrigeminal plate.
 - D.** Red nuclei.
 - E.** Reticular formation.
- 54.** *A woman of 25-years-old felt nausea, vomiting, and the increase of sweat secretion while being on a merry-go-round. The activation of what receptors stimulated reflex development of these symptoms?*
- A.** Corti's organs.
 - B.** Proprioceptors of skeletal muscles.
 - C.** Vestibular receptors of semicircular ducts.
 - D.** Visual.
 - E.** Otoconia vestibular.
- 55.** *The height of a grown-up person is 120 cm. Proportions of the body-build and mental capacity are normal. There characteristics are result of a lack of some hormone secretion in childhood. What kind of hormone is it?*

- A. Thyroxin.
- B. Gonadotropin.
- C. Corticotropin.
- D. Thyreotropin.
- E. Somatotropin.

56. *It is ascertained in an experiment during excitation of the motoneurons of flexor muscles the motoneurons of extensor muscles are inhibited. What kind of inhibition underlies this phenomenon?*

- A. Reciprocal.
- B. Inhibition after excitation.
- C. Pessimal.
- D. Feedback (Renshaw).
- E. Lateral.

57. *For better examination of the fundus of eye a doctor began to drip the solution of atropine on the conjunctiva of the patient's eye. It resulted in pupil expansion. The blockade of what membranous cytoceptors stipulated such effect?*

- A. H₂-receptors.
- B. N-holinoreceptors.
- C. α-adrenoreceptors.
- D. β-adrenoreceptors.
- E. M-holinoreceptors.

58. *During the pathoanatomic research of the spinal cord of a 70-year-old man the destruction and diminishing of the quantity of anterior horns nuclei cells in cervical and thoracic spines were found. What functions were damaged during the man's life?*

- A. Moving functions of the lower extremities.
- B. Moving functions of the upper extremities.
- C. Sensitiveness and moving functions of the upper extremities.
- D. Sensitiveness of the lower extremities.
- E. Sensitiveness of the upper extremities.

59. *As a result of a trauma a man's otolithic apparatus of the internal ear is damaged. To what irritants will not the patient is able to react?*

- A. Sound stimuli.
- B. Motion with angular acceleration.
- C. Skin irritants.
- D. Photos stimuli.
- E. Motion with linear acceleration.

60. *A careless student met the dean by chance. The concentration of what hormone will increase in the student's blood first of all?*

- A.** Cortisol.
- B.** Thyreoliberin.
- C.** Corticotropin.
- D.** Adrenaline.
- E.** Somatotropin.

61. *The function of the thyroid gland of a child has been reduced since birth. What is the main consequence of this state?*

- A.** Giantism.
- B.** Nanism.
- C.** Cretinism.
- D.** Hypopituitarism.
- E.** Hyperpigmentation of skin.

62. *The working capacity of a man reduced as a result of physical activity. The changes in what structures are the reason for the fatigue first of all?*

- A.** Muscles.
- B.** Nerve centers.
- C.** Afferent nerves.
- D.** Efferent nerves.
- E.** Nervous-muscle synap-

ses.

63. *The consequence of what process is the persistent dilation of pupil under the conditions of intense illumination?*

- A.** Paralysis of cilia muscle.
- B.** Normal state of regulatory mechanism.
- C.** Over activity of the parasympathetic part of the nervous system.
- D.** Paralysis of the muscle that expands the pupil.
- E.** Over activity of the sympathetic part of the nervous system.

64. *Height of a grown-up person is 100 cm. Proportions of the body-build characteristics are the result of a lack of some hormone secretion in childhood. What kind of hormone is it?*

- A.** Thyreotropin.
- B.** Gonadotropin.
- C.** Corticotropin.
- D.** Somatotropin.
- E.** Prolactin.

65. *After a cranial trauma a patient's respiration be-*

came infrequent and deep. What structure of cerebrum is damaged?

- A.** Medulla oblongata.
- B.** Hypothalamus.
- C.** Metencephalon.
- D.** Cortex of large hemisphere.
- E.** Cerebellum.

66. *After the introduction of microelectrodes into the structures of diencephalon, the animal's eyesight failed completely. What subcortex structure was possibly damaged?*

- A.** Suprachiasmatic nucleus of hypothalamus.
- B.** Medial geniculate body.
- C.** Associative nuclei of thalamus.
- D.** Supraoptimal nuclei of hypothalamus.
- E.** Lateral geniculate body.

67. *During an operation on cerebrum it was noted that the irritation of a certain area of the cortex of cerebrum caused tactile and temperature sensation of a patient. Which area of cerebral cortex was irritated?*

- A.** Cingulate gyrus.

- B.** Precentral gyrus.
- C.** Upper lateral gyrus.
- D.** Postcentral gyrus.
- E.** Parahippocampal gyrus.

68. *A frog reacts by generalized convulsions to the least irritation after the introduction of strychnine. The blockage of what structure of the CNS is the reason for such reaction?*

- A.** Inhibitory synapses.
- B.** Excitatory synapses.
- C.** Renshaw cells.
- D.** Adrenoreceptors.
- E.** Cholinergic receptors.

69. *Tachycardia, increase of basal metabolism and body temperature, weight loss, increase of excitability of a patient are diagnosed. The reason for it is the increase of the hormone secretion of some gland. What gland is it?*

- A.** Neurohypophysis.
- B.** Adrenal glands.
- C.** Parathyroid glands.
- D.** Gonads.
- E.** Thyroid gland.

70. *Demineralization of bones (decreasing of calcium ions content) is often a prob-*

lem of elderly people. The reason for this is the decreasing of some hormone. What hormone is it?

- A.** Thyrocalcitonin.
- B.** Thyroxin.
- C.** Insulin.
- D.** Aldosterone.
- E.** Parathormone.

71. *A woman of 64 has disorders of fine movements of fingers, evident muscular rigidity, and tremor. A neurologist diagnosed Parkinson's disease. The defect of what structure of cerebrum resulted in this disease?*

- A.** Reticular formation.
- B.** Thalamus.
- C.** Red nuclei.
- D.** Cerebellum.
- E.** Substantia nigra.

72. *A woman of 25-year-old came to a doctor a month after childbirth with complaint about the decrease of galactopoietics. What hormone deficit resulted in such state?*

- A.** Prolactin.
- B.** Somatostatin.
- C.** Corticotropin.
- D.** Insulin.

E. Glucagon.

73. *Red nuclei of a mesencephalic animal were destroying in an experiment. Which reflexes disappear in this condition?*

- A.** Static postural vestibular.
- B.** Static postural neck.
- C.** Straightening and statokinetic.
- D.** Myotatic tonic.
- E.** Myotatic phasic.

74. *The height of a 10-year-old child is 178 cm, the weight is 64 kg. It is connected with function disorders of some gland. What gland is it?*

- A.** Gonads.
- B.** Thyroid gland.
- C.** Pituitary gland.
- D.** Adrenal glands.
- E.** Parathyroid glands.

75. *After a domestic trauma a patient of 18-year-old began to complain of permanent giddiness, nystagmus of eyes, scanning speech, uncertain gait. Dysfunction of what structures of cerebrum does it testify to?*

- A.** Vestibular nuclei.
- B.** Motor cortex.

- C. Basal nuclei.
- D. Substantia nigra.
- E. Cerebellum.

76. *After a traffic accident a patient of 36-years-old got paralysis of muscles of extremities on the right, the loss of pain and temperature sensitivity on the left, partial reduction of tactile sensation on both sides. These changes are most characteristic of the defect of some part of brain. What part is it?*

- A. Motor cortex on the left.
- B. Right half of spinal cord.
- C. Left half of spinal cord.
- D. Anterior division of the anterolateral pathway of spinal cord.
- E. Dorsal columns of spinal cord.

77. *Pushing a barbell a sportsman pulls the head back of the maximal increase of the tone of the upper extremities extensor muscles. Where are the local centers of the reflexes arising here situated?*

- A. In the spinal cord.
- B. In the motor cortex.
- C. In basal nuclei.
- D. In red nuclei.

- E. In Deiters' nuclei.

78. *An experiment is conducted on a spinal frog. The time of defense flexor reflex decreased from 10 sec. to 6 sec. after increasing the area of the skin surface, which is acted on with acid solution. What mechanism underlies the diminishing of the time of defense flexor reflex?*

- A. Irradiation of excitation on divergent nervous chains.
- B. Spatial summation of excitation.
- C. Temporal summation of excitation.
- D. Principle of dominant.
- E. Recirculation of excitation.

79. *In an experiment on a cat one irritates a cerebrum motor structure; as a result there is an increase of the tone of extensor muscles on the side of stimulation. What structures of cerebrum are irritated?*

- A. Nucleus reticularis medialis.
- B. Nucleus caudatus.
- C. Nucleus ruber.

- D. Nucleus vestibularis lateralis.
- E. Nucleus intermedius lateralis.

80. *A man with one CNS part affected has asthenia, muscular dystonia, imbalance. What CNS part is affected?*

- A. Red nuclei.
- B. Substantia nigra.
- C. Reticular formation.
- D. Cerebellum.
- E. Vestibular nuclei.

81. *A supertension of extensor muscles of extremities and back (decerebrate rigidity) is observed in an experiment on a cat. What level is the section done at?*

- A. Spinal cord.
- B. Between spinal cord and medulla oblongata.
- C. Below vestibular nuclei.
- D. Above red nuclei.
- E. Below red nuclei.

82. *A 20-year-old child had cramps as a result of the decline of the concentration of calcium ions in blood plasma. It was caused by the decline of the function of*

some organ of internal secretion. What organ is it?

- A. Thymus.
- B. Hypophysis.
- C. Adrenal cortex.
- D. Pineal body.
- E. Parathyroid glands.

83. *The secretion of some hormone of hypophysis is inhibited after taking oral contraceptives containing sex hormones. What hormone secretion is inhibited?*

- A. Somatotropin.
- B. Vasopressin.
- C. Thyreotropin.
- D. Gonadotropin.
- E. Oxytocin.

84. *A patient has an increased basal metabolism, high body temperature, tachycardia in the state of rest. What gland's hyperfunctioning can be the reason for this state?*

- A. Pancreas.
- B. Thyroid.
- C. Neurohypophysis.
- D. Adrenal cortex.
- E. Gonads.

85. *A woman has a limited blood flow in kidneys, high*

arteriotomy. What hormone's hypersecretion was the reason for high arteriotomy?

- A.** Vasopressin.
- B.** Adrenaline.
- C.** Noradrenaline.
- D.** Erythropoietin.
- E.** Rennin.

86. *The section of a cat's brain leads to the decerebrate rigidity – the jump of tone of extensor muscles. What level of brain was the secretion made at?*

- A.** Between medulla oblongata and spinal cord.
- B.** Between diencephalon and mesencephalon.
- C.** Between mesencephalon and metencephalon.
- D.** Between diencephalon and telencephalon.
- E.** Between medulla oblongata and pons.

87. *After a long training a sportsman got tired, working capacity decreased. In what link of the reflex arch did fatigue occur first of all?*

- A.** In an efferent.
- B.** In an afferent.
- C.** In receptors.
- D.** In nerve centers.

E. In muscles.

88. *A child has signs of physical development delay and mental retardation (cretinism). With the deficit of what hormone is it connected?*

- A.** Thyroxin.
- B.** Somatotropin.
- C.** Calcitonin.
- D.** Insulin.
- E.** Testosterone.

89. *While examining a patient, attention was paid to cervical intumescences, exophthalmus, high body temperature, pulse 110 per minute. The content of what hormone in blood is it necessary to examine?*

- A.** Insulin.
- B.** Sex hormone.
- C.** Catecholamines.
- D.** Thyroxin.
- E.** Cortisol.

90. *During the last 6 month a woman has signs of masculinization: increased hair growth on the face, while line of stomach, legs. She complains of irregular menstrual cycle. The reason of*

such state can be the increased secretion of some hormone. What hormone is it?

- A.** Mineralocorticoids.
- B.** Estrogens.
- C.** Somatotropin.
- D.** Thyroxin.
- E.** Androgens.

91. *An infant has got a laryngospasm. In anamnesis there is a susceptibility to cramps development. One must think about the dysfunction of some endocrine glands. What are there?*

- A.** Parathyroid glands.
- B.** Pancreas.
- C.** Thymus.
- D.** Thyroid gland.
- E.** Adrenal glands.

92. *An experimental animal has lost orientative reflexes as a result of destruction of certain brainstem structures. What structures had been destroyed?*

- A.** Medial nuclei of the reticular formation.
- B.** Vestibular nuclei.
- C.** Red nuclei.
- D.** Black substance.
- E.** Quadrigeminal plate.

93. *In vertical position a patient loses balance when closing eyes. What structures of brain are probably damaged?*

- A.** Basal ganglia.
- B.** Cerebellum.
- C.** Limbic system.
- D.** Thalamus.
- E.** Precentral gyrus of the cortex of cerebral hemisphere.

94. *A patient was diagnosed with Parkinson's syndrome. It is connected with the disorder of some transmitter systems of cerebrum. What transmitter system is there?*

- A.** Histaminergic.
- B.** Dopaminergic.
- C.** Serotonergic.
- D.** Cholinergic.
- E.** Opioid.

95. *A person who was rolling on a merry-go-round got an increase of heart beats, perspiration, and nausea. What the irritation of what receptors is it connected first of all?*

- A.** Visual.
- B.** Proprioceptors.

- C. Tactile.
- D. Auditory.
- E. Vestibular.

96. *A patient has got a sharp lowering of calcium level in blood. It will cause the increasing secretion of some hormone. What hormone is this?*

- A. Parathormone.
- B. Thyrocalcitonin.
- C. Aldosterone.
- D. Vasopressin.
- E. Somatotropin.

97. *A patient has got an incoordination of movements, disorder of their amplitude and orientation; movements are sweeping, disproportional; the gait of cock, tottering. What part of brain is damaged?*

- A. Spinal cord.
- B. Medulla oblongata.
- C. Cerebellum.
- D. Hypothalamus.
- E. Thalamus.

98. *In response to a muscle strain its reflex contraction is observed. From the irritation of what receptors does this reflex reaction*

begin?

- A. Muscular spindles.
- B. Tendon Golgi's receptors.
- C. Articular.
- D. Tactile.
- E. Nociceptor.

99. *In response to a strong rapid reduction of a muscle its reflex weakening is observed. With the irritation of what receptors does this reflex reaction begin?*

- A. Muscular spindles.
- B. Tendon Golgi's receptors.
- C. Articular.
- D. Tactile.
- E. Nociceptor.

100. *The vestibular apparatus of a frog was ruined on the right side. What changes of muscle tone will it cause?*

- A. Decreasing the tone of extensor on the right.
- B. Increasing the tone of extensors on the right.
- C. Decreasing the tone of flexors on the left.
- D. Decreasing the tone of flexors on the left.
- E. Decreasing the tone of extensors on the left

101. *Red nuclei of an animal were ruined. Which of the following reflexes will it lose as a result of this?*

- A. Myotatic.
- B. Vestibular static.
- C. Tonic cervical.
- D. Statokinetic.
- E. Tendon.

102. *A research was carried out on a decerebrated animal. What structures of the animal should be ruined for rigidity to disappear?*

- A. Substantia nigra.
- B. Red nuclei.
- C. Vestibular lateral nuclei.
- D. Medial reticular nuclei.
- E. Lateral reticular nuclei.

103. *As a result of the destruction of certain brainstem structures an animal lost orientative reflex in response to strong phoric stimuli. What structures were ruined?*

- A. Substantia nigra.
- B. Posterior tubercles of quadrigeminal plate.
- C. Red nuclei.
- D. Vestibular nuclei.
- E. Anterior tubercles of quadrigeminal plate.

104. *As a result of the destruction of certain brainstem structures an animal lost orientative reflex in response to strong sound stimuli. What structures were ruined?*

- A. Red nuclei.
- B. Anterior tubercles of quadrigeminal plate.
- C. Posterior tubercles of quadrigeminal plate.
- D. Vestibular nuclei.
- E. Substantia nigra.

105. *As a result of the destruction of certain brainstem structures an animal lost orientative reflex. What structures were ruined?*

- A. Medial nuclei of reticular formation.
- B. Quadrigeminal plate.
- C. Red nuclei.
- D. Vestibular nuclei.
- E. Substantia nigra.

106. *A patient gets tired quickly. While standing with closed eyes he is reeling, losing balance. Skeletal muscle tone is reduced. Which of the following structures of the person's brain is probably affected?*

- A. Hypothalamus.
- B. Thalamus.
- C. Cerebellum.
- D. Precentral gyrus of cerebral hemisphere cortex.
- E. Basal ganglia.

107. *A patient has hypercalcemia. What hormone deficient can be the reason for it?*

- A. Parathormone.
- B. Thyrocalcitonin.
- C. Aldosterone.
- D. Corticotropin.
- E. Corticoliberin.

108. *The height of a 10-year-old child is 80 cm, he has right proportions of body, normal mental development. What hormone deficit in the organism can cause such changes?*

- A. Thyroxin.
- B. Somatostatin.
- C. Somatotropin.
- D. Triiodothyronine.
- E. Cortisol.

109. *A 35-year-old man came to a dentist with complaints of reducing dental tissue density, heightened fragility of teeth at ingesting hard food. The lack of what miner-*

al element most probably takes place in this case?

- A. Calcium.
- B. Potassium.
- C. Sodium.
- D. Magnesium.
- E. Iron.

110. *An animal has an increased tonus of extensor muscles. This the result of intensified information transmission to the motoneurons of the spinal cord through the following descending pathways:*

- A. Lateral corticospinal.
- B. Rubrospinal.
- C. Medial corticospinal.
- D. Vestibulospinal.
- E. Reticulospinal.

111. *During the examination of the mouth cavity of a 59-year-old patient it was necessary to examine the movements of the lower jaw. What method is used in this case?*

- A. Myography.
- B. Electromyography.
- C. Masticaciography.
- D. Electroodontodiagnostics.
- E. Gnathodynamometry.

112. A patient has defects in the act of chewing as a result of the affection by a pathological process Renshaw in the structures that form the afferent guide of the arch of the proper reflex. What nerve is affected?

- A. N. hypoglossum.
- B. N. vagus.
- C. N. glossopharyngeus.
- D. N. trigeminus.
- E. N. glossopharyngeus and n. vagus.

113. A patient has defects in the act of swallowing as a result of the affection by a pathological process in the structures that form the afferent guide of the arch of the proper reflex. What nerve is affected?

- A. N. trigeminus and n. vagus.
- B. N. vagus.
- C. N. hypoglossum.
- D. N. glossopharyngeus.
- E. N. trigeminus.

114. A patient has got the enlargement of separate parts of body (lower jaw, nose, ears, tongue, feet, and hands), body proportions preserved.

It can be connected with the increase of the secretion of a certain hormone. What hormone is it?

- A. Cortisol.
- B. Somatostatin.
- C. Tetraiodothyronine.
- D. Triiodothyronine.
- E. Somatotropin.

115. After the destruction of CNS structures an animal lost orientative reflex. What structures were destroyed?

- A. Quadrigeminal plate.
- B. Red niclei.
- C. Lateral vestibular nuclei.
- D. Substantia nigra.
- E. Medial reticular nuclei.

116. As a result of a trauma a patient has got defective swallowing. The affection of what of the following CNS structures is the most probable reason for this disorder?

- A. Hypothalamus.
- B. Spinal cord at the level Th_{II-IV}.
- C. Spinal cord at the level C_{V-VI}.
- D. Mesencephalon.
- E. Medulla oblongata.

3. BLOOD SYSTEM

117. A woman with III (B), Rh⁻ blood group born a child with II (A) blood group. The child is diagnosed with hemolytic disease of newborn as a result of rhesus incompatibility. What blood group is the child's father likely to have?

- A. II (A), Rh⁺
- B. I (O), Rh⁺
- C. III (B), Rh⁺
- D. I (O), Rh⁻
- E. II (A), Rh⁻

118. A patient with liver disease revealed the decreasing of prothrombin level in the blood. It can first of all, result in the impairment of:

- A. The second phase of the coagulator hemostasis.
- B. Anticoagulative properties of the blood.
- C. Vascular-thrombocytic hemostatic.
- D. Fibrinolysis.
- E. The first phase of the coagulatory hemostasis.

119. A patient with tissue trauma was taken a blood sample for the determination of blood clothing parameters.

Specify the right sequence of extrinsic pathway activation.

- A. III – VIII: TF – Xa
- B. III – VIIa – Xa
- C. III – IV – Xa
- D. IV – VIII: TF – Xa
- E. IV – VIIa – Xa

120. Blood sampling for bulk analysis is recommended to be performed on an empty stomach and in the morning. What changes in blood composition can occur if to perform blood sampling after food intake?

- A. Reduced contents of erythrocytes.
- B. Increased contents of erythrocytes.
- C. Increased contents of leukocytes.
- D. Increased plasma proteins.
- E. Reduced contents of thrombocytes.

121. If strong oxidizers get into the bloodstream, a methemoglobin is formed. It is compound, where iron (II) becomes iron (III). What has to be done to save the patient?

- A. He has to be given pure oxygen.
- B. He has to be calmed down and put to bed.
- C. Respiratory centers have to be stimulated.
- D. Interchangeable hemo-transfusion has to be done.
- E. Patient has to be exposed to the fresh air.

122. *Long-term starvation cure of a patient resulted in diminished ratio of albumines and globulins in plasma. What of the following will be result of this change?*

- A. Increase of ESR.
- B. Decrease of hematocrit.
- C. Increase of hematocrit.
- D. Hypercoagulation.
- E. Decrease of ESR.

123. *On blood grouping on the system ABO, standard serum of the I and II groups caused erythrocytes agglutination of the examined blood and serum group of the III didn't. What agglutinogens are in these erythrocytes?*

- A. A.
- B. D and C.
- C. B.

- D. C.
- E. A and B.

124. *Osmotic pressure of a man's blood plasma is 350 mosmol/L (standard pressure is 300 mosmol/L). This will cause hypersecretion of the following hormone:*

- A. Vasopressin.
- B. Adrenocorticotropin.
- C. Cortisol.
- D. Natriuretic.
- E. Aldosterone.

125. *It was established that agglutination of the recipient's blood erythrocytes had been caused by the standard sera from the I and II groups. Serum from the III group as well as anti-Rh serum hadn't provoked any agglutination. Which blood group and rhesus is allowed to be transfused this recipient?*

- A. A, β (II) Rh⁻.
- B. 0, α , β (I) Rh⁺.
- C. AB (IV) Rh⁻.
- D. B α (III) Rh⁻.
- E. AB (IV) Rh⁺.

126. *The concentration of albumins in human blood*

sample is lower than normal. This leads to edema of tissues. What blood function is damaged?

- A.** Maintaining the body temperature.
- B.** Maintaining the oncotic blood pressure.
- C.** Maintaining the blood sedimentation system.
- D.** Maintaining the pH level.
- E.** All answers are correct.

127. *The concentration of albumins in human blood sample is lower than normal. This leads to edema of tissues. What function of the blood suffered?*

- A.** Maintaining the oncotic blood pressure.
- B.** Maintaining the Ph level.
- C.** Maintaining the body temperature.
- D.** Maintaining the blood sedimentation system.
- E.** All answers are correct.

128. *A woman had an acute blood loss after a car accident. What is the main physiological mechanism of stabilizing the internal parameters of the organism after a blood loss?*

- A.** Releasing blood from the blood depot.
- B.** Activation of proper skeletal muscles.
- C.** Inhibition of blood vessels' volume-receptors.
- D.** Increase of bone marrow activity.
- E.** Increase of water reabsorption.

129. *A patient who has thrombosis of blood vessels has a lowered activity of anti-coagulant blood system. What factor concentration can be lowered?*

- A.** X-factor.
- B.** Heparin.
- C.** Fibrinogen.
- D.** Prothrombin.
- E.** Prothrombinase.

130. *Hemophilia is:*

- A.** Absence of blood clotting
- B.** Acceleration of blood clotting
- C.** Erythrocyte destruction
- D.** Deceleration of blood clotting
- E.** Increase of bleeding time

131. *One has a decreased total erythrocyte number: $1.5 \cdot 10^{12}$ in 5 L. It is accom-*

panied with dyspnoea, loss of consciousness, noise in the ears. Why?

- A. Hypoxia.
- B. Change in transport function of blood.
- C. Decrease of hemoglobin quantity.
- D. Poor oxygen capacity of blood.
- E. All answers are correct.

132. *If strong oxidizers get into the bloodstream, a methemoglobin is formed. It is a compound, where iron (II) becomes iron (III). What has to be done to save the patient?*

- A. Interchangeable hemo-transfusion has to be done.
- B. Patient has to be exposed to the fresh air.
- C. He has to be calmed down and put to bed.
- D. He has to be given pure oxygen.
- E. Respiratory centers have to be stimulated.

133. *After a long period of taking antibiotics a patient got allergy – skin redness, vasodilatation and increased*

inflow of blood. What leucocytes take part in allergy reactions?

- A. Lymphocytes.
- B. Basophils.
- C. Eosinophils.
- D. Monocytes.
- E. Neutrophils.

134. *Patient's smear shows that the number of young neutrophils is 20%, quantity of segment-nucleated neutrophils is 50%. How this leucocyte formula change is called?*

- A. Leukemoid reaction.
- B. Agranulocytosis.
- C. Regenerative shift.
- D. Degenerative shift.
- E. Leukemic dip.

135. *A patient with blood loss was admitted to a reanimation department. In order to restore the VCB he needs the plasma-substituting solution. Which solution has to be used?*

- A. 0,9% NaCl.
- B. 0,65% NaCl.
- C. 5,0% glucose.
- D. 40% glucose.
- E. 1,2% KCl.

136. *A woman, 29 years old, pregnant – 11-23 weeks, pregnancy is normal. Mother is Rh⁺, fetus is Rh⁻. How normal pregnancy can be explained?*

- A.** Fetus is not able to produce antibodies.
- B.** Low concentration of anti-rhesus agglutinins will not cause erythrocytes sticking together.
- C.** The placental barrier is not permeable for fetal erythrocytes.
- D.** The placental barrier is not permeable for mother's erythrocytes.
- E.** The placental barrier is not permeable for anti-rhesus agglutinins.

137. *People who live in highlands have got the increased content of erythrocytes. It can be caused by the increase of the production of certain matter by kidneys. What matter is it?*

- A.** Rennin.
- B.** Erythropoietin.
- C.** Urokinase.
- D.** Prostagalndins.
- E.** Vitamin D₃.

138. *During the examination in the state of rest a healthy person has the number of erythrocytes $5.65 \times 10^{12}/L$. The reason for this can be the fact that the examined person is:*

- A.** A miner.
- B.** An inhabitant of highlands.
- C.** A student.
- D.** An expectant mother.
- E.** A responsible ministry worker.

139. *A man suffering from a kidneys disease has anemia. The most probable reason for anemia can be a disorder in the secretion of a certain matter. What matter is it?*

- A.** Antidiuretic hormone.
- B.** Rennin.
- C.** Aldosterone.
- D.** Atrial natriuretic factor.
- E.** Erythropoietin.

140. *As a result of poisoning with carbon monoxide a person has got a headache, short breath, vertigo. The decline of the content of what compound in blood resulted in this?*

- A.** Oxyhemoglobin.

- B. Carboxyhemoglobin.
- C. Carbhemoglobin.
- D. Methemoglobin.
- E. Deoxyhemoglobin.

141. *What compound of hemoglobin will have the inhabitants of the house, where the flue was blocked untimely?*

- A. Deoxyhemoglobin.
- B. Carbhemoglobin.
- C. Carboxyhemoglobin.
- D. Methemoglobin.
- E. Oxyhemoglobin.

142. *An expectant mother had her blood type defined. The reaction of agglutination of erythrocytes took place with standard serums of blood groups $O_{\alpha\beta}$ (I), B_{α} (III), and did not appear with the serum of blood group A_{β} (II). What group does the blood belong to?*

- A. B_{α} (III).
- B. A_{β} (II).
- C. $O_{\alpha\beta}$ (I).
- D. AB_0 (IV).
- E. Defining is impossible.

143. *It was found that the common time of blood coagu-*

lation of a 40-year-old man with the weigh of 80 kg was 2 minutes during the stress. The modified index of the time of blood coagulation is the result of a certain hormone influence on blood coagulation. What hormone is it?

- A. Aldosterone.
- B. Cortisol.
- C. Catecholamines.
- D. Somatotropin.
- E. Vasopressin.

144. *In an experiment in two weeks after the narrowing of the kidney arteria of a rabbit the increase of erythrocytes number and hemoglobin is found in its blood as a result of the stimulation of erythropoiesis by erythropoietins. What increases the formation of erythropoietins?*

- A. Hypercapnia.
- B. Hypoxemia.
- C. Hyperosmia.
- D. Hyposmia.
- E. Hypovolemia.

145. *When defining a blood type according to the ABO system the agglutination of erythrocytes of the explored blood was stimulated by*

standard serums of the I and II blood groups and wasn't stimulated by the standard serum of the III blood group. What agglutinogens are in these erythrocytes?

- A.** A and B.
- B.** A.
- C.** B.
- D.** C.
- E.** D and C.

146. *During a surgery there was a necessity of massive blood transfusion. A victim's blood type is B (III)Rh⁻. What must be the blood type of a donor?*

- A.** AB (IV) Rh⁻.
- B.** 0 (I) Rh⁻.
- C.** A (II) Rh⁺.
- D.** B (III) Rh⁺.
- E.** B (III) Rh⁻.

147. *During a laboratory blood analysis of a 33-year-old patient the reaction of agglutination of erythrocytes is detected with standard serum of the I and the II blood groups. The reactions of agglutinations did not take place with the serum of the III blood group and with antirhesus serum. What type of blood*

can be transfused if it is necessary to take into consideration the CDE system?

- A.** B (III) Rh⁻.
- B.** 0 (I) Rh⁺.
- C.** A (II) Rh⁺.
- D.** AB (IV) Rh⁺.
- E.** AB (IV) Rh⁻.

148. *In 3 years after the surgery of stomach removal a 45-year-old man has the number of erythrocytes in blood $2.0 \cdot 10^{12}/L$, Hb – 85 g/L, color index – 1.27. The violation of the absorption of what vitamin caused the changes of erythropoiesis?*

- A.** C.
- B.** B₁₂.
- C.** A.
- D.** P.
- E.** B₆.

149. *After applying a tourniquet an examined person has punctuated hemorrhages of the forearm. The dysfunction of what blood corpuscles is it connected with?*

- A.** Basophils.
- B.** Erythrocytes.
- C.** Thrombocytes.
- D.** Neutrophils.
- E.** Macrophages.

150. *When defining a blood type according to ABO system with the help of standard serum such results was got: agglutination took place with the serums of the I and II blood groups and did not take place with the serum of the III blood group. What is the group of the examined blood?*

- A.** AB (IV).
- B.** A (II).
- C.** B (III).
- D.** 0 (I).
- E.** It is impossible to define.

151. *When defining a blood type according to ABO system with the help of standard serums such results were got: agglutination took place with the serums of the I, II, and III blood groups. What is the group of the examined blood?*

- A.** AB (IV).
- B.** A (II).
- C.** B (III).
- D.** 0 (I).
- E.** It is impossible to define.

152. *A women's blood test showed the increase of SRE. What is the reason for it?*

- A.** Physical activity.

- B.** Pregnancy.
- C.** Loss of blood.
- D.** Stress.
- E.** Food intake.

153. *The result of a blood test showed an insignificant increase of the number of leukocytes (leukocytosis) without any change of other indexes. What actions of a patient can be the reason for leukocytosis?*

- A.** That he slept badly.
- B.** Did not have breakfast.
- C.** Had breakfast.
- D.** Smoked.
- E.** Drank 200 ml of water.

154. *An emergency doctor stated the signs of poisoning by carbon monoxide. What compound became the reason for it?*

- A.** Carboxyhemoglobin.
- B.** Carbhemoglobin.
- C.** Methemoglobin.
- D.** Deoxyhemoglobin.
- E.** Oxyhemoglobin.

155. *During the last month of pregnancy the content of fibrinogen in blood plasma was twice as much as the norm. What values of SRE are*

expected?

- A.** 3 – 12 mm/h.
- B.** 0 – 5 mm/h.
- C.** 10 – 15 mm/h.
- D.** 5 – 10 mm/h.
- E.** 40 – 50 mm/h.

156. *As a result of a long stay in the mountains at 3,000 m above the sea level a person had an increase of the oxygen capacity of blood. The increased formation of what substances in the organism is the direct reason for it?*

- A.** Leukopoiетins.
- B.** Erythropoietins.
- C.** Carbhemoglobin.
- D.** Catecholamines.
- E.** 2,3-diphosphoglycerate.

157. *As a result of physical activity a person's speed of blood coagulation increased. The increased concentration of what hormone in blood is the reason for this phenomenon?*

- A.** Somatotropin.
- B.** Thyroxin.
- C.** Adrenaline.
- D.** Cortisol.
- E.** Plasmins.

158. *As a result of a chron-*

ic disease of the liver the protein synthesis function of the person is substantially defective. It will result in the decrease of some parameter of homeostasis. What parameter is it?

- A.** Density of blood.
- B.** Osmotic pressure.
- C.** pH.
- D.** Oncotic pressure of the blood plasma.
- E.** Hematocrit index.

159. *A patient has got sharp decrease of the content of albumins in blood plasma and oncotic pressure. What phenomenon will be the result of these changes?*

- A.** Decrease of SRE.
- B.** Decrease of diuresis.
- C.** Increase of blood volume.
- D.** Edemas.
- E.** Increase of blood density.

160. *A child has helminths. What changes in the peripheral blood will be observed?*

- A.** Monocytosis.
- B.** Leukocytosis.
- C.** Neutrophilia.
- D.** Basophilia.
- E.** Eosinophilia.

161. *After applying a tourniquet an examined person has got punctuated hemorrhages. The dysfunction of what blood cells is it connected with?*

- A.** Thrombocytes.
- B.** Eosinophils.
- C.** Monocytes.
- D.** Lymphocytes.
- E.** Neutrophils.

162. *As a result of physical activity the oxygen capacity of blood of a person increased from 180 to 200 ml. what index's increase during the physical activity is the principal reason for this phenomenon?*

- A.** Hemoglobin content in the unit of blood volume.
- B.** Diffusion capacity of lungs.
- C.** Oxygen content in alveoli.
- D.** Affinity of hemoglobin with oxygen.
- E.** Minute respiratory volume.

163. *Trying to lose weight a woman limited the amount of products in her dietary intake. Three months later she had edemata, dieresis in-*

creased. The deficit of what components in food is the reason for it?

- A.** Mineral substances.
- B.** Fats.
- C.** Carbohydrates.
- D.** Vitamins.
- E.** Proteins.

164. *After running, possible changes in a common blood analysis could be found?*

- A.** Anemia.
- B.** Leukopenia.
- C.** Leukocytosis.
- D.** Increase of SRE.
- E.** Increase of the Color Index.

165. *After a long-term starvation a patient got edemata of tissues. What is the reason for this phenomenon?*

- A.** Reduction of the oncotic pressure of blood plasma.
- B.** Increase of the osmotic pressure of blood plasma.
- C.** Reduction of the osmotic pressure of blood plasma.
- D.** Reduction of hydrostatic blood pressure.
- E.** Increase of oncotic blood pressure.

166. *At a clinic a 49-year-old man is being observed. He*

is suffering from the substantial increase of the time of blood coagulation, gastroenteric bleeding, and subcutaneous hemorrhages. Such symptoms can be explained by the lack of a certain vitamin.

What vitamin is it?

- A. E.
- B. B₁.
- C. PP.
- D. H.
- E. K.

167. *A 40-year-old man with a removed kidney has got symptoms of anemia. What is the reason for such symptoms?*

- A. Lack of iron.
- B. Intensive destruction of erythrocytes.
- C. Decline of synthesis of erythropoietins.
- D. Lack of vitamin B₁₂.
- E. Lack of folic acid.

168. *A hypertensive solution of glucose was intravenously infused to a patient. How will it enhance the water motion?*

- A. The changes of water motion will not be present.
- B. From intercellular liquid

to capillaries.

- C. From intercellular liquid to cell.
- D. From capillaries to intercellular liquid.
- E. From cells to intercellular liquid.

169. *A 25-year-old woman, pregnant for the third time, got into a clinic with a threat of miscarriage. What combination of her Rh-factor and the fetus' Rh-factor may be the reason for it?*

- A. Rh⁻ of the mother and Rh⁺ of the fetus.
- B. Rh⁻ of the mother and Rh⁻ of the fetus.
- C. Rh⁺ of the mother and Rh⁻ of the fetus.
- D. Rh⁺ of the mother and Rh⁺ of the fetus.
- E. Defining is impossible.

170. *When defining a blood type according to the ABO system the agglutination of erythrocytes of the examined blood was caused by standard serums of the I and II blood groups and wasn't caused by the serum of the III blood group. What blood type is it?*

- A. 0_{αβ} (I).

- B. A_{β} (II).
- C. AB_0 (IV).
- D. B_{α} (III).
- E. It is impossible to define.

171. *A patient with chronic glomerulonephritis has disorders in the incretory function of the kidneys. The deficit of what blood cells observed?*

- A. Thrombocytes.
- B. Leukocytes.
- C. Erythrocytes.
- D. Leukocytes and thrombocytes.
- E. Erythrocytes and leukocytes.

172. *A woman with the blood type AB (IV) Rh^- , who has a 3-year-old child with the blood type AB (IV) Rh^+ , was taken to a hospital with posttraumatic bleeding. It is necessary to transfuse blood. Which of the following blood types is it possible to transfuse?*

- A. AB (IV) Rh^- .
- B. O (I) Rh^- .
- C. A (II) Rh^+ .
- D. A (II) Rh^- .
- E. AB (IV) Rh^+ .

173. *During a long stay in the mountains, climbers have an increase of the number of erythrocytes (erythrocytosis). The influence of what biologically active substance caused these changes?*

- A. Cortisol.
- B. Rennin.
- C. Erythropoietin.
- D. Adrenaline.
- E. Testosterone.

174. *Laboratory blood analysis of a 44-year-old patient showed that the content of proteins in blood plasma is 40 g/l. How does it influence the transcapillary exchange of water?*

- A. The exchange does not change.
- B. Filtration and reabsorption are increased.
- C. Filtration and reabsorption are decreasing.
- D. Filtration is decreasing, reabsorption is increasing.
- E. Filtration is increasing, reabsorption is decreasing.

4. CIRCULATORY SYSTEM

175. A 2-year-old child convulsion as a result of lowered concentration of calcium ions in blood plasma. Function of what structure is decreased?

- A. Pineal gland.
- B. Thymus.
- C. Hypophysis.
- D. Adrenal cortex.
- E. Parathyroid glands.

176. ECG study showed that the T-waves were positive in the standard extremity leads, their amplitude and duration was normal. The right conclusion would be that the following process runs normally in the heart ventricles:

- A. . Excitement.
- B. Contraction.
- C. Relaxation.
- D. Depolarization.
- E. Repolarization.

177. An isolated cell of human heart automatically generates excitation impulses with frequency 60 times per minute. What heart structure

was this cell obtained from?

- A. Atrioventricular node.
- B. His' bundle.
- C. Ventricle.
- D. Sinoatrial node.
- E. Atrium.

178. After the trauma, the patient's right n. vagus was damaged. Which violation of the cardiac activity is possible in this case?

- A. Violation of conductivity in the right auricle.
- B. Violation of the automatism of a atrioventricular node.
- C. Block of a conductivity in the atrioventricular node.
- D. Arrhythmia.
- E. Violation of the automatism of a Kiss-Fleck node.

179. A 63-year-old man with collapse symptoms was delivered to the emergency hospital. A doctor chose nor-adrenaline in order to prevent hypotension. What is the action mechanism of this medication?

- A. Activation of serotonin receptors.

- B.** Activation of β -adrenoreceptors.
- C.** Block of M-cholinoreceptors.
- D.** Activation of α_1 -adrenoreceptors.
- E.** Activation of dopamine re-captors.

180. A 49-year-old woman consulted a doctor about heightened fatigue and dyspnea during physical activity. ECG: heart rate is 50 per min, PQ is extended, QRS is unchanged, and P-wave quantity exceeds quantity of QRS complexes. What type of arrhythmia does the patient have?

- A.** Atrioventricular block.
- B.** Sinoatrial block.
- C.** Sinus bradycardia.
- D.** Ciliary arrhythmia.
- E.** Extrasystole.

181. A patient has extra systole. ECG shows no P wave, QRS complex is deformed; there is a full compensatory pause. What extra systoles are these?

- A.** Sinus.
- B.** Atrioventricular.

- C.** –
- D.** Ventricular.
- E.** Atrial.

182. A peripheral segment of vagus nerve on a dog's neck was being stimulated in course of an experiment. The following changes of cardiac activity could be meanwhile observed:

- A.** Enhancement of atrioventricular conduction.
- B.** Increased excitability of myocardium.
- C.** Heart rate and heart force amplification.
- D.** Heart rate fall.
- E.** Heart hurry.

183. A person has steady HP not exceeding 40 bpm. What is the pacemaker of the heart rhythm in this person?

- A.** Branches of His' bundle.
- B.** Sinoatrial Node.
- C.** Atrioventricular node.
- D.** Purkinje' fibers.
- E.** His' bundle.

184. During ultrasound examination of the heart the doctor observed the leaves of the mitral valve. What happens to them during the systo-

le?

- A. They turn inside the cavity of the ventricle.
- B. They clasp with the walls of the atrium.
- C. They clasp with the walls of the vessels.
- D. They turn inside the cavity of the atrium.
- E. They close up covering the lumen of the orifice.

185. *Electrocardiogram of a 45-year-old man showed absence of P-wave in all the leads. What part of the conducting system is blocked?*

- A. Common branch of the bundle of His.
- B. Sinuatrial node.
- C. Branches of the bundle of His.
- D. Atrioventricular node.
- E. Purkinje's fibres.

186. *Examination of a man established that cardiac output equaled 3500 ml, systolic output – 50 ml. what is the man's heart rate per minute?*

- A. 80
- B. 50
- C. 90
- D. 70
- E. 60

187. *Examination of an isolated cardiomyocyte revealed that it didn't generate excitation impulses automatically. This cardiomyocyte was obtained from:*

- A. Atrioventricular node.
- B. Purkinje's fibers.
- C. His' bundle.
- D. Ventricles.
- E. Sinoatrial node.

188. *On examination of the person it was revealed that minute volume of heart is 3500 mL, systolic volume is 50 mL. What is the frequency of cardiac contraction?*

- A. 60 bpm.
- B. 70 bpm.
- C. 50 bpm.
- D. 90 bpm.
- E. 80 bpm.

189. *Person has stable HR, not more than 40 bpm. What is the pacemaker of the heart rhythm in this person?*

- A. His' bundle.
- B. Purkinje' fibers.
- C. Atrioventricular node.
- D. Branches of His' bundle.
- E. Sinoatrial node.

190. *Short-term physical activity resulted in reflex amplification of heart rate and raise of systemic arterial pressure. What receptors activation was the main cause of pressor reflex realization?*

- A. Vascular volume receptors.
- B. Vascular baroreceptors.
- C. Hypothalamus thermoreceptors.
- D. Vascular chemoreceptors.
- E. Proprioceptors of active muscles.

191. *The electrocardiograms analysis demonstrated that the duration of man's heart cycle is 1 sec. What is the heart rate per minute?*

- A. 50
- B. 100
- C. 60
- D. 70
- E. 80

192. *The speed of excitement conduction through the atrioventricular node in a healthy adult is 0,02-0,05mps. What does atrioventricular delay supply?*

- A. Simultaneous contraction of both ventricles.

- B. Sufficient force of ventricles contraction.
- C. Sufficient force of atria contraction.
- D. Sequence of atria and ventricles contraction.
- E. Simultaneous contraction of both atria.

193. *The heart rate and the systemic arterial blood pressure of a man have increased due to voluntary respiratory delay for 40 sec. Realization of what regulation mechanism caused these changes?*

- A. Unconditioned sympathetic reflexes.
- B. Conditioned sympathetic reflexes.
- C. –
- D. Conditioned parasympathetic reflexes.
- E. Unconditioned parasympathetic reflexes.

194. *During an experiment vagus branches that innervate heart are being stimulated. This has stopped conduction of excitement from the atria to the ventricles. The reason for it is electro physical changes in the following structures:*

- A. Atria.

- B. Atrioventricular node.
- C. Ventricles.
- D. Sinoatrial node.
- E. His' bundle.

195. *In a patient with transplanted heart stroke volume, heart rate and minute volume increased on physical exert. What is the first mechanism to provide this reaction?*

- A. Extracardiac.
- B. Hypothalamus.
- C. Cortex.
- D. Intracardiac.
- E. Basal ganglia.

196. *Electrocardiogram of a 45-year-old man showed absence of P-wave in all the leads. The block of what part of the conducting system can it be an evidence of?*

- A. Atrioventricular node.
- B. Sinuatrial node.
- C. Common branch of the bundle of His.
- D. Branches of the bundle of His.
- E. Purkinje's fibres.

197. *In a patient the velocity of impulse conduction along the atrioventricular*

node is decreased. This will cause

- A. Decrease in heart rate.
- B. Increase in P-wave amplitude.
- C. Segment ST widening.
- D. Interval PQ prolongation.
- E. QRS complex widening.

198. *Pulse pressure is 50 mm Hg, and systolic pressure is 120 mm Hg. What is the diastolic pressure?*

- A. 70 mm Hg.
- B. 50 mm Hg.
- C. 60 mm Hg.
- D. 90 mm Hg.
- E. 170 mm Hg.

199. *Mean arterial blood pressure is 100 mm Hg, and total peripheral resistance is 20 mm Hg/min/L. What is the total blood flow?*

- A. 1 L/min.
- B. 2 L/min.
- C. 5 L/min.
- D. 10 L/min.
- E. L/min.

200. *Functioning of certain structures of an isolated heart is stopped as the result of their cooling. What structure was cooled down if the heart*

stops and then starts beating at two time's lower heart rate?

- A. Sinuatrial node.
- B. Atrioventricular node.
- C. Common branch of the bundle of His.
- D. Branches of the bundle of His.
- E. Purkinje's fibres.

201. *In a 30-year-old lady the amount of blood that flows along the blood vessels is 5 l/per minute. What amount of blood flows along pulmonary blood vessels?*

- A. 3,75L
- B. 5 L
- C. 2,5 L
- D. 2 L
- E. 1,5 L

202. *On an isolated heart of rabbit calcium channels of cardiac cells were blocked. How will it influence heart work?*

- A. Heart stops in systole.
- B. Heart rate increases.
- C. Heart rate decreases.
- D. Heart stops in diastole.
- E. Heart rate and stroke volume decrease.

203. *In a patient with hyper*

function of thyroid gland electrocardiogram showed tachycardia. Analyses of what segments of ECG prove tachycardia.

- A. P-Q segment.
- B. P-Q interval.
- C. P-T interval.
- D. R-R interval.
- E. QRS complex.

204. *Stroke volume is 70 ml, and heart rate is 80 bpm. What is the cardiac output?*

- A. 5600 ml/min
- B. 1000 ml/min
- C. 5000 ml/min
- D. 5600 ml
- E. 6400 ml

205. *Capillary hydrostatic pressure is 35 mm Hg, capillary colloidal osmotic pressure is 28 mm Hg, and interstitial fluid colloidal osmotic pressure is 3 mm Hg. The net filtration or absorption pressure is:*

- A. 4 mm Hg (absorption).
- B. 4 mm Hg (filtration).
- C. 10 mm Hg (absorption)
- D. 10 mm Hg (filtration).
- E. 7 mm Hg (filtration)

206. *An individual's blood*

pressure is measured as 120/90 mm Hg. What is the mean arterial pressure?

- A. 30 mm Hg
- B. 90 mm Hg
- C. 120 mm Hg
- D. 100 mmHg
- E. 210 mm Hg

207. In a healthy adult the probe of heart cavities and big vessels is performed. Where to is the probe inserted if the pressure changed from 0 to 120 mm Hg during the heart cycle?

- A. Aorta.
- B. Right ventricle.
- C. Left ventricle.
- D. Pulmonary artery.
- E. Atrium.

208. All heart valves are closed in the phase of heart cycle:

- A. Isometric contraction.
- B. Asynchronic contraction.
- C. Fast ejection.
- D. Slow ejection.
- E. Active filling.

209. The patient takes drugs that block Ca^{2+} -channels. Which processes in the myocardium do they act

on?

- A. Excitation.
- B. Conductivity.
- C. Electromechanical inter-face.
- D. Automatism.
- E. Mastering the rhythm.

210. The calcium canals of cardiomyocytes have been blocked on an isolated heart of a rabbit. What changes in a heart activity happen as a result?

- A. Decreased heart beat rate.
- B. Decreased force of the contraction.
- C. Decreased rate and force of heart beat.
- D. Heart stops in systole.
- E. Heart stops in diastole.

211. During the emotional excitation, the heart beat rate of a 30-year-old person reaches 112 beats per minute. Which part of a heart conductive system provides these changes?

- A. Purkinje's fibres.
- B. Kiss-Fleck node.
- C. Hiss bundle.
- D. Atrio-ventricular node.
- E. Hiss bundle branches.

212. The heart beat rate of

an adult male after the disease is 40 beats per minute. Which part of a heart conductive system provides such rate?

- A. Atrio-ventricular node.
- B. Kiss-Fleck node.
- C. Hiss bundle.
- D. Purkinje fibers.
- E. Bahaman bundle.

213. *After the trauma, the patient's right n. vagus was damaged. Which violation of a cardiac activity is possible in this case?*

- A. Violation of the automatism of a Kiss-Fleck node.
- B. Violation of the automatism of a atrio-ventricular node.
- C. Violation of conductivity in the right auricle.
- D. Block of a conductivity in the atrio-ventricular node.
- E. Arrhythmia.

214. *During the diastole the blood flow in ventricle sometimes causes:*

- A. The first tone.
- B. The second tone.
- C. The sound of blood ejec-

tion.

- D. Noise made by the heart emission.
- E. The third tone.

215. *Duration of the 1st heart tone:*

- A. 7-8 sec
- B. 8-9 sec
- C. 9-10sec
- D. 10-11 sec
- E. 11-12 seconds

216. *Where is the mitral valve heard?*

- A. At the basis of xiphoid process.
- B. In the 5th intercostal space 1-1.5 cm to the right of medio-clavicular line.
- C. In the 2nd intercostal space on the left edge of the sternum.
- D. In the 2nd intercostal space on the right edge of the sternum
- E. In the 5th intercostal space on the level of anterior axillaries line

217. *Normal duration of a QRS complex:*

- A. 0.08-0.1
- B. 0.02-0.05

- C. 0.06-0.09 sec
- D. 0.04-0.12
- E. There is no true answer.

218. *Due to the arrhythmogenic influence of the stress-reaction on the heart the normal sequence of the waves on ECG was violated. Mark the correct sequence of waves on ECG:*

- A. PQRST
- B. QPRST
- C. RSTPQ
- D. TSRPQ
- E. QPSTR

219. *The heart makes single contractions due to:*

- A. The prolonged phase of absolute refractory.
- B. The contractive phase of relative refractory.
- C. Exaltation phase.
- D. The contractive phase of absolute refractory.
- E. All answers are true.

220. *A student, 18-years-old. During physical activity redistribution of blood flow in organism is reographically registered. In the vessels of what organ did the blood flow increase most of all?*

- A. Liver.
- B. Sceletal muscles.
- C. Cerebrum.
- D. Kidneys.
- E. Digestive tract.

221. *When analysis an ECG it is necessary to define the pacemaker of the heart. On the basis of the measuring of what index is it possible to do?*

- A. Duration of waves.
- B. Amplitude of waves.
- C. Direction of waves.
- D. Duration of R-R interval.
- E. Duration of QRS complex.

222. *As a result of arbitrary breath-holding during 40 s. the frequency of heart beats and system arteriotony increased. The realization of what mechanisms of regulation caused the changes of indexes?*

- A. Reflexes.
- B. Unconditional parasympathetic reflexes.
- C. Conditional sympathetic reflexes.
- D. Conditional parasympathetic reflexes.
- E. Unconditional sympathetic

reflexes.

223. *In the course of an experiment on animals it was stated that arteriotomy depends on the size of vascular resistance. In what vessels is it the greatest?*

- A. Aorta.
- B. Arteries.
- C. Arterioles.
- D. Veins.
- E. Capillaries.

224. *A 40 y. o. man the rise of arteriotomy was diagnosed after emotional excitement. What is the possible reason for this effect?*

- A. Hyperpolarization of cardiomyocytes.
- B. Dilatation of arterioles.
- C. Decrease of frequency of heart beats.
- D. Increase of tone of sympathetic part of the nervous system.
- E. Increase of tone of parasympathetic part of the nervous system.

225. *In an experiment during the study of the processes of the excitation of cardiomyocytes it was determined that*

in the phase of rapid depolarization sodium ions can move additionally. What channels can they additionally move through?

- A. Calcium.
- B. Potassium.
- C. Choric.
- D. Magnesium.
- E. Lithium.

226. *During physical activity the minute volume of blood of a man with a transplanted heart increased. What mechanism of regulation provides these changes?*

- A. Sympathetic conditional reflexes.
- B. Sympathetic unconditional reflexes.
- C. Parasympathetic unconditional reflexes.
- D. Catecholamines.
- E. Parasympathetic conditional reflexes.

227. *Analysis the ECG it was stated that in the II standard lead from the extremities the T waves are positive, their amplitude and duration are normal. What process takes place in the ventricles of the heart normally?*

- A. Excitation.
- B. Depolarization.
- C. Repolarization.
- D. Contraction.
- E. Relaxation.

228. *Working up atypical cardiomyocytes with the biologically active substance the increase of their membrane potential is registered due to the increased permeability of potassium ions. What substance influenced the cardiomyocytes?*

- A. Thyroxin.
- B. Adrenaline.
- C. Noradrenaline.
- D. Acetylcholine.
- E. Atrial natriuretic factor.

229. *A woman of 30 y. o. her minute volume of blood passed through her lungs' vessels in 1 minute?*

- A. 1.5 L.
- B. 3.75 L.
- C. 2.5 L.
- D. 2 L.
- E. 5 L.

230. *In a month after a surgical narrowing of the kidney arteria of a rabbit the substantial increase of system*

arteriotony is registered. A certain substance influenced the change of the pressure of the animal. What sort of substance is it?

- A. Angiotensin II.
- B. Vasopressin.
- C. Adrenaline.
- D. Noradrenaline.
- E. Serotonin.

231. *Immediately after the transition from horizontal position to vertical one the frequency of heart beats of a man increased by 15 per minute. What mechanisms of regulation mainly predetermine this change?*

- A. Conditional sympathetic reflexes.
- B. Unconditional sympathetic reflexes.
- C. Conditional and unconditional sympathetic reflexes.
- D. Catecholamines.
- E. Sympathetic reflexes and catecholamines.

232. *After long physical activity the volume of circulatory blood of a man with body weight of 0 kg decreased. Hematocrit value was 50%,*

general blood protein – 80 g/L. the result of what process are such indexes of blood?

- A.** Loss of water with sweat.
- B.** Increase of quantity of erythrocytes.
- C.** Increase of proteins content in blood plasma.
- D.** Increase of oncotic pressure of blood plasma.
- E.** Increase of diuresis.

233. *Calcium canals of cardiomyocytes were partly blocked on the isolated heart of a rabbit. What changes in cardiac activity will take place as a result of it?*

- A.** Decrease of the frequency of contractions.
- B.** Decrease of the frequency and force of contraction.
- C.** Decrease of the force of contractions.
- D.** Cardiac arrest in diastole.
- E.** Cardiac arrest in systole.

234. *Physical activity of a healthy man caused moderate of diastolic pressure. What is the reason for such phenomenon?*

- A.** Enhancement of heart work.
- B.** Decline of the tone of ves-

sels in muscle.

- C.** Decrease of the elasticity of vessels.
- D.** Decrease of the volume of circulatory blood.
- E.** Increase of the resistance of vessels.

235. *In an experiment on an animal a cardiac cycle is examined. All valves of heart are closed. What phase does it correspond to?*

- A.** Isometric contraction.
- B.** Asynchronous contraction.
- C.** Protodiastolic period.
- D.** Rapid filling.
- E.** Slow filling.

236. *A patient has got a diminishing speed contraction of experiment on an atrioventricular node. The increase of the duration of a certain index will be registered on the ECG. What index is it?*

- A.** R – R interval.
- B.** Wave P.
- C.** P – Q interval.
- D.** QRS complex.
- E.** ST segment.

237. *The catheterization of the chambers and large vessels of a healthy grown-up is*

made. Where is the probe, if during a cardiac cycle the changes of pressure are registered from 0 to 120 mm?

- A. In the pulmonary artery.
- B. In the right ventricle.
- C. In the aorta.
- D. In the left ventricle.
- E. In the auricle.

238. In an experiment on a dog a peripheral part of the vagus nerve on the neck is irritated. What changes of cardiac activity take place?

- A. Increase of excitability of myocardium.
- B. Increase of the force of contraction.
- C. Increase of atrioventricular conduction.
- D. Increase of the frequency and force of contractions.
- E. Decrease of the frequency of contraction.

239. In an experiment an isolated heart of a dog was perfused with the solution overconcentration of calcium chloride. What changed in the work of the heart took place?

- A. Decrease of the frequency of contractions.
- B. Decrease of the force of

contractions.

- C. Increase of the frequency of contractions.
- D. Increase of the frequency and force of contractions.
- E. Decrease of the frequency and force of contractions.

240. The ECG a patient showed the increase of the duration of T wave. The increasing of this index was caused by the diminishing speed of certain processes in ventricles. What processes are there?

- A. Depolarization and repolarization.
- B. Repolarization.
- C. Depolarization.
- D. Contraction.
- E. Relaxation.

241. What change in the isolated heart of a frog can be expected after introducing surplus amount of calcium chloride into perfusion solution?

- A. Decrease of the force of contractions.
- B. Increase of the frequency and force of contractions.
- C. Increase of the frequency of contractions.

- D. Increase of the force of contractions.
- E. Cardiac arrest in diastole.

242. *The ECG of a patient showed the increase of the duration of the Q – T interval. The increasing of this index was caused by the diminishing speed of certain processes in the ventricles. What processes are there?*

- A. Depolarization.
- B. Depolarization and repolarization.
- C. Repolarization.
- D. Contraction.
- E. Relaxation.

243. *Before a competition a sportsman has got the increase of arteriotony and frequency of heart beats. By the influence of what parts of the CNS is it possible to explain these hemispheres.*

- A. Cortex of large hemispheres.
- B. Medulla oblongata.
- C. Mesencephalon.
- D. Diencephalon.
- E. Hypothalamus.

244. *What compensatory mechanisms arise when a*

healthy person passes from a lying position to a standing position?

- A. Decline of diastolic arteriotony.
- B. Decrease of the frequency of heartbeats.
- C. Increase of the frequency of heartbeats.
- D. Decrease of the tone of vessels.
- E. Decrease of common peripheral resistance.

245. *The speed of the conduction of excitement through the atrioventricular node of a healthy grown-up is 0.02 – 0.05 m/sec. What process does the atrioventricular delay provide?*

- A. Sufficient force of auricle contraction.
- B. Simultaneity of the contraction of both auricles.
- C. Simultaneity of the contraction of both ventricles.
- D. Sequence of the contraction of auricles and ventricles.
- E. Sufficient force of the contraction of ventricles.

246. *What effect will the electrostimulation of barore-*

ceptors of carotid sinus lead to in an experiment on a dog?

- A.** Expansion of vessels.
- B.** Vasoconstriction.
- C.** Increase of the frequency of heartbeats.
- D.** Increase of the minute volume of blood.
- E.** Increase of systolic volume.

247. *The frequency of heartbeats of a man is constantly at the level of 40 per min. What structure is the conductor of the rhythm?*

- A.** His' bundle.
- B.** Sinoatrial node.
- C.** Atrioventricular node.
- D.** Crura of His' bundle.
- E.** Purkinje's fibres.

248. *A reflex cardiac arrest happened during a surgical operation on the organs of abdominal cavity. Where is the center of this reflex located?*

- A.** In the diencephalon.
- B.** In the spinal cord.
- C.** In the mesencephalon.
- D.** In the medulla oblongata.
- E.** In the cortex of large hemispheres.

249. *During the research of*

the isolated cardiomyocyte it was determined that it doesn't generate the impulses of excitation automatically. What structure is the cardiomyocyte got from?

- A.** From the atrioventricular node.
- B.** From the sinoatrial node.
- C.** From the ventricles.
- D.** From the His' bundle.
- E.** From the Purkinje's fibres.

250. *In an experiment on a mammal by the destruction of a certain heart structure the conduction of experiment from atrium to ventricles is destroyed?*

- A.** Crura of His' bundle.
- B.** Sinoatrial node.
- C.** His' bundle.
- D.** Atrioventricular node.
- E.** Purkinje's fibres.

251. *While examining a person it was determined that his minute volume of blood is 3500 ml, systolic volume – 50 ml. What frequency of heart beats does this man have?*

- A.** 90 per min.
- B.** 60 per min.
- C.** 50 per min.
- D.** 80 per min.

E. 70 per min.

252. *When analyzing an ECG it is determined that the duration of the cardiac cycle of a person is 1 sec. What frequency of heartbeats per minute does the person have?*

A. 60.

B. 50.

C. 70.

D. 80.

E. 100.

253. *It is necessary to examine the elasticity of a person's large arterial vessels. Which of the instrumental methods of research is it better to use for this purpose?*

A. Electrocardiography.

B. Sphygmography.

C. Phonocardiography.

D. Phlebography.

E. Vectorcardiography.

254. *It is necessary to examine the state of the person's heart valves. Which of the instrumental methods of research is it better to use for this purpose?*

A. Sphygmography.

B. Electrocardiography.

C. Phonocardiography.

D. Phlebography.

E. Probing of vessels.

255. *The processes of the repolarization in the myocardium of the ventricles of an examined patient are defective. The violation of amplitude, configuration, and duration of what wave will it leads to?*

A. S.

B. Q.

C. R.

D. T.

E. P.

256. *In the course of an experiment on a rabbit a bandaging of the kidney artery was done. As a result of it the level of arteriotony increased considerably. The increase of the secretion of what substance caused it?*

A. Atrial natriuretic factor.

B. Adrenaline.

C. Vasopressin.

D. Noradrenaline.

E. Rennin.

257. *In an experiment the linear speed of blood movement is measured. It is the least in a capillary. What is*

the reason for this phenomenon?

- A.** Small diameter of the capillary.
- B.** Small length of the capillary.
- C.** The biggest total area of transversal section of capillaries.
- D.** Small hydrostatical pressure in capillaries.
- E.** Superfine wall of capillary.

258. *What changes of the function of the isolated heart will take place after the increase of the concentration of calcium chloride in the perfusion solution?*

- A.** Decrease of the frequency of contractions.
- B.** Decrease of the force of contractions.
- C.** Increase of the frequency and force of contractions.
- D.** Cardiac arrest in diastole.
- E.** Decrease of the frequency and force of contractions.

259. *A student got tachycardia before an examination. What changes in the ECG will testify its presence?*

- A.** Lengthening of QRS

complex.

- B.** Lengthening of R – R interval.
- C.** Shortening of R – R interval.
- D.** Lengthening of P – Q interval.
- E.** Lengthening of QT segment.

260. *During the research it was determined that normally the liquid outlet in interstitium exceeds its reverse inflow through a capillary wall. Where does the surplus of liquid get?*

- A.** Into arterial vessels.
- B.** Into venous vessels.
- C.** Into interpleural space.
- D.** Into abdominal cavity.
- E.** Into lymphatic vessels.

261. *After several hours' sitting in the force position in a bus a passenger noticed an edema of his feet and ankles. What is the reason for such edema?*

- A.** Venous congestion.
- B.** Dilatation of arterioles.
- C.** Increased permeability of capillaries.
- D.** Decline of proteins level in plasma.

E. High level of histamine.

262. *The duration of the P – Q interval exceeds the norm against the background of the normal duration of the P wave. The reason for it is the lowering of the speed of excitement conduction in a certain structure. What structure is it?*

- A. Atrioventricular node.
- B. Sinoatrial node.
- C. His' bundle.
- D. Cruca of His' bundle.
- E. Purkinje's fibres.

263. *A patient has got an increasing tone of arterioles against the background of normal indexes of heart work. How will it influence the value of arteriotony?*

- A. Pressure will not change.
- B. Systolic pressure will increase mainly.
- C. Diastolic pressure will increase mainly.
- D. Diastolic pressure will diminish mainly.
- E. Systolic pressure will diminish mainly.

264. *As a result of bleeding the volume of circulatory*

blood of a patient is reduced. How will it influence the value of arteriotony?

- A. Diastolic pressure will decrease only.
- B. Systolic pressure will decrease only.
- C. Systolic and diastolic pressure will decrease.
- D. Systolic pressure will decrease at increasing of diastolic.
- E. Diastolic pressure will decrease at increasing of systolic.

265. *In an experiment on a dog it was necessary to reduce the excitability of myocardium. What solution is it advisable to introduce intravenously?*

- A. Glucose.
- B. Calcium chloride.
- C. Sodium chloride.
- D. Sodium hydrocarbonate.
- E. Potassium chloride.

266. *A sportsman has the increase of arteriotony and frequency of heartbeats before a competition. By the influence of what parts of the CNS is it possible to explain these changes?*

- A. Cortex of large hemispheres.
- B. Diencephalon.
- C. Medulla oblongata.
- D. Mesencephalon.
- E. Hypothalamus.

267. *In an experiment on a dog a peripheral part of the vagus nerve on the neck is irritated. What changes of cardiac activity are observed here?*

- A. Increase of the force of contractions.
- B. Increase of the frequency and force of contractions.
- C. Increase of the excitability of myocardium.
- D. Increase of the conduction of excitation on myocardium.
- E. Decrease of the frequency of contractions.

268. *The change of body position from horizontal to vertical caused the decrease of venous return of blood to the heart, and as a result there is a decrease of the stroke volume of blood and system arteriotony. Signals from what receptors, first of all, start compensatory mech-*

anisms of the renewal of hemodynamics?

- A. Baroreceptors of pulmonary artery.
- B. Chemoreceptors of sinocarotid zone.
- C. Mechanoreceptors of right atrium.
- D. Baroreceptors of the arch of aorta and carotid sinuses.
- E. Volume receptors of the vena cava inferior.

269. *During physical activity the activity of sympathetic part of the nervous system increases, which results in the increase of minute blood volume and narrowing of resistant vessels, but the vessels of working muscles dilate sharply. What is the reason for their dilatation?*

- A. Strengthening of the impulsion from baroreceptors of the arch of aorta.
- B. Decrease of the sensitivity of adrenoreceptors.
- C. Strengthening of the impulsion from arterial chemoreceptors.
- D. Strengthening of the impulsion from proprioceptors of muscles.

E. Accumulation of the products of metabolism.

270. The volume blood volume in a patient with transplanted heart has increased as a result of physical activity. What regulative mechanism is responsible for these changes?

- A.** Parasympathetic conditioned reflexes.
- B.** Sympathetic conditioned reflexes.
- C.** Catecholamines.
- D.** Sympathetic unconditioned reflexes.
- E.** Parasympathetic unconditioned reflexes.

271. In response to a change in body position from horizontal to vertical blood circulation system develops reflectory pressor reaction. Which of the following is its compulsory component?

- A.** Weakening of the pumping ability of heart.
- B.** Increase in the heart rate.
- C.** Decrease in the circulating blood volume.
- D.** Systemic constriction of the venous vessels.
- E.** Systemic dilatation of the arterial resistive.

5. SYSTEM OF RESPIRATION, ENERGY METABOLISM, AND THERMOREGULATION

272. *A patient with bronchial asthma is administered inhalation of 0,5% isadrine solution. Bronchospasm was released, but the patient began complaining of pain in the heart region and palpitation. It is connected with the stimulation of:*

- A.** M-cholinergic receptors.
- B.** Acetylcholine synthesis.
- C.** α_1 - adrenoreceptors.
- D.** β_1 - adrenoreceptors.
- E.** β_2 - adrenoreceptors.

273. *A patient has a transverse disruption of spinal cord below the IV thoracic segment. What changes of respiration will it cause?*

- A.** Respiration will stop.
- B.** Respiration will become more frequent.
- C.** Respiration will stay unchanged.
- D.** Respiration will become less frequent.
- E.** Respiration will become deeper.

274. *A patient with the symptoms of acute alcoholic*

poisoning was brought to the hospital. What carbohydrates metabolism changes are typical for this condition?

- A.** The anaerobic glucose metabolism predominates in muscles.
- B.** The gluconeogenesis is increased in liver.
- C.** The breakage of glycogen is increased in liver.
- D.** The gluconeogenesis velocity in liver is decreased.
- E.** The anaerobic breakage of glucose is increased in muscles.

275. *A young man increased his energy inputs from 500 to 2000 kJ per hour. What from the suggested can cause it?*

- A.** Rising of external temperature.
- B.** Food taken.
- C.** Change of sleeping for waking.
- D.** Mental activity.
- E.** Physical activity.

276. *Child asked you to puff up the balloon as much as possible for a one exhalation. What is air volume will you use?*

- A.** Vital volume of the lungs
- B.** Functional residual volume
- C.** Back up volume of the inspiration
- D.** Total volume of the lungs
- E.** Inspiration volume

277. *Inhabitants of territories with cold climate have high content of an adaptive thermoregulatory hormone. What hormone is meant?*

- A.** Glucagon.
- B.** Somatotropin.
- C.** Thyroxin.
- D.** Insulin.
- E.** Cortisol.

278. *Intrapleural pressure is being measured in a person. In what phase does a person hold his breath if the pressure is $-25 \text{ cm H}_2\text{O}$?*

- A.** Quiet expiration.
- B.** Quiet inspiration.
- C.** –
- D.** Forced expiration.
- E.** Forced inspiration.

279. *Which mechanism of thermoregulation protects overheating of the organism in sauna:*

- A.** Heat radiation.
- B.** Heat transformation.
- C.** Convection.
- D.** Evaporation.
- E.** Vasodilatation.

280. *A patient has a tidal volume of 500 ml, a breathing rate of 16 breaths / min, a dead space volume of 150 ml, and a FRC (functional residual capacity) of 3 liters. Minute ventilation for this patient would be:*

- A.** 2.4 L/min
- B.** 2.9 L/min
- C.** 4.8 L/min
- D.** 5.6 L/min
- E.** 8 L/min

281. *A patient has an alveolar ventilation of 5 L/min, a frequency of 10 breaths per min, and a tidal volume of 700 ml. What is the patient's dead space ventilation?*

- A.** 2.0 L/min
- B.** 0.7 L/min
- C.** 1.0 L/min
- D.** 4.3 L/min
- E.** –

282. *In an animal medulla oblongata is destroyed. How will the respiration change?*

- A.** Respiration grows deeper and less frequent.
- B.** Respiration becomes superficial.
- C.** Respiration stops.
- D.** Respiration becomes more frequent.
- E.** Respiration grows deeper and more frequent.

283. *A trained athlete has a forced vital capacity of 5.0 liters, a functional residual volume of 2.4 liters, and a residual volume of 1.2 liters. What is the person's total lung capacity?*

- A.** 8 liters
- B.** 7.4 liters
- C.** 5.0 liters
- D.** 6.2 liters
- E.** 9.6 liters

284. *A person expires into a spirometer for 10 minutes. Her expired volume was 54 liters, her respiration rate was 12 breaths / min, and her alveolar ventilation was 4.2 L/min during the 10-minute period. What is this person's tidal volume?*

- A.** 300 ml
- B.** 1.2 liters
- C.** 420ml
- D.** 450 ml
- E.**—

285. *Lungs discharge:*

- A.** All enumerated substances.
- B.** Water.
- C.** Volatile aromatic compounds that contains in nutritious and medical substances.
- D.** Carbonic acid.
- E.** Products of incomplete oxygenation of the fat (at the diabetes).

286. *The respiratory system compensates the metabolic acidosis by:*

- A.** Decreasing the frequency of breathing and excretion CO₂.
- B.** Decreasing the frequency of breathing and delay excretion CO₂.
- C.** Increasing the frequency of breathing and excretion CO₂.
- D.** Increasing the frequency of breathing and delay excretion CO₂.
- E.** All is wrong.

287. *The regulation of the water balance in organism is a function of:*

- A.** Thalamus.
- B.** Hypothalamus.
- C.** Cerebellum.
- D.** Medulla oblongata.
- E.** Limbic system.

288. *The patient with the symptoms of acute alcoholic poisoning was brought in clinic. Which changes of carbohydrates metabolism are typical for this condition?*

- A.** The speed of gluconeogenesis in liver is decreased.
- B.** The gluconeogenesis is increased in liver.
- C.** The breakage of glycogen is increased in liver.
- D.** The anaerobic glucose metabolism predominates in muscles.
- E.** The anaerobic breakage of glucose is increased in muscles.

289. *The utilization of glucose by cells is promoted by...*

- A.** Insulin.
- B.** Glucagon.
- C.** Adrenalin.
- D.** Thyroxin.

E. Somatotropin.

290. *An examined person's tidal volume makes 500 ml, respiratory rate – 15 per 1 min, volume of dead space – 100 ml. How much air will pass through his alveoli in 1 minute?*

- A.** 9000 ml.
- B.** 7500 ml.
- C.** 1500 ml.
- D.** 6000 ml.
- E.** 7400 ml.

291. *Energy waster of a young man increased from 500 to 2000 kilojoules in 1 hour. Which of the following below can be the reason for it?*

- A.** Physical activity.
- B.** Increase of external temperature.
- C.** Mental work.
- D.** Food intake.
- E.** Transition from sleep to wakeful state.

292. *During physical activity a young man's oxygen consumption and carbon dioxide elimination per minute make 1000 ml. What substances are oxidized in the*

cells of his organism?

- A. Carbohydrates.
- B. Proteins.
- C. Fats.
- D. Carbohydrates and fats.
- E. Carbohydrates and proteins.

293. *In a pressure chamber the pressure was reduced to 400 mm Hg. How will the breathing of a person change in this pressure chamber?*

- A. Respiration depth will decrease and respiration frequency will increase.
- B. Respiration depth and frequency will decrease.
- C. Respiration depth and frequency will increase.
- D. Respiration depth will increase, and respiration frequency will decrease.
- E. Will remain without changes.

294. *The sharp reduction of the activity of lungs surfactant of a patient is determined. What will the result of it be?*

- A. Increase of the ventilation of lungs.
- B. Decrease of the resistance of respiratory tract.
- C. Decrease of the work of

respiratory muscles.

- D. Inclination of the alveoli to falling.
- E. Hyperoxemia.

295. *The air temperature is 38°C, relative humidity of the air – 80%, wind speed – 0 m per sec. Due to what mechanism will there be heat emission under these condition?*

- A. Convection.
- B. Radiation.
- C. Evaporation of sweat.
- D. Heat conduction.
- E. Radiation convection.

296. *Tidal volume is 450 ml and breathing frequency is 20 per min. What will alveolar ventilation per minute be?*

- A. 5000 ml.
- B. 3000 ml.
- C. 4000 ml.
- D. 6000 ml.
- E. 8000 ml.

297. *The curve of the dissociation of oxyhemoglobin is shifted to the right. What changes in a person's organism can be the reason for it?*

- A. Increase of the concentration of 2,3-phosphoglycerate in

erythrocytes.

- B. Hyperthermia.
- C. Alkalosis.
- D. Hypocapnia.
- E. Hypoxemia.

298. *After a craniocerebral trauma a patient's breathing become infrequent and deep. What structure of cerebrum is damaged?*

- A. Medulla oblongata.
- B. Hypothalamus.
- C. Metencephalon.
- D. Cortex of large hemispheres.
- E. Cerebellum.

299. *There is an increased content of carbon dioxide in an apartment. How will the breathing of a person entering the apartment change?*

- A. Depth and frequency will increase.
- B. Depth will decrease.
- C. Depth will increase.
- D. Frequency will decrease.
- E. Frequency will increase.

300. *A man dressed in light clothes is standing in a room where air temperature is 14°C. Windows and doors are closed. In what way does the*

man give the biggest quantity of heat?

- A. By convection.
- B. By heat conduction.
- C. By heat radiation.
- D. By evaporation.
- E. By perspiration.

301. *By the method of indirect calorimetry it was determined that the basic exchange of an examined person is 40 % lower than it should be. The violation of the activity of what endocrine gland is the reason for such state?*

- A. Pancreas.
- B. Thymus.
- C. Thyroid.
- D. Epiphysis.
- E. Adrenal gland.

302. *A patient has a spasm of smooth muscle of the bronchi. The use of the activators of what receptors will be physiologically grounded for the removal of the spasm?*

- A. N-Cholinoreceptors.
- B. α -Adrenoreceptors.
- C. α - and β -adrenoreceptors.
- D. β -Adrenoreceptors.
- E. M-Cholinoreceptors.

303. *A patient has got a*

trauma of the spinal cord above the 5th neck segment. How will the breathing character change?

- A.** Will become superficial and more frequent.
- B.** Will become superficial and more seldom.
- C.** Will become deep and more frequent.
- D.** Will stop.
- E.** Will become deep and more seldom.

304. *During an experiment on an animal its spinal cord was cut above the 5th neck segment. How will the breathing character change?*

- A.** Will stop.
- B.** Will become superficial and more seldom.
- C.** Will become deep and frequent.
- D.** Will become superficial and frequent.
- E.** Will become deep and more seldom.

305. *What mechanism of heat emission is the most effective if a person is in the conditions of 80% air humidity and the temperature of the environment is 35°C?*

- A.** Sweat secretion.
- B.** Radiation.
- C.** Heat conduction.
- D.** Convection.
- E.** Conduction.

306. *When analysis a patient's spirogram the decrease of the frequency and depth of breathing is determined. The decrease of what index will it cause?*

- A.** Expiratory reserve volume.
- B.** Vital capacity of the lungs.
- C.** Inspiratory reserve volume.
- D.** Minute volume of respiration.
- E.** Residual volume.

307. *In the pre-start condition it is necessary for a runner to increase the content of oxygen in his muscle. In what way can the runner do it?*

- A.** To breathe with low frequency.
- B.** To breathe in the mode of hypoventilation.
- C.** To take a rapid inspiration and slow expiration.
- D.** To breathe superficially.
- E.** To breathe in the mode of

hyperventilation.

308. *After inhalation of dust a man had a cough. By the excitation of what receptors is it caused?*

- A. Irritant.
- B. Juxtacapillar.
- C. Chemoreceptors of lungs.
- D. Thermoreceptors of lungs.
- E. Pain.

309. *While smoking a man often has a cough. Irritation of what receptors starts this reflex.*

- A. Chemoreceptors of carotid sinuses.
- B. Central chemoreceptors.
- C. Chemoreceptors of the arch of aorta.
- D. Irritant.
- E. Mechanoreceptors of lungs.

310. *Cooling of the human body in water is much faster than in the air. What way of heat emission in water is much more effective?*

- A. –
- B. Sweat evaporation.
- C. Heat radiation.
- D. Convection.
- E. Heat conduction.

311. *A man who went out warm a warm apartment into cold air often had a cough. The irritation of what receptors started the coughing reflex?*

- A. Mechanoreceptors of lung.
- B. Central chemoreceptors.
- C. Chemoreceptors of the arch of aorta.
- D. Chemoreceptors of carotid sinuses.
- E. Irritant.

312. *After hyperventilation a sportsman has a short stop of breathing. What changes in blood are the reasons for it?*

- A. Decrease of pH.
- B. Decrease of the tension of CO₂.
- C. Increase of the tension of CO₂.
- D. Decrease of the tension of O₂.
- E. Increase of the tension of CO₂ and O₂.

313. *Air temperature in production premises is 36°C; relative air humidity is 80%. In what way does a human organism give its warm under such conditions?*

- A. By evaporation of sweat.
- B. By heat conduction.
- C. By radiation.
- D. By convection.
- E. By conduction.

314. *As a result of physical activity a person has got hyperventilation. Which of the following indexes of his breathing are considerably higher than in the state of rest?*

- A. Tidal volume.
- B. Vital capacity of lungs.
- C. Inspiratory reserve volume.
- D. Expiratory reserve volume.
- E. Total lung capacity.

315. *As a result of some pathological process a person has got an increased thickness of alveolar capillary membrane. The decrease of what indexes will be the direct result of it?*

- A. Oxygen capacity of blood.
- B. Diffusive capacity of lungs.
- C. Minute respiratory volume.
- D. Alveolar ventilation of lungs per minute.

- E. Expiratory reserve volume.

316. *A person lost consciousness in a car salon, where he had been waiting for a friend with a turned on engine for a long time. What compound of hemoglobin was found in his blood?*

- A. Methemoglobin.
- B. Deoxyhemoglobin.
- C. Carbohemoglobin.
- D. Carboxyhemoglobin.
- E. Oxyhemoglobin.

317. *Carotid bodies of an animal were ablated on both sides. The influence of which of the following factors will not cause hyperventilation?*

- A. Increase of the temperature of the main body.
- B. Physical activity.
- C. Hypercapnia.
- D. Acidosis.
- E. Hypoxemia.

318. *During the registration of the electric activity of neurons it was determined that they become excited before inspiration and its beginning. Where are there neurons situated?*

- A. In medulla oblongata.
- B. In diencephalon.
- C. In mesencephalon.
- D. In the spinal cord.
- E. In cerebral cortex.

319. *A man with the attack of bronchospasm needs to have the influence of the vagus nerve on the smooth muscles of the bronchi decreased. What membranous cytoceptors is it advisable to block this?*

- A. N-Cholinoreceptors.
- B. M-Cholinoreceptors.
- C. α - and β -adrenoreceptors.
- D. α -Adrenoreceptors.
- E. β -Adrenoreceptors.

320. *There are many people in a cramped enclosed space. What changes in the air will cause hyperventilation of the people?*

- A. Increase of water vapour content.
- B. Decrease of oxygen content.
- C. Increase of carbon dioxide content.
- D. Rise of temperature.
- E. Temperature reduction.

321. *During an examina-*

tion it is necessary to determine what part of the alveolar air is renewed at every person's breath. Which of the following indexes must be calculated for this purpose?

- A. Vital capacity of lungs.
- B. Minute respiratory volume.
- C. Alveolar ventilation per minute.
- D. Coefficient of pulmonary ventilation.
- E. Functional residual capacity.

322. *A person made a quiet expiration. What is the air volume contained in his lungs called?*

- A. Vital capacity of lungs.
- B. Residual volume.
- C. Expiratory reserve volume.
- D. Tidal volume.
- E. Functional residual capacity.

323. *A person took a maximum deep breath. What is the air volume contained in his lungs called?*

- A. Total lung capacity.
- B. Vital capacity of lungs.
- C. Inspiratory capacity.
- D. Functional residual capacity.

ty.

E. Tidal volume.

324. *A person made a maximum deep expiration. What is the air volume contained in his lungs called?*

A. Functional residual capacity.

B. Residual volume.

C. Inspiratory capacity.

D. Expiratory reserve volume.

E. Alveolar volume.

325. *What type of hemoglobin provides greater oxygen capacity of fetus's blood than that of mother's?*

A. Hb F.

B. Hb A.

C. Hb H.

D. Hb S.

E. Hb P.

326. *In the state of rest a person has considerably increased work in inspiration muscles. Which of the following can be the reason for it?*

A. Infrequent respiration.

B. Hypopnea.

C. Constriction of respiratory tracts.

D. Negative intrapleural

pressure.

E. Decrease of minute respiratory volume.

327. *Intrapleural pressure of a person is taken. In what phase did the person hold breathe if the value of pressure is -7.5 cm of water?*

A. Quiet inspiration.

B. Quiet expiration.

C. Forced inspiration.

D. Forced expiration.

E. Pauses between inspiration and expiration.

328. *Intrapleural pressure of a person is taken. In what phase did the person hold breath if the value of pressure is -25 cm of water?*

A. Quiet inspiration.

B. Quiet expiration.

C. Forced inspiration.

D. Forced expiration.

E. Pauses between inspiration and expiration.

329. *Intrapleural pressure of a person is taken. In what phase did the person hold breathe if the value of pressure is 3 cm of water?*

A. Quiet expiration.

B. Forced expiration.

- C. Forced inspiration.
- D. Quiet inspiration.
- E. Pauses between inspiration and expiration.

330. *The pressure in the lung's alveoli of a healthy person is taken. In what phase of breathing is the pressure 0 mm Hg?*

- A. Quiet expiration.
- B. Quiet inspiration.
- C. Pauses between inspiration and expiration.
- D. Forced inspiration.
- E. Forced expiration.

331. *During a patient's examination the increase of basic exchange by 50% was determined. The increasing secretion of what hormone caused this change?*

- A. Prolactin.
- B. Insulin.
- C. Parathormone.
- D. Somatotropin.
- E. Thyroxin.

332. *The transaction of the brainstem between pons and medulla oblongata caused the lengthening of inspiration phase. It caused the violation of connection between medul-*

la oblongata and a certain structure of cerebrum. What structure is it?

- A. Cerebellum.
- B. Reticular formation.
- C. Pneumotaxic center.
- D. Cortex of large hemisphere.
- E. Red nuclei.

333. *A teenager of 14 has got positive nitrogen balance. Which of the following can be the reason for it?*

- A. Starvation.
- B. Growth of organism.
- C. Reduction of protein content in food.
- D. Considerable physical activity.
- E. Emotional tension.

334. *In what state is a person if the index of his energy wasted is lower than the value of basal metabolism?*

- A. Calmness.
- B. Rest.
- C. Easy work.
- D. Nervous tension.
- E. Sleep.

335. *One measure a person's energy wastes on an empty stomach, in the lying*

position, in the conditions of physical and psychic rest, comfort temperature. At what time will the energy wastes be the least?

- A.** 5 – 6 p.m.
- B.** 7 – 8 a.m.
- C.** 10 – 12 a.m.
- D.** 2 – 4 p.m.
- E.** 3 – 4 a.m.

336. *One measure a person's energy wastes on an empty stomach, in the lying position, in the conditions of physical and psychic rest, conform temperature. At what time will the energy wastes be the greatest?*

- A.** 3 – 4 a.m.
- B.** 7 – 8 a.m.
- C.** 10 – 12 a.m.
- D.** 5 – 6 p.m.
- E.** 2 – 4 p.m.

337. *Measuring the energy wasted of a human organism by the method of indirect calorimetry it was determined that the oxygen consumption per minute is 1000 ml and carbon dioxide elimination per minute is 800 ml. what respiratory coefficient does the examined person have?*

- A.** 1.0.
- B.** 1.25.
- C.** 0.9.
- D.** 0.84.
- E.** 0.8

338. *Measuring the energy wasted of a human organism it was determined that the respiratory coefficient is 1.0. What substances are mainly oxidized in the person's cells?*

- A.** Carbohydrates.
- B.** Proteins.
- C.** Fats.
- D.** Protein and carbohydrates.
- E.** Carbohydrates and fats.

339. *Measuring the energy wasted of a human organism it was determined that the respiratory coefficient is 0.7. What substances are mainly oxidized in the person's cells?*

- A.** Carbohydrates.
- B.** Proteins.
- C.** Fats.
- D.** Protein and carbohydrates.
- E.** Carbohydrates and fats.

340. *The inhabitants of territories with cold climate have an increased content of a hormone in blood, which has an adaptive thermoregu-*

latory meaning. What hormone is it?

- A. Thyroxin.
- B. Insulin.
- C. Glucagon.
- D. Somatotropin.
- E. Cortisol.

341. *In a laboratory experiment rats were adapted to living in the conditions of cold at a temperature of 5°C. The increasing secretion of what hormone caused the development of this adaptation?*

- A. Thyroxin.
- B. Glucagon.
- C. Somatotropin.
- D. Testosterone.
- E. Adrenaline.

342. *People adapted to the action of high external temperature do not lose with sweat a large quantity of sodium chloride with hydrosis. The action of what hormone on sweat glands causes such effect?*

- A. Atrial natriuretic factor.
- B. Vasopressin.
- C. Cortisol.
- D. Thyroxin.
- E. Aldosterone.

343. *The processes of heat emission of an undressed man at a room temperature are researched. In what way is the maximum quantity of heat emitted under such conditions?*

- A. Convection.
- B. Heat conduction.
- C. Heat radiation.
- D. Evaporation.
- E. Conduction.

344. *Lung ventilation in a person is increased as a result of physical activity. Which of the following indices of the external respiration is much higher than in a state of rest?*

- A. Respiratory volume.
- B. Expiratory reserve volume.
- C. Inspiratory reserve volume.
- D. Total lung capacity.
- E. Vital capacity of lung.

345. *A man went out from an apartment with air conditioning into the street where the air temperature was 40°C, air humidity was 60%. In what way will the heat be emitted from the organism in the street?*

- A. By the evaporation of sweat.
- B. By convection.
- C. By radiation.
- D. By conduction.
- E. –

346. *During the thermometry it was determined that the temperature of the open parts of skin is by 1 – 1.5°C lower than the temperature of the parts covered with clothes of natural fabrics. In what way do clothes reduce heat emission?*

- A. By radiation.
- B. By convection.
- C. By conduction.
- D. By the evaporation.
- E. –

347. *In cold weather with wind people freeze quicker than without any wind increase heat emission?*

- A. By evaporation.
- B. By radiation.
- C. By heat conduction.
- D. By convection.
- E. By conduction.

348. *During the experimentation of a 35-year-old woman there was the increase of*

the indexes of basic exchange. The surplus of which of the following hormones probably caused this state?

- A. Triiodothyronine.
- B. Somatotropin.
- C. Insulin.
- D. Cortisol.
- E. Glucagon.

349. *The workers of hot workshops of metallurgical enterprises lose a lot of water with sweat. What drink is it necessary to take for optimum compensation for this state?*

- A. Water with some salt added.
- B. Soda water.
- C. Milk.
- D. Natural juices.
- E. Kvass.

350. *By the method of indirect calorimetry the decrease of indexes of basal metabolism of a 30-year-old man by 30% was determined. The decrease concentration of what hormones in blood plasma can be the reason for it?*

- A. Triiodoteranine, tetraiodothyronine.
- B. Thyrocalcitonin, parathormone.

- C. Glucocorticoids.
- D. Catecholamine.
- E. Somatoliberin, somatostatin.

351. *Vagus nerves of an experimental animal have been cut on the both sides. What respiratory changes will result from this?*

- A. There will be no respiratory changes.
- B. Respiration will become deep and frequent.
- C. Respiration will become deep and infrequent.
- D. Respiration will become shallow and frequent.
- E. Respiration will become shallow and infrequent.

352. *A patient has a transversal laceration in the spinal cord. What respiratory changes will result from this?*

- A. Respiration will become less frequent.
- B. Respiration will present no significant changes.
- C. Respiration will stop.
- D. Respiration will become more frequent.
- E. Respiration will become deeper.

6. DIGESTIVE SYSTEM

353. An experimental dog by means of stomach tube was given 150 ml of meat broth. The concentration of which of the below mentioned substances will be increased in animal's blood?

- A. Gastrin.
- B. Insulin.
- C. Vasoactive intestinal polypeptide.
- D. Neurotensin.
- E. Somatostatin.

354. *A 60-year-old patient presents with weakened peristaltic activity of the bowels. Which of the following food-stuffs would stimulate peristalsis most of all?*

- A.** Brown bread.
- B.** Tea.
- C.** Meat.
- D.** Lard.
- E.** White bread.

355. *When the pH level of the stomach lumen decreases to less than 3, the atrium of the stomach releases peptide that acts in paracrine fashion to inhibit gastrin release. This peptide is:*

- A.** Acetylcholine.
- B.** Vasoactive intestinal peptide (VIP).
- C.** Somatostatin.
- D.** GIF.
- E.** Gastrin-releasing peptide (GRP).

356. *During sharp experiment an animal's chorda tympani was electrically irritated. How does it influence the secretion of the parotid salivary gland?*

- A.** Saliva is not secreted.
- B.** Little liquid saliva secret-

ed.

- C.** Much liquid saliva secreted.
- D.** Little sicvid saliva secreted.
- E.** Much sicvid saliva secreted.

357. *A part of a patient's pancreas was ablated. What products is it necessary for him to limit in his food ration?*

- A.** Fruit.
- B.** Boiled vegetables.
- C.** Dairy produce.
- D.** Vegetable rich in proteins (beans, soy).
- E.** Fat meat, beef tea.

358. *150 ml of meat broth was introduced through a probe into the gastric cavity of an experimental animal. The content of what matter will increase in its blood quickly?*

- A.** Insulin.
- B.** Somatostatin.
- C.** Gastrin.
- D.** Glucagon.
- E.** Neurotensin.

359. *During an examination a student's mouth is dry.*

The increased realization of what reflexes is the mechanism causing the development of this state?

- A.** Unconditional sympathetic.
- B.** Unconditional parasympathetic.
- C.** Conditional parasympathetic.
- D.** Conditional sympathetic.
- E.** Conditional metasympathetic.

360. *Energy wastes of a 40-year-old miner are more than 5000 kcal per day. What component in his food ration is it necessary to increase for the renewal of such energy wastes?*

- A.** Vitamin.
- B.** Liquid.
- C.** Proteins.
- D.** Carbohydrates.
- E.** Fats.

361. *In Ancient India a person suspected of committing a crime was offered to swallow a handful of dry rice. Criminals could not swallow the rice because of decreased salivation. What process is the reason for such state?*

- A.** Inhibition of the sympathoadrenal system.
- B.** Activation of the parasympathetic nucleus of the facial nerve.
- C.** Decrease of blood circulation salivary glands.
- D.** Activation of the parasympathetic nucleus of the gloss pharyngeal nerve.
- E.** Activation of the sympathoadrenal system.

362. *A peripheral part of horda tympani of an experimental animal is irritated. How does it influence the secretion of parotid salivary glands?*

- A.** Much liquid saliva secreted.
- B.** Little liquid saliva secreted.
- C.** Saliva is not secreted.
- D.** Little viscid saliva secreted.
- E.** Much viscid saliva secreted.

363. *A peripheral part of sympathetic fibers which innervate the sublingual salivary gland of an experimental animal is irritated. How does*

it influence the secretion of the sublingual salivary gland?

- A.** Much viscid saliva secreted.
- B.** Little liquid saliva secreted.
- C.** Saliva is not secreted.
- D.** Much liquid saliva secreted.
- E.** Little viscid saliva secreted.

364. *The content of what products is it advisable to increase in the food ration of a person with reduced secretary functional of the stomach?*

- A.** Sweet.
- B.** Broth.
- C.** Salt.
- D.** Milk.
- E.** Lard.

365. *Lean solution of hydrochloric acid was introduced into the duodenum of an animal through a probe. The content of what hormone will be increased as a result of it?*

- A.** Gastrin.
- B.**Cholecystokinin pancreozymin.
- C.** Secretin.

- D.** Glucagon.
- E.** Neurotensin.

366. *A patient has got a chronic neuritis of the trigeminus. Which of the digestive processes is considerably broken?*

- A.** Mastication.
- B.** Salivation.
- C.** Formation of taste feeling.
- D.** Swallowing.
- E.** Formation of saliva.

367. *The 150 g of meat broth was introduced into the gastric cavity of an experimental dog through a probe. The content of which of the following substances will be quickly increased in the dog's blood?*

- A.** Vasointerstitial polypeptide.
- B.** Somatostatin.
- C.** Insulin.
- D.** Neurotensin.
- E.** Gastrin.

368. *After taken 100 ml of 25% concentrated solution of magnesium sulfate there will be a lot of fluid experiments. Why?*

- A.** Because the work of the

bowels is inhibited.

- B.** Because the secretion of gastric juices is stimulated.
- C.** Because osmolality is increased in the bowels.
- D.** Because the secretion of hormones of the duodenum is stimulated.
- E.** Because osmolality decreased.

369. *Deficit of what enzyme is the most often the reason for incomplete digestion of fats in the digestive tract and the increase of the neutral fat quantity in experiments?*

- A.** Hepatic lipase.
- B.** Gastric lipase.
- C.** Pancreatic lipase.
- D.** Intestinal lipase.
- E.** Enterokinase.

370. *During the carpological research it is determined that experiments are discolored, neutral fat drops are found in them. The violation of what process is the most probable reason for such results?*

- A.** Processes of an intestine.
- B.** Acidity of gastric juice.
- C.** Secretion of pancreatic

juice.

- D.** Secretion of intestinal juice.
- E.** Permeation of bile into the bowels.

371. *A person has got little viscid saliva, its enzyme activity is reduced, and content of mucus is increased. The function violation of what glands is the most possible reason for this state?*

- A.** Parotid.
- B.** Own glands of tunica mucosa of oral cavity.
- C.** Sublingual.
- D.** Submandibular.
- E.** Own lingual glands.

372. *During an examination of a 45-year-old person who had been keeping to a vegetable diet for a long time negative nitrogen balance was determined. What peculiarity of the ration becomes the reason for such state?*

- A.** Excessive peculiarity of carbohydrates.
- B.** Excessive peculiarity of water.
- C.** Insufficient peculiarity of proteins.
- D.** Insufficient peculiarity of

fats.

- E.** Insufficient peculiarity of fats and proteins.

373. *During a patient's examination the decrease of the motor and evacuator functions of the stomach was determined. The deficit of which of the following substances can it be connected with?*

- A.** Secretin.
- B.** Gastrin.
- C.** Adenosine.
- D.** Somatostatin.
- E.** Gastric-inhibiting peptide.

374. *In the process of aging of a human being there is a decrease of the synthesis and secretion of the pancreatic juice, a decrease of trypsin content in it. To the violation of the splitting of what substances does it lead first of all?*

- A.** Polysaccharides.
- B.** Phospholipids.
- C.** Proteins.
- D.** Nucleic acid.
- E.** Lipids.

375. *A patient's duodenum is ablated. The decrease of the secretion of what hormone*

will it cause?

- A.** Gastrin.
- B.** Cholecystokinin and secretin.
- C.** Histamine.
- D.** Gastrin and histamine.
- E.** Neurotensin.

376. *A lean solution of hydrochloric acid was introduced into an experimental dog's duodenum through a probe. The secretion increase of what hormone will it cause?*

- A.** Gastrin.
- B.** Secretin.
- C.** Histamine.
- D.** Cholecystokinin.
- E.** Neurotensin.

377. *A patient's tip of the tongue was anointed with a local anesthetic. To the absence of perception of what taste sensation will it lead?*

- A.** Sour.
- B.** Salt.
- C.** Sweet.
- D.** Bitter.
- E.** Sour and salt.

378. *Which of the following processes of a hungry man who sees tasty food will be*

activated first of all?

- A. Secretion of gastric juice.
- B. Secretion of intestinal juice.
- C. Colonies motility.
- D. Contraction of Oddi's sphincter.
- E. Small intestine motor activity.

379. *There is no conductivity in the gloss pharyngeal nerve of a patient. What taste sensation will disappear?*

- A. Sour and salt.
- B. Sour.
- C. Sweet.
- D. Salt.
- E. Bitter.

380. *A patient's tip of the tongue was anointed with Novocaine. What taste sensations will disappear?*

- A. Salt.
- B. Sweet.
- C. Sour.
- D. Bitter.
- E. Sour and salt.

381. *A patient has normally colored excrements, which contain a lot of free fatty acids. Violation of what process is the reason for this phenom-*

enon?

- A. Hydrolysis of fats.
- B. Absorption of fats.
- C. Biliary excretion.
- D. Bile production.
- E. Secretions of lipase.

382. *The 150 g meat broth was introduced into the gastric cavity of an experimental dog through a probe. Which of the following substances will be quickly increased in the dog's blood?*

- A. Insulin.
- B. Gastrin.
- C. Vasointestinal polypeptide.
- D. Neurotensin.
- E. Somatostatin.

383. *A stone in the common bile coming into the bowels. Violation of what process observed here?*

- A. Absorption of proteins.
- B. Digestion of carbohydrates.
- C. Absorption of carbohydrates.
- D. Digestion of fats.
- E. Digestion of proteins.

384. *With the violation of cerebral circulation a patient*

has got a broken act of swallowing. What part of the brain has suffered?

- A. Prosencephalon.
- B. Cervical part of the spinal cord.
- C. Brainstem.
- D. Diencephalon.
- E. Mesencephalon.

385. *In an experiment cerebral structures are electro stimulated. As a result of it polyphagia (excessive yearning for food) appeared. What departments of cerebrum are electrodes put in?*

- A. Adenohypophysis.
- B. Ventromedial nuclei of hypothalamus.
- C. Supraoptical nuclei of hypothalamus.
- D. Lateral nuclei of hypothalamus.
- E. Red nucleus.

386. *In an experiment cerebral neurons of an animal are electrostimulated. As a result of it hypophagia (excessive yearning for food) appeared. What departments of cerebrum are electrodes put in?*

- A. Ventromedial nuclei of hypothalamus.
- B. Lateral nuclei of hypothalamus.
- C. Neurohypophysis.
- D. Adenohypophysis.
- E. Red nucleus.

387. *According to the result of the analysis of a patient's saliva it is determined that the pH is 8.0. What changes in the mouth cavity will this state of saliva result in?*

- A. Development of hyperplasia of tooth tissue.
- B. Development of caries.
- C. Development of fluorosis.
- D. Formation of dental calculus.
- E. Development of the hyperplasia of tooth tissue.

388. *A person has got considerable violation in direction of proteins, fats and carbohydrates. Reduced secretion of what digestive juice is the result of it?*

- A. Saliva.
- B. Pancreatic.
- C. Gastric.
- D. Bile.
- E. Intestinal.

7. EXCRETORY SYSTEM

389. *A man after 1,5 liter blood loss has suddenly reduced diuresis. The increased secretion of what hormone caused such diuresis alteration?*

- A. Natriuretic.
- B. Vasopressin.
- C. Cortisol.
- D. Corticotropin.
- E. Parathormone.

390. *A 35-year-old patient who often consumes alcohol was treated with diuretics. There appeared serious muscle and heart weakness, vomiting, diarrhea, AP – 100/60 mm Hg, depression. This condition is caused by intensified excretion with urine of:*

- A. Sodium.
- B. Potassium.
- C. Chlorine.
- D. Phosphates.
- E. Calcium.

391. *The peculiarity of renal circulation of the blood is:*

- A. The afferent arteriole's diameter is larger than di-

ameter of efferent arteriole.

- B. Near 90% of the circulating blood passes through kidneys.
- C. The low circulation rate.
- D. There is one capillary system.
- E. Kidneys absorb little oxygen and are not sensitive to its lack.

392. *What is the difference between the initial urine and the blood?*

- A. Absence of blood cells and large-molecular proteins.
- B. Presence of exchange products.
- C. Absence of aminoacids.
- D. Absence of glucose.
- E. Absence of vitamins.

393. *The qualitative content of the creatine in urine is:*

- A. 1.2 mmole/L.
- B. 0.15 mmole/L.
- C. 0.25 mmole/L.
- D. 0.05 mmole/L.
- E. 0.3 mmole/L.

394. *The level of natrium's serum of 73 years old patient is 170 mmole/L. What is the most probably reason of hypernatremia?*

- A.** Dehydration.
- B.** High use of salt with the food.
- C.** Uraemia.
- D.** Unproportional secretion of vasopressin.
- E.** Overdose of diuretics.

395. *The low specific weight if the secondary urine (1002) was found out at the sick person. At what part of nephron the substance of the secondary urine concentrate to the outmost?*

- A.** At the nephron's glomerulus.
- B.** At proximal tubuli of nephron.
- C.** At the ductus papillares.
- D.** At ascending part of Henley's loop.
- E.** At distalis tubuli of nephron.

396. *Indicate the substances that create osmotic concentration gradient of kidneys:*

- A.** Natrium and urea.
- B.** Natrium and creatinine.

- C.** Natrium and phosphates.
- D.** Natrium and calcium.
- E.** Natrium and uric acid.

397. *For the compensation kidney's acidosis is taken out:*

- A.** More ions of sodium.
- B.** Less ions of hydrogen.
- C.** More bicarbonate.
- D.** Less phosphate.
- E.** More ions of hydrogen.

398. *Which point is not correct about regulation acid-base balance?*

- A.** Ammoniogenesis – it is a formation H_2CO_3 in kidneys.
- B.** Kidneys take out nonvolatile acid from organism.
- C.** Respiratory compensation of metabolic acidosis includes tachypnea.
- D.** Respiratory acidosis is a consequence of violation external breathing.
- E.** Kidneys realize regeneration of bicarbonate buffer.

399. *Indicate the changes of homeostatic parameters which increase the rate of glomerous filtration:*

- A.** Hyperproteinemia.

- B.** Hypoglycemia.
- C.** Hypoproteinemia
- D.** Hyperosmia
- E.** Hypervolemia

400. *As a result of a long stay in heat a person gets thirsty. Signaling from what receptors caused its development?*

- A.** Glucoreceptors of the hypothalamus.
- B.** Sodiums reseptors of the hypothalamus.
- C.** Osmoreceptors of the liver.
- D.** Osmoreceptors of the hypothalamus.
- E.** Baroreceptors of the arch of aorta.

401. *The loss of 0.5 L of blood by a dog was compensated by an intravenous injection of a balanced saline solution with glucose. It is accompanied by the increase of glomerular filtration rate. What is the credible reason for the increase of this index of the dog?*

- A.** Increase of kidneys filter permeability.
- B.** Increase of system arteriotony.

- C.** Decrease of the hydrostatic pressure.
- D.** Decrease of the oncotic pressure of blood plasma.
- E.** Increase of effective renal blood flow.

402. *An increase of arteriotony, especially diastolic, of a person suffering from a kidney disease was diagnosed. The concentration of what biologically active substance was increased in the patient's blood.*

- A.** Noradrenaline.
- B.** Adrenaline.
- C.** Rennin.
- D.** Vasopressin.
- E.** Catecholamines.

403. *A person was injected intravenously 0.5L of isotonic solution of a pharmaceutical substance. Which of the following receptors will react to the changes of the water-salt balance of the organism first of all?*

- A.** Osmoreceptors of the liver.
- B.** Osmoreceptors of the hypothalamus.
- C.** Volume receptors of venous cavas and atrium.

- D. Sodium receptors of the hypothalamus.
- E. Baroreceptors of the arch of aorta.

404. *As a result of a trauma a person lost 500 ml blood which resulted in the decrease of diuresis. The influence on the kidneys of what hormone caused this*

- A. Cortisol.
- B. Atrial natriuretic factor.
- C. Aldosterone.
- D. Vasopressin.
- E. Rennin.

405. *At dinner a person ate salt herring and potato with a pickled cucumber. Some time later he felt thirsty. Excitation of what receptors caused this feeling?*

- A. Baroreceptors of the arch of aorta.
- B. Volume receptors of venous cavas and atriums.
- C. Baroreceptors of carotid sinuses.
- D. Volumoreceptors of the hypothalamus.
- E. Osmoreceptors of the hypothalamus.

406. *After giving blood as a donor, a student felt thirsty.*

The increased secretion of what biologically active substance stimulated it?

- A. Angiotensin II.
- B. Aldosterone.
- C. Erythropoietin.
- D. Adrenaline.
- E. Noradrenaline.

407. *During an experiment a dog under anesthetic was injected with vasopressin. As a result of that the quantity of urine decreased. What influence of vasopressin caused it?*

- A. Decrease of the reabsorption of water.
- B. Increase of the reabsorption of sodium.
- C. Increase of the reabsorption of water.
- D. Decrease of the reabsorption of calcium.
- E. Increase of the reabsorption of calcium.

408. *A transplanted kidney reacts to pain stimulations by the stop of urinary excretion. What is the reason for this reaction?*

- A. Increase of the secretion of antidiuretic hormone.
- B. Decrease of the secretion of antidiuretic hormone.

- C. Influence of the parasympathetic part of the nervous system.
- D. Influence of the sympathetic part of the nervous system.
- E. Decrease of the secretion of corticotrophin.

409. *As a result of long starvation glomerular filtration rate of a person increased by 20 %. What is the credible reason for the change of filtration in the mentioned conditions?*

- A. Increase of renal plasma current.
- B. Increase of system arteriotony.
- C. Increase of the permeability of the renal filter.
- D. Increase of glomerular capillary filtration coefficient.
- E. Decrease of the oncotic pressure of blood plasma.

410. *A person has a decreased diuresis, hypernatremia, and hypokalaemia in blood plasma. Hypersecretion of what hormone can be the reason for such changes?*

- A. Aldosterone.

- B. Vasopressin.
- C. Atrial diuretic factor.
- D. Adrenaline.
- E. Parathormone.

411. *During the laboratory research the presence of glucose was detected in the urine of an 18-year-old patient, while its concentration in blood plasma was normal. Violation of what process is the most possible reason for this state?*

- A. Secretion of insulin.
- B. Glomerular filtration.
- C. Tubular secretion.
- D. Tubular reabsorption.
- E. Secretion of glucocorticoids.

412. *A person has a decreased diuresis as a result of increased secretion of vasopressin. The increase of what index stimulates the secretion of vasopressin?*

- A. Osmotic pressure of plasma.
- B. Concentration of sodium.
- C. Volume of circulatory blood.
- D. Oncotic pressure of plasma.
- E. Concentration of potassium.

um.

413. *During an experiment the processes of energy formation in the epithelium of renal tubules were blocked. As a result of it diuresis increased by a factor of four. The decrease of what index is the most possible reason for polyuria?*

- A.** Glomerular filtration rate.
- B.** Reabsorption of sodium ions.
- C.** Secretion of potassium ions.
- D.** Renal blood flow.
- E.** Secretion of urea.

414. *As a result of long starvation glomerular filtration rate of a person increased by 20%. What is the credible reason for the change of filtration in the mentioned conditions?*

- A.** Increase of the permeability of renal filter.
- B.** Increase of system arteriotony.
- C.** Decrease of the oncotic pressure of blood plasma.
- D.** Increase of glomerular capillary filtration coefficient.

E. Increase of renal plasma current.

415. *A long abuse of potassium preparations by a person resulted in the increased of potassium content in blood plasma. The change of secretion of what hormone will it cause?*

- A.** Increase of aldosterone secretion.
- B.** Decrease of aldosterone secretion.
- C.** Increase of vasopressin secretion.
- D.** Decrease of vasopressin secretion.
- E.** Decrease of rennin secretion.

416. *During an experiment a rabbit was intravenously injected 300 ml of isotonic of sodium chloride, which resulted in the considerable increase of circularity blood volume. Concentration of what substance will be increased in the rabbit's blood these conditions provided?*

- A.** Atria natriuretic factor.
- B.** Rennin.
- C.** Aldosterone.
- D.** Angiotensin II.

E. Adrenaline.

417. *During a laboratory examination of a 54-year-old man it was determined that inulin clearance is 120 ml per minute. What index of this man meets the norm?*

- A.** Glomerular filtration rate.
- B.** Tubular reabsorption.
- C.** Tubular secretion.
- D.** Renal blood flow.
- E.** Renal plasma current.

418. *A man of 35 had had the flu complicated by the affection of the CNS. His day's amount of urine considerably increased after the disease. Which of the cerebral department was the most probably affected?*

- A.** Spinal cord.
- B.** Mesencephalon.
- C.** Prosencephalon.
- D.** Metencephalon.
- E.** Diencephalon.

419. *In an experiment on an animal by overstretching of atriums by blood the decrease of the reabsorption of sodium ions and water in renal tubules was caused. The influence on kidney of what*

hormones can it is explained by?

- A.** Rennin.
- B.** Aldosterone.
- C.** Atrial natriuretic factor.
- D.** Angiotensin.
- E.** Vasopressin.

420. *A person has got a considerable reduction of urine quantity after salt food intake. The influence of what hormone can it is explained by?*

- A.** Somatostatin.
- B.** Adrenaline.
- C.** Corticotropin.
- D.** Oxytocin.
- E.** Antidiuretic.

421. *Long-lasting vomiting of a 32-year-old patient resulted in fluid loss. The increased secretion of what hormone promotes water preservation in the organism?*

- A.** Thyroxin.
- B.** Calcitonin.
- C.** Vasopressin.
- D.** Somatostatin.
- E.** Aldosterone.

422. *Hyponatraemia and hyperkalaemia of a patient were diagnosed. The reduced*

secretion of what hormone can cause such changes?

- A.** Cortisol.
- B.** Vasopressin.
- C.** Aldosterone.
- D.** Parathormone.
- E.** Atrial natriuretic factor.

423. *During the research of a new low-molecular preparation X it was determined that its clearance was higher than the clearance of inulin. What is the mechanism of the excretion of the preparation by kidneys?*

- A.** Secretion.
- B.** Filtration.
- C.** Filtration and secretion.
- D.** Filtration and reabsorption.
- E.** Secretion and reabsorption.

424. *A great number of protein and erythrocytes were detected in urine. The increase of what index can be the reason for it?*

- A.** Permeability of renal filter.
- B.** Net filtration pressure.
- C.** Hydrostatic blood pressure in glomerular capillaries.
- D.** Hydrostatic pressure of primary urine in the cap-

sule.

- E.** Oncotic pressure of blood plasma.

425. *A man's glomerular filtration rate is 80 ml per min (norm – 125 ± 25 ml per min). The increase of what index can be the reason for it?*

- A.** Renal blood flow.
- B.** Net filtration pressure.
- C.** Hydrostatic blood pressure in glomerular capillaries.
- D.** Oncotic pressure of blood plasma.
- E.** Permeability of renal filter.

426. *A man's glomerular filtration rate is 180 ml per min (norm – 125 ± 25 ml per min). The reduction of what index can be the reason for it?*

- A.** Oncotic pressure of blood plasma.
- B.** Net filtration pressure.
- C.** Hydrostatic blood pressure in glomerular capillaries.
- D.** Renal blood flow.
- E.** Permeability of renal filter.

427. *A person has hyponatraemia and hyperkalaemia. The increased secretion of what hormone will it cause?*

- A.** Vasopressin.
- B.** Cortisol.
- C.** Aldosterone.
- D.** Atrial natriuretic factor.
- E.** Parathormone.

428. *A person's osmotic pressure of blood plasma is 350 mosmol/L (norm – 300 mosmol/L). The increased secretion of what hormone will it cause?*

- A.** Vasopressin.
- B.** Aldosterone.
- C.** Cortisol.
- D.** Corticotropin.
- E.** Atrial natriuretic factor.

429. *As a result of the loss of 1.5 l of blood a person has got sharp decrease of diuresis. The increased secretion of what hormone caused the change in diuresis?*

- A.** Cortisol.
- B.** Corticotropin.
- C.** Atrial natriuretic factor.
- D.** Vasopressin.
- E.** Parathormone.

430. *In experiment on a*

rabbit the narrowing of kidney arteria resulted in the increase of system arteriotony. The increase of concentration of what biologically active substance in blood plasma caused hypertension?

- A.** Medullinum.
- B.** Erythropoietin.
- C.** Prostaglandins.
- D.** Vasopressin.
- E.** Rennin.

431. *A patient who lost about 500 ml blood was delivered to a hospital. During an examination it was determined that considerable decrease of the volume of circulatory blood was absent. The increased secretion of which of the following hormones is the reason for it?*

- A.** Thyroxin.
- B.** Adrenaline.
- C.** Noradrenaline.
- D.** Aldosterone.
- E.** Cortisol.

432. *The substance, which was introduced to a dog during an experiment, resulted in the damage of the renal filter. Which of the following substances can be detected in the*

animal's urine as a result of it?

- A. Ions of sodium.
- B. Glucose.
- C. Amino acids.
- D. Proteins.
- E. Ions of calcium.

433. *A boy of the 10 years old drank 1.5 L of water at once. The change in secretion of which of the following hormones will result in the increase of the volume of circulatory blood?*

- A. Aldosterone.
- B. Atrial natriuretic factor.
- C. Vasopressin.
- D. Corticotropin.
- E. Rennin.

434. *The decline of synthesis of vasopressin of a patient was determined, that caused polyuria, the result if which was evident fluid loss. What is the mechanism of polyuria development?*

- A. Increase of glomerular filtration.
- B. Reduction of tubular reabsorption of sodium ions.
- C. Reduction of the tubular reabsorption of proteins.

- D. Reduction of the reabsorption of glucose.
- E. Reduction of tubular reabsorption of water.

435. *In the kidneys of a patient the reabsorption of calcium ions is increased, and that of phosphate ions is reduced. The influence of what hormone was the reason for such changes?*

- A. Parathormone.
- B. Thyrocalcitonin.
- C. Hormonal form of vitamin D₃.
- D. Aldosterone.
- E. Vasopressin.

436. *The level of glucose in a person's blood is 15 millimoles/L (threshold of reabsorption is 10 mmol/L). What process will become the result of the glucose level increase?*

- A. Decrease of vasopressin secretion.
- B. Decrease of diuresis.
- C. Decrease of glucose reabsorption.
- D. Glucosuria.
- E. Decrease of aldosterone secretion.

8. ANALYZERS

437. A 25-year-old patient complained of vision reduction. Accommodation disorder, dilated pupil, not reacting on the light was revealed on examination. Function of what muscles is disturbed?

- A. Pupil narrowing muscle, ciliary.
- B. Pupil narrowing and dilating muscle.
- C. Inferior oblique muscle, ciliary.
- D. Pupil dilating muscle, ciliary.
- E. Lateral rectus muscle, pupil narrowing.

438. A patient has a hemorrhage into the posterior central gyrus. What type of sensitivity on the opposite side will be disturbed?

- A. Skin and proprioceptive.
- B. Auditory.
- C. Visual.
- D. Olfactory.
- E. Auditory and visual.

439. A man who went for a ride on a roundabout had amplification of heart rate, sweating and nausea. What

receptors stimulation is it primarily connected with?

- A. Vestibular.
- B. Visual.
- C. Tactile.
- D. Proprioceptors.
- E. Auditory.

440. After brain injury a patient has lost his vision. What zone of the brain cortex is damaged in this case?

- A. Temporal and parietal.
- B. Occipital.
- C. Parietal.
- D. Frontal.
- E. Temporal.

441. According to audiometry data a patient has a disturbed perception of medium-frequency sounds. It might have been caused by a damage of:

- A. Quadritubercular structure.
- B. Spinal ganglion.
- C. Cochlear nuclei.
- D. Lateral geniculate bodies.
- E. Middle part of helix.

442. A 60-year-old patient has a reduced perception of

high-frequency sounds. What structures' disorder of auditory analyzer caused these changes?

- A.** Muscles of middle ear.
- B.** Eustachian tube.
- C.** Main membrane of cochlea near the oval window.
- D.** Main membrane of cochlea near helicotrema.
- E.** Tympanic membrane.

443. *After looking thorough the window for a while, a person began to read a book. Due the change of the state of a certain eye structure the refractive power of optical mediums increases. What eye structure is it?*

- A.** Lens.
- B.** Cornea.
- C.** Vitreous body.
- D.** Pupil.
- E.** Liquid of chamber of the eye.

444. *What process takes place during shifting one's look from near to remote things?*

- A.** Contraction of the ciliary muscle.
- B.** Relaxation of the ciliary muscles.

- C.** Relaxation of suspensor ligaments.
- D.** Increase of lens curvature.
- E.** Increase of refractive power of the eye.

445. *During physical activity the person is less sensitive to pain. Activation of what index is the reason for this phenomenon?*

- A.** Sympathoadrenal system.
- B.** Nociceptive system.
- C.** Function of the thyroid gland.
- D.** Antinociceptive system.
- E.** Function of adrenal glands.

446. *Which of the visual functions is violated most of all when rods are damaged?*

- A.** Light adaptation.
- B.** Color vision.
- C.** Binocular vision.
- D.** Central vision.
- E.** Peripheral vision.

447. *In an experiment on an animal electric activity of spinal ganglion neuron is registered. In allows analyzing afferent impulsation from certain receptors. What receptors are there?*

- A.** Maculae.

- B. Corti's organ.
- C. Semicircular canals.
- D. Vestibular.
- E. Vestibular and Corti's organ.

448. *In an experiment on an animal the middle part of the internal ear helix on the right is ruined. The violation of perception of what sounds will it results in?*

- A. High-frequency.
- B. Low-frequency.
- C. Medium-frequency.
- D. High- and low-frequency.
- E. Violations will not be present.

449. *With the help of a tuning fork the perception of sounds of a patient was examined. When the tuning fork was placed near the external ear the patient didn't hear sounds of the tuning fork by his right ear. When the legs of the tuning fork were placed on a mastoid bone the patient heard a sound. With the affection of what part of the auditory sensory system is it connected?*

- A. Cochlear nerve.
- B. Inferior colliculus testis.

- C. Internal ear.
- D. Middle ear.
- E. Medial geniculation body.

450. *As a result of a spinal trauma a man of 33 got violation of pain and temperature sensitivity. Damage of what pathway does it cause?*

- A. Spinothalamic.
- B. Medial spinocortical.
- C. Posterior spinocerebellar.
- D. Lateral spinocortical.
- E. Anterior spinocerebellar.

451. *After a craniocerebral trauma a patient does not recognize objects at touching them. What department of cerebrum has been damaged?*

- A. Cerebellum.
- B. Occipital lobulus.
- C. Temporal particle.
- D. Precentral gyrus.
- E. Postcentral gyrus.

452. *Under the action of an irritant an animal's neurons activity of the spiral ganglion increased. What irritant was it?*

- A. Light.
- B. Sound.
- C. Rotation.
- D. Touch to the skin.

E. Muscle strain.

453. *During an examination a student's absolute threshold of pain sensitivity is bigger than in the state of calm. Activating of what system of organism is the reason for this state?*

- A.** Antinociceptive.
- B.** Sympathoadrenal.
- C.** Sympathetic part of the nervous system.
- D.** Parasympathetic part of the nervous system.
- E.** Hypophysial-adrenal system.

454. *In an experiment on an animal the middle part of internal ear helix was damaged. Violation of the perception of what sounds will it result it?*

- A.** High- and medium-frequency.
- B.** Medium- and low-frequency.
- C.** Low-frequency.
- D.** Medium-frequency.
- E.** High- and low-frequency.

455. According to the data of audiometry a patient has got the imperceptions of the

sounds of medium frequency. The damage of what organ can be the reason for it?

- A.** Cochlear nuclei.
- B.** Middle part of helix.
- C.** Spiral ganglion.
- D.** Quadrigeminal plate.
- E.** Lateral geniculate bodies.

456. *To get the imprints of dentitions for the following prosthetics the solution of gypsum was brought into the mouth cavity of a woman of 65. What receptors of the mucous tunic of the mouth cavity become excited first of all?*

- A.** Chemoreceptors.
- B.** Thermal cold.
- C.** Thermal hemal.
- D.** Tactile.
- E.** Taste.

457. *Examination of an 18-year-old patient showed that he didn't feel the temperature irritations in the central part of the back surface of the tongue. What is the reason for this state?*

- A.** Edema of the mucous tunic of the tongue.
- B.** Affection of the gloss pharyngeal nerve.
- C.** Affection of the tongue

nerve.

- D. Absence of cold and thermal receptors in this area.
- E. Affection of somatosensory cortex.

458. *Gustatory sensibility of a person is preserved, but general sensitiveness of the mouth cavity structures is lost. The damage of what organ does it testify about?*

- A. N. vagus.
- B. N. trigemius.
- C. N. glossopharyngeus.
- D. N. hypoglossus.
- E. N. glossopharyngeus and n. vagus.

459. *After a brain injury a person lost his sight. Damage of what areas of cerebral cortex can cause such a state?*

- A. Front.
- B. Temporal.
- C. Occipital.
- D. Parietal.
- E. Temporal and parietal.

460. *A man who is riding the carousel presents with increased heart rate, sweating, nausea. This condition is caused primarily by the*

stimulation of the following receptors:

- A. Auditory
- B. Vestibular otolithic
- C. Visual
- D. Proprioceptors
- E. Vestibular ampullar

461. *A person has got a hemorrhage into the back central gyrus. Violation of what sensitivity on the opposite side will it cause?*

- A. Auditory and visual.
- B. Visual.
- C. Auditory.
- D. Smell and taste.
- E. Skin and proprioceptive.

462. *As a result of the affection by a pathological process of conduction tracts of the spinal cord the pain sensitivity of skin and muscles was damaged. What pathways were damaged?*

- A. Lateral spinocortical.
- B. Spinothalamic.
- C. Medial spinocortical.
- D. Anterior spinocerebellar.
- E. Posterior spinocerebellar.

9. BEHAVIOR

463. *A 60-year-old man after cerebral hemorrhage felt asleep for a long time. Damage of what structure caused this state?*

- A.** Cortex of the large hemispheres/lack substance.
- B.** Nucleus of the cerebral nerves.
- C.** Black substances.
- D.** Reticular formation.
- E.** Hippocampus.

464. *During the merry-go-round riding a 25-year-old woman began having nausea, vomiting and intensive sweat. Activation of which receptors caused the reflex development of these symptoms?*

- A.** Vestibular receptors of semicircular duct.
- B.** Proprioceptors of skeletal muscles.
- C.** Receptors of Corti's organ.
- D.** Optic receptors.
- E.** Otolith vestibular receptors.

465. *The insult in the site of hypothalamic lateral nuclei localization is diagnosed in*

60-year-old patient. Which changes in patient's behavior may be expected?

- A.** Aggressive behaviour.
- B.** Depression.
- C.** The rejection of food.
- D.** Thirst.
- E.** Unsatisfied hunger.

466. *The cold receptors predominate on the heat receptors:*

- A.** In the pre-optical region of hypothalamus.
- B.** In the posterior hypothalamus.
- C.** In the inner organs.
- D.** On the body surface.
- E.** In the liver.

467. *Heat receptors predominate on the cold receptors:*

- A.** In the pre-optical region of the hypothalamus.
- B.** On the body surface.
- C.** In the posterior hypothalamus.
- D.** In the inner organs.
- E.** In the liver.

468. *It is necessary for a researcher to develop a con-*

ditioned reflex of a dog as soon as possible. On the basis of what unconditioned reflex is it possible to develop a conditioned one?

- A.** Orientative.
- B.** Food.
- C.** Sexual.
- D.** Defense.
- E.** Myotatic.

469. *A loud sound during a conditioned reflex activity caused its inhibition. What kind of inhibition is it?*

- A.** Beyond maximum.
- B.** External.
- C.** Extinctional.
- D.** Differential.
- E.** Being late.

470. *During a long drought a river dried up. For some time animals continued to come to the place of watering, but then stopped coming. What kind of inhibition of conditioned reflexes caused the change in animals' behavior?*

- A.** Beyond maximum.
- B.** External.
- C.** Extinctional.
- D.** Differential.
- E.** Being late.

471. *A man of 60 slept after brain hemorrhage for a long time. The damage of what structures caused such state?*

- A.** Substantia nigra.
- B.** Hippocampus.
- C.** Nuclei of cranial nerves.
- D.** Cortex of large hemispheres.
- E.** Reticular formation.

472. *During an examination it was determined that a patient had a strong balanced inert type of higher nervous activity according to Pavlov. What temperament according to Hippocrate does this type correspond to?*

- A.** Melancholic.
- B.** Sanguine.
- C.** Choleric.
- D.** Phlegmatic.
- E.** Hysterical.

473. *During an examination of a sick old man a motor aphasia was detected. Where is the area of cerebral affection?*

- A.** In the precentral gyrus.
- B.** In the Herschel's gyrus.
- C.** In the angular gyrus.
- D.** In the postcentral gyrus.
- E.** In the Broca's center.

474. *During an examination of a sick old man a sensory aphasia was detected. What area of cerebral cortex is damaged?*

- A.** Wernicke's center.
- B.** Postcentral gyrus.
- C.** Angular gyrus.
- D.** Broca's center.
- E.** Precentral gyrus.

475. *Psychological research determined: a person has a good ability to adapt quickly to a new situation, good memory, emotional stability, high capacity for work. What type of temperament do these signs belong to?*

- A.** Sanguine.
- B.** Choleric.
- C.** Melancholic.
- D.** Phlegmatic.
- E.** Phlegmatic with the elements of melancholic.

KEYS OF RIGHT ANSWERS

1 – A	18 – B	34 – E	51 – A	68 – A	85 – E
2 – E	19 – C	35 – A	52 – A	69 – E	86 – C
3 – A	20 – D	36 – D	53 – D	70 – A	87 – D
4 – B	21 – E	37 – E	54 – C	71 – E	88 – A
5 – C	22 – C	38 – E	55 – E	72 – A	89 – D
6 – D	23 – A	39 – A	56 – A	73 – C	90 – E
7 – A	24 – C	40 – E	57 – E	74 – C	91 – A
8 – A	25 – A	41 – E	58 – B	75 – E	92 – E
9 – B	26 – C	42 – D	59 – E	76 – B	93 – B
10 – D	27 – A	43 – A	60 – D	77 – E	94 – B
11 – E	28 – D	44 – E	61 – C	78 – B	95 – E
12 – A	29 – C	45 – E	62 – B	79 – D	96 – A
13 – E	29 – C	46 – A	63 – E	80 – D	97 – C
14 – B	30 – B	47 – B	64 – D	81 – E	98 – A
15 – E	31 – B	48 – B	65 – C	82 – E	99 – B
16 – E	32 – C	49 – A	66 E	83 – D	100 – A
17 – A	33 – D	50 – B	67 – D	84 – B	101 – D

102 – C	120 – C	138 – B	156 – B	174 – E	192 – D
103 – E	121 – D	139 – E	157 – C	175 – E	193 – A
104 – C	122 – A	140 – A	158 – D	176 – E	194 – B
105 – B	123 – C	141 – C	159 – D	177 – D	195 – D
106 – C	124 – A	142 – B	160 – E	178 – E	196 – B
107 – A	125 – D	143 – C	161 – A	179 – D	197 – D
108 – C	126 – B	144 – B	162 – A	180 – A	198 – A
109 – A	127 – A	145 – C	163 – E	181 – D	199 – C
110 – D	128 – A	146 – D	164 – C	182 – D	200 – A
111 – C	129 – B	147 – A	165 – A	183 – C	201 – B
112 – D	130 – A	148 – B	166 – E	184 – A	202 – A
113 – D	131 – E	149 – C	167 – C	185 – D	203 – D
114 – E	132 – A	150 – C	168 – E	186 – D	204 – A
115 – A	133 – B	151 – A	169 – A	187 – D	205 – B
116 – E	134 – C	152 – B	170 – D	188 – B	206 – D
117 – A	135 – A	153 – C	171 – C	189 – C	207 – A
118 – A	136 – A	154 – A	172 – A	190 – E	208 – A
119 – C	137 – B	155 – E	173 – C	191 – C	209 – C

210 – C	228 – D	246 – A	264 – C	282 – A	300 – C
211 – B	229 – E	247 – C	265 – E	283 – B	301 – C
212 – A	230 – A	248 – D	266 – A	284 – D	302 – D
213 – A	231 – B	249 – C	267 – E	285 – A	303 – D
214 – E	232 – A	250 – D	268 – D	286 – C	304 – A
215 – E	233 – B	251 – E	269 – E	287 – B	305 – A
216 – B	234 – B	252 – A	270 – C	288 – A	306 – D
217 – C	235 – A	253 – B	271 – D	289 – A	307 – E
218 – A	236 – C	254 – C	272 – D	290 – D	308 – A
219 – A	237 – D	255 – D	273 – C	291 – A	309 – D
220 – B	238 – E	256 – E	274 – D	292 – A	310 – E
221 – D	239 – D	257 – C	275 – E	293 – E	311 – E
222 – E	240 – B	258 – C	276 – A	294 – D	312 – B
223 – C	241 – B	259 – C	277 – C	295 – C	313 – A
224 – D	242 – B	260 – E	278 – E	296 – D	314 – A
225 – A	243 – A	261 – D	279 – D	297 – B	315 – B
226 – D	244 – C	262 – A	280 – E	298 – C	316 – D
227 – C	245 – D	263 – C	281 – A	299 – A	317 – E

318 – A	336 – D	354 – A	372 – C	390 – B	408 – A
319 – B	337 – E	355 – D	373 – B	391 – A	409 – E
320 – C	338 – A	356 – C	374 – C	392 – A	410 – A
321 – D	339 – C	357 – E	375 – B	393 – D	411 – D
322 – E	340 – A	358 – C	376 – B	394 – A	412 – A
323 – A	341 – A	359 – D	377 – C	395 – C	413 – B
324 – B	342 – E	360 – E	378 – A	396 – A	414 – C
325 – A	343 – C	361 – E	379 – E	397 – E	415 – A
326 – C	344 – A	362 – A	380 – B	398 – A	416 – A
327 – A	345 – A	363 – E	381 – B	399 – C	417 – A
328 – C	346 – B	364 – B	382 – B	400 – D	418 – E
329 – B	347 – D	365 – C	383 – D	401 – D	419 – C
330 – C	348 – A	366 – A	384 – C	402 – C	420 – E
331 – E	349 – A	367 – E	385 – D	403 – C	421 – C
332 – C	350 – A	368 – C	386 – A	404 – D	422 – C
333 – B	351 – C	369 – C	387 – D	405 – E	423 – C
334 – E	352 – B	370 – E	388 – B	406 – A	424 – A
335 – E	353 – A	371 – A	389 – B	407 – C	425 – D

426 – A	435 – A	444 – B	453 – A	462 – B	471 – E
427 – C	436 – D	445 – D	454 – D	463 – D	472 – D
428 – A	437 – A	446 – E	455 – B	464 – A	473 – E
429 – D	438 – A	447 – B	456 – D	465 – C	474 – A
430 – E	439 – A	448 – C	457 – D	466 – D	475 – A
431 – B	440 – B	449 – D	458 – B	467 – A	
432 – D	441 – E	450 – A	459 – C	468 – D	
433 – C	442 – C	451 – E	460 – E	469 – B	
434 – E	443 – A	452 – B	461 – E	470 – D	