1. A man got an injection of curarelike substance causing the relaxation of all skeletal muscles. What is its mechanism of action?

a. Block of cholinergic receptors of postsynaptic membrane

b. Block of Ca2+-channels of presynaptic membrane

c. Disturbance of acetylcholine secretion

d. Disturbance of cholinesterase synthesis

e. Disturbance of acetylcholine synthesis

2. As a result of rocking a passenger has developed the sea sickness. The reflexes causing the development of this sickness are provoked by the excitement of the following receptors:

a. Olfactory

b. Vestibular

c. Tactile

d. Visual

e. Gustatory

3. Production of primary urine in kidneys is induced by filtration in renal corpuscles. What components of blood plasma are absent in the primary urine?

a. Urea

b. Ions

c. Amino acids

d. Glucose

e. Proteins

4. Final urine is generated as a result of three sequential processes. Name the most credible sequence:

a. -

b. Filtration, reabsorption, secretion

c. Reabsorption, filtration, secretion

d. Secretion, filtration, reabsorption

e. Secretion, reabsorption, filtration

5. A drug which inhibits ATP synthesis in a cell has been used during an experiment. What type of transmembrane transport will be disturbed?

a. Diffusion

b. Filtration

c. Facilitated diffusion

d. Active

e. Osmosis

6. A patient has impaired mesopic vision, his photopic vision is normal. What is the probable cause of such vision anomaly?

a. Vitamin D deficiency

b. Vitamin A deficiency

c. Cones disfunction

d. Hyperopia

e. Myopia

7. What factors of humoral regulation stimulate the function of respiratory centre the most actively?

a. Insulin

b. Carbon dioxide

c. Acetylcholine

d. Adrenaline

e. Thyroxine

8. Increase in secretion of hydrochloric acid in the stomach of an experimental animal can be provoked by subcutaneous injection of the following gastrointestinal hormone:

a. Gastrin

b. Cholecystokinin
c. Motilin
d. Somatostatin
e. Secretin

9. To the membrane proteins that contact with this or that biologically active substance transmitting information into the cell belong:
a. Glycocalix
b. Receptor proteins
c. Enzyme proteins
d. Pump proteins
e. Channel proteins

10. What segment of digestive tract secretes digestive juice that has acid reaction?
a. Small intestine
b. Oral cavity
c. Stomach
d. Large intestine
e. Esophagus

11. Name inhibitory transmitters:
a. Serotonin and glycin
b. Acetylcholine and GABA
c. Adrenaline and noradrenaline
d. Noradrenaline and dopamine
e. GABA and glycin

12. A patient was prescribed a bile preparation for better digestion of fatty food. What components of this preparation cause fat emulsification?
a. Bile acids
b. Diglycerides
c. Bile pigments
d. Bilirubinglucuronids
e. Cholesterol and its ethers

13. Physical exercise results in an increase in thermogenesis due to an increase in heat production in the following structure:
a. Skeletal muscles
b. Lungs
c. Brain
d. Liver
e. Heart

14. It is known that digestion of proteins, fats and carbohydrates happens due to protease, lipase and amylase respectively. What digestive juice contains all three enzyme groups enough for digestion?
a. Bile
b. Juice of large intestine
c. Saliva
d. Gastric juice
e. Juice of pancreas

15. It is known that proteins, fats and carbohydrates are digested by means of proteases, lipases and amylases, respectively. Which of digestive juices contains all these groups of enzymes enough for digestion?
a. Gastric juice
b. Saliva
c. Pancreatic juice
d. Bile

e. Juice of large intestine

16. An adult presents with systemic arterial pressure at the rate of 160/100 mm Hg. This might be caused by the increased concentration of the following hormone in blood:

a. Adrenalin

b. Glucagon

c. Thyroxin

d. Cortisol

e. Aldosterone

17. In course of an experiment the experimenters are stimulating a sympathetic nerve responsible for heart innervation. What changes in cardiac activity can be expected?

a. Decrease in heart force

b. Deceleration of excitement conduction

c. Increase in heart rate

d. Increase in heart rate and force

e. Decrease in heart rate

18. It is required to diminish pump function of patients heart. This can be done by means of blockers of the following membrane cytoreceptors:

a. Nicotinic cholinoreceptors

b. α-adrenoreceptors

c. Dopamine receptors

d. β-adrenoreceptors

e. Muscarinic cholinoreceptors

19. Taking vasopressin resulted in a decrease in diuresis. The reason for it is increased water reabsorption in the following renal tubuli:

a. Proximal convoluted tubuli

b. Descending limbs of Henles loops

c. Ascending limbs of Henles loops

d. Distal convoluted tubuli and receiving tubes

e. Henles loops

20. Under conditions of high exterior temperature a ventilating fan can relieve staying in the premises because it intesifies heat emission by means of:

a. Liquid evaporation

b. Heat conduction

c. Heat radiation and conduction

d. Convection

e. Heat radiation

21. Under conditions of high exterior temperature and dry climate heat emission will become more intense by means of:

a. Radiation

b. Conduction

c. -

d. Evaporation

e. Convection

22. During an exam a student got high arterial pressure and palpitation. What ist the probable cause of this phenomenon?

a. Low excitability threshold of α and β adrenoreceptors

b. Decreased tonus of parasympathetic nervous system

c. Secretion of glucocorticoids

d. Increased tonus of sympathetic nervous system

e. Increased volume of circulating blood

23. During preventive examination of a patient a doctor revealed considerable weakening of

patellar-tendon reflex. What part of CNS might be affected?
a. Metencephalon
b. Thalamencephalon
c. Cerebellum
d. Spinal cord
e. Mesencephalon

24. Erythrocytes contain carbonic acid produced from CO2 and H2O. What enzyme ensures synthesis of carbonic acid in erythrocytes and its decomposition in pulmonary capillaries?
a. Carbonic anhydrase
b. Elastase
c. Amylase
d. Lipase
e. Alkaline phosphatase

25. As a result of reduced water reabsorption in nephron tubules daily diuresis of a patient has increased up to 10 litres. This might be caused by reduced secretion of the following hormone:
a. Parathormone
b. Aldosterone
c. Vasopressin
d. Thyrocalcitonin
e. Insulin

26. Analysis of a patient's urine showed an increase in Na+ ions concentration and a decrease is K+ ions concentration. This might be caused by the reduced secretion of the following hormone:
a. Hydrocortisone
b. Prolactin
c. Insulin
d. Thyroxine
e. Aldosterone

27. Passive and active transport of substances is realized through the cell membrane. Name the type of active transport by which the membrane changes its structure:
a. Filtration
b. Osmosis
c. Endocytosis
d. Diffusion
e. Facilitated diffusion

28. What disorders are possible as a result of thyroid insufficiency during infancy?
a. Basedows disease
b. Itsenko-Cushing syndrome
c. Nanism
d. Gigantism
e. Cretinism

29. Gastric juice of a patient has decreased concentration of enzymes. What secretory cells of stomach display disfunction?
a. Cells of tegumental epithelium
b. G-cells
c. Parietal cells of glands
d. Gland mucocytes
e. Chief cells of glands

30. Fatty food is digested by means of several digestive juices. Which of them enables fat emulsification?
a. Gastric juice
b. Pancreatic juice

c. Saliva
d. Intestinal juice
e. Bile

31. When fats get into an organism they are digested and absorbed. What products of fat hydrolysis are absorbed in an intestine?
a. Glycerine, fatty acids
b. Monosaccharides
c. Polypeptides
d. Lipoproteids
e. Amino acids

32. Analysis of urine composition revealed changed concentration of sodium ions. Which of hormones provides regulation of sodium ions reabsorption in nephron canaliculi?
a. Adrenaline
b. Parathormone
c. Vasopressin
d. Somatostatin
e. Aldosterone

33. Irritation of the sympathetic nerve in an experimental dog induces quantitative and qualitative alterations in the saliva composition. What alterations are induced?
a. A lot of saliva, few enzymes
b. A lot of saliva, no enzymes
c. A lot of saliva, a lot of enzymes
d. Little saliva, few enzymes
e. Little saliva, a lot of enzymes

34. A patient took a maximal deep breath. Air volume being present in lungs under these conditions is called:
a. Tidal volume
b. Vital lung capacity
c. Total lung capacity
d. Residual volume
e. Inspiratory reserve volume

35. Stable contraction of myofibrilla of muscle fibers takes place due to accumulation of the following ions in the cytoplasm:
a. Potassium
b. Magnesium
c. Hydrogen
d. Calcium
e. Sodium

36. Which of the following indices of the external respiration characterizes the maximum volume of air that a person can exhale after maximum inhalation?
a. Respiratory volume
b. Lung vital capacity
c. Functional residual capacity
d. Total lung capacity
e. Expiratory reserve volume

37. The air in a room has increased concentration of carbonic acid. What respiratory changes (depth and rate) will be observed in a person after entering this room?
a. There will be no respiratory changes
b. Increase in respiration rate and depth
c. Decrease in respiration depth and increase in respiration rate
d. Decrease in respiration rate and depth

e. Increase in respiration depth and decrease in respiration rate

38. Early pregnancy test involves analysis of a woman's urine. Pregnancy is ascertained by presence of the following hormone:

a. Estriol
b. Testosterone
c. Progesterone
d. Chorionic gonadotropin
e. Aldosterone

39. In course of an experiment a dog has been injected a preparation that reduces secretory and motor activity of stomach. What preparation is it?

a. Gastrin
b. Atropine
c. Secretin
d. Histamine
e. Acetylcholine

40. What ion mechanism is responsible for the development of depolarization phase of action potential?

a. Calcium influx into the cell
b. Sodium influx into the cell
c. Potassium influx into the cell
d. Sodium outflux
e. Potassium outflux

41. Study of an isolated heart shows that it keeps on contracting even after removal from the body. This effect owes to the following peculiarity of the myocardium:

a. Conductivity
b. Excitability
c. Automatism
d. Contractility
e. Adiaphoria

42. Electronic microscopy of a cell revealed mitochondrial destruction. What processes are disturbed?

a. Protein biosynthesis
b. Synthesis of nucleic acids
c. Fat synthesis
d. ATP synthesis
e. Glycolysis

43. What changes will be observed in the isolated heart after introduction of adrenaline into perfusion solution?

a. Excitability reduction
b. Heart rate rise
c. Heart force fall
d. Heart rate fall
e. Conduction reduction

44. A man's tip of tongue was processed with an anesthetic solution. Therefore he will loose the sense of the following taste:

a. Sweet
b. Sour
c. Bitter and salty
d. Salty
e. Bitter

45. The thyroid gland synthesizes a hormone that lowers the rate of $Ca2+$ concentration in blood thus facilitating its deposition in bones. What hormone is it?

a. Calcitonin
b. Triiodthyronine
c. Parathormone
d. Adrenaline
e. Thyroxin

46. Nephron is the structural and functional unit of the kidneys. The process of filtration takes place in the following part of it:
a. Distal tubule
b. Bowmans capsule
c. Collecting tubule
d. Henles loop
e. Proximal tubule

47. What vessels have the minimal linear speed of sanguimotion?
a. Capillaries
b. Arterioles
c. Large arteries
d. Veins
e. Aorta

48. Transport of some substances is accompanied by utilization of metabolic energy (ATP energy). This process is called:
a. Filtration
b. Simple diffusion
c. Active transport
d. Osmosis
e. Facilitated diffusion

49. Taken 150 ml of meat broth was introduced into the gastric cavity of an experimental dog through the feeding tube. This will result in rapid rise of concentration of the following hormone in the animals blood:
a. Somatostatin
b. Insulin
c. Vasointestinal polypeptide
d. Neurotensin
e. Gastrin

50. Preventive examination of a woman revealed enlargement of her thyroid gland, exophthalmos, high body temperature, increase of heart rate up to 110 times per minute. It is advisable to determine content of the following hormone in blood:
a. Noradrenaline
b. Insulin
c. Cortisol
d. Thyroxine
e. Adrenaline

51. It is required to measure the nitrogen metabolism in a person under observation who is recovering from continuous starvation. What result is most likely to be expected?
a. Acetonemia
b. -
c. Nitrogen equilibrium
d. Negative nitrogen balance
e. Decrease in nitrogen secretion

52. It is required to increase the secretion of gastric juice in an experimental dog with stomach fistula. What should be introduced into the stomach?
a. Milk

b. White bread
c. Meat broth
d. Dried bread
e. Sour cream

53. Concentration of different ions within the cytoplasm of a neurocyte has been measured during an experiment. The highest ion concentration was observed in:
a. K+
b. Cl-
c. HCO3-
d. Ca2+
e. Na+

54. Heart automatism is possible due to the atypical cardiomyocytes forming the cardiac conduction system. What part of this system is the primary cardiac pacemaker?
a. Sinoatrial node
b. Atrioventricular node
c. His bundle branches
d. His bundle
e. Purkinjes fibers

55. During the practical training the students placed the isolated frogs heart into a solution. This caused the cardiac arrest in diastole. What solution was the heart placed into?
a. 3% solution of NaCl
b. 1% solution of NaCl
c. 3% solution of KCl
d. 1% solution of CaCl2
e. 0,1% solution of MgCl2

56. A patient takes blocker of muscarinic cholinoreceptors of parasympathetic nerve organ synapses. What changes of heart activity will be observed?
a. Heart force fall
b. Prolongation of atrioventricular delay
c. Heart rate and heart force fall
d. Heart rate fall
e. Heart rate rise

57. To relax skeletal muscles during complex surgeries, curarelike substances are applied. These substances block the following structure:
a. Synaptic structures of the spinal cord
b. Vegetative ganglions
c. Basal ganglions
d. Red nuclei of the mesencephalon
e. Neuromuscular synapses

58. It is known that the digestion of proteins, fats and carbohydrates is possible due to the protease, lipase and amylase respectively. What digestive juice contains the enough supply of all the groups of enzymes?
a. Gastric juice and bile
b. Pancreatic
c. Gastric
d. Saliva
e. Bile

59. Anxious condition can be characterized by reduced salivation and sense of dry mouth. What mediator is exuded out of nerve terminals innervating salivary glands?
a. Serotonin
b. Acetylcholine

c. Noradrenaline
d. Histamine
e. GABA

60. A patient complains about an increase in heart rate, hyperperspiration, irritability, sleeplessness. He has been presenting with these symptoms for the latest six months. They indicate the hyperfunction of the following endocrine gland:
a. Adrenal glands
b. Pancreas
c. Thyroid gland
d. Sexual glands
e. Thymus

61. What mediator provides information transmission from nerve terminations of motoneurons to the fibers of skeletal muscles?
a. Noradrenaline
b. Adrenaline
c. Acetylcholine
d. Serotonin
e. GABA

62. Lligation of the common bile duct in an experimental animal results in block of bile inflow to the duodenum. This will cause the failure of hydrolysis of the following substances:
a. Proteins and carbohydrates
b. Fats
c. Proteins
d. Carbohydrates
e. Fats and carbohydtares

63. Roentgenological examination of a patient revealed delayed transition of contrast material from the stomach to the duodenum. It is caused by disturbance of the folowing function of digestive tract:
a. Evacuatory function of stomach
b. Membrane digestion
c. Protein digestion
d. Water absorption
e. Secretory function

64. During blowing up a baloon a boy took maximally deep and prolonged inspirations and expirations. Thereafter he felt slight dizziness. What is the probable cause of this phenomenon?
a. Drop of pO2 in blood
b. Drop of pCO2 in blood
c. Bronchi constriction
d. Rise of pCO2 in blood
e. Arterial pressure rise

65. Before diving experienced divers first take several deep breaths. They do it in order to:
a. Reduce functional residual capacity of lungs
b. Increase total lung capacity (TLC)
c. Increase respiratory volume (RV)
d. Remove as much as possible CO2
e. Increase lung vital capacity (LVC)

66. During the preventive medical examination a doctor revealed a significant weakening of patellar reflex in one of the patients. What part of the central nervous system is likely to be affected?
a. Spinal cord
b. Midbrain
c. Cerebellum
d. Interbrain

e. Hindbrain

67. In course of an experiment a branch of vagus that innervates heart is being stimulated. What changes of heart activity will appear in the first place?

a. Increase of heart force
b. Rise of arterial pressure
c. Heart force fall
d. Increase of heart rate
e. Heart rate fall

68. Introduction of a hormone into a mans organism resulted in increased water reabsorption in kidneys, high vascular tone, rise of arterial pressure. What hormone was introduced?

a. Vasopressin
b. Thyroxine
c. Noradrenaline
d. Aldosterone
e. Adrenaline

69. In order to restore a mans circulating blood volume he was transfused with blood substitute - isotonic solution NaCl. What is the concentration of this solution?

a. 3%
b. 0,9%
c. 0,5%
d. 0,3%
e. 1%

70. As a result of hyperventilation a student has developed dizziness. What blood changes are the primary cause of this effect?

a. Increase in CO_2 concentration
b. pH increase
c. Decrease in CO_2 concentration
d. Increase in O_2 concentration
e. Decrease in O_2 concentration