1. At a medical genetic consultancy, the karyotype of a child with physical development problems was examined. Trisomy 13 was detected. What syndrome is it?

a. Turner syndrome

b. Patau syndrome

c. Klinefelter syndrome

d. Down syndrome

e. Edwards syndrome

2. A woman with allergic neurodermatitis was prescribed a second-generation antihistamine without depressing effect on the CNS. Name this drug:

a. Tavegyl (Clemastine)

b. Dimedrol (Diphenhydramine)

c. Diazolin (Mebhydrolin)

d. Loratadine

e. Ketotifen

3. A 32-year-old woman was stung by a wasp. The site of the sting is edematous and hyperemic. What is the primary mechanism of edema formation in this case?

a. Increased capillary permeability

b. Increased interstitial fluid oncotic pressure

c. Problematic lymphatic efflux

d. Increased blood hydrostatic pressure in the capillaries

e. Decreased blood oncotic pressure

4. A 2-year-old child with kidney failure has been diagnosed with hyperoxaluria and oxalate urolithiasis that resulted in deposition of calcium oxalate in the kidneys. This condition has been caused by the disturbed metabolism of a certain amino acid. Name this amino acid.

a. Methionine

b. Arginine

c. Lysine

d. Histidine

e. Glycine

5. A test animal was given a cytochrome oxidase blocker, which resulted in its instant death. What potassium compound can cause it?

a. Cyanide

b. Sulfate

c. Phosphate

d. Oxalate

e. Nitrite

6. After a trauma the patient has developed right-sided paralyses and disturbed pain sensitivity. On the left side no paralyses are observed, but pain and thermal sensitivity is disturbed. What is the cause of this condition?

a. Midbrain injury

b. Cerebellar injury

c. Unilateral right-side spinal cord injuiry

d. Motor cortex injury

e. Brainstem injury

7. In parodontosis, protein and polysaccharide components of the connective tissue become destroyed. What protein is a component of the connective tissue?

a. Antitrypsin

b. Collagen

c. Albumin

d. Transferrin

e. Ceruloplasmin

8. A patient was diagnosed with an injury to the middle third of the shoulder with an incomplete

rupture of the median nerve. In addition to motor and sensory disorders below the injury site, the patient complains of an unbearable sharp burning pain. What is the nature of this pain?

a. Somatic pain
b. Referred pain
c. Projected pain
d. Causalgia
e. Phantom pain

9. When performing an anterior median incision on the skin and fascia of the neck for an urgent tracheotomy, the doctor should keep in mind that there is a risk of damaging the following blood vessel:

a. Arcus venosus juguli
b. V. jugularis interna
c. V. jugularis externa
d. V. thyroidea media
e. V. facialis

10. A woman diagnosed with bronchial asthma has been undergoing a glucocorticoid treatment for a long time. After an abrupt cessation of the treatment, her condition deteriorated, which manifested as a drop in blood pressure and recurrence of asthma attacks. What pathological condition can be characterized by these signs?

a. -
b. Accumulation
c. Sensitization
d. Withdrawal syndrome
e. Tachyphylaxis

11. In an experiment, pluripotent embryonic stem cells were obtained from a human blastocyst. Over the course of the next several months, they formed millions of new cells in a nutrient medium at the laboratory. What is the name of the process of multiple cell renewal?

a. Apoptosis
b. Maturation
c. Differentiation
d. Repair
e. Proliferation

12. In an experiment, certain nuclei of the hypothalamus were destroyed in homeothermic animals, which resulted in them being unable to maintain their body temperature. What nuclei were destroyed?

a. Lateral hypothalamic nuclei
b. Medial hypothalamic nuclei
c. Posterior hypothalamic nuclei
d. Ventral hypothalamic nuclei
e. Supraoptic nuclei

13. A baby was born healthy, but developed vomiting one week later. After that, the baby developed muscle hypertonicity, seizures, and a specific sweet smell of urine and sweat. What disease is observed in the baby?

a. Fructosuria
b. Wilson's disease
c. Histidinemia
d. Maple syrup urine disease
e. Phenylketonuria

14. A man with a kidney transplant was receiving immunosuppressive therapy. He died of intoxication. Morphological examination detects giant cells with large nuclei and a light border, resembling an owl's eye, in the patient's lungs, kidney, and pancreas. What infectious disease can be characterized by these changes?

a. Tuberculosis
b. Cytomegalovirus infection
c. Syphilis
d. Plague
e. Leprosy

15. In an acute test, a narcotized dog received vasopressin, which resulted in decreased urine output, because this substance:
a. Decreases water reabsorption
b. Increases water reabsorption
c. Increases calcium reabsorption
d. Decreases calcium reabsorption
e. Increases sodium reabsorption

16. After exacerbation of chronic calculous cholecystitis, the patient developed acute jaundice. During ECG it was noted that against the background of normal sinus rhythm (heart rate is 51/min.) there are periodical extrasystoles. What mechanism is the most likely cause of disturbed electrical activity of the heart?
a. Bile acid damage to the sinus node
b. Stimulation of the conductive system by the toxins that were not neutralized in the liver
c. Bile acid stimulation of the sinus node
d. Bile acid stimulation of the vagal receptors
e. Bile acid damage to the myocardium

17. A patient was diagnosed with bronchial asthma. What changes in the patient's pulmonary ventilation will be observed?
a. Increase of forced expiratory volume
b. Increase of vital capacity
c. Decrease of residual volume
d. Increase of expiratory reserve volume
e. Decrease of forced expiratory volume

18. A man has been diagnosed with hydrocele testis. What testicular membrane forms a cavity, inside which the fluid accumulates?
a. Tunica albuginea
b. Tunica vaginalis testis
c. Tunica dartos
d. Fascia spermatica externa
e. Fascia spermatica interna

19. Only one of these statements about the extraordinary excitation occurring in the ventricular myocardium is correct. Name the correct statement:
a. It decreases the automaticity of the  sinoatrial node
b. It increases the automaticity of the  sinoatrial node
c. It increases the rate of excitation  conduction in the working cardiomyocytes
d. It decreases the rate of excitation  conduction in the working cardiomyocytes
e. It has no effect on the automaticity of the sinoatrial node

20. Examination of a patient shows the following: blood pressure - 180/110 mm Hg, heart rate - 95/min. X-ray detects narrowing of one of the renal arteries. What system was activated, causing the hypertensive state in this patient?
a. Renin-angiotensin system
b. Hemostatic system
c. Kinin system
d. Immune system
e. Sympathoadrenal system

21. Steroid hormones facilitate the binding of RNA polymerase to the gene promoter. What stage of protein synthesis becomes activated in this case?

a. Processing
b. Post-translational modification
c. Translation
d. Transcription
e. Splicing

22. A 5-year-old child became acutely ill and developed fever, intoxication, and hemorrhagic skin rash. The child died of acute adrenal insufficiency. Autopsy revealed morphological changes caused by the severity of DIC syndrome and endotoxic shock. On the skin, there are necrotic foci, diapedetic hemorrhages, and fibrin thrombi in the dermal vessels. The adrenal glands have massive hemorrhages. What disease can be characterized by these changes?
a. Influenza
b. Scarlet fever
c. Meningococcemia
d. Measles
e. Typhus

23. A 40-year-old man with impaired venous patency in the lower limbs developed edemas. What mechanism plays the main role in the development of this disturbance?
a. Disturbed humoral regulation of water-mineral balance
b. Decreased gradient of osmotic pressure between blood and tissue
c. Elevated filtration pressure
d. Hypoproteinemia
e. Positive fluid balance

24. Divers risk developing decompression sickness, when ascending quickly from the depth to the surface, which can result in fatal gas embolism. What gas is released in this case?
a. CO_2
b. N_2
c. CO
d. NO_2
e. O_2

25. A patient has been suffering from bronchial asthma for 15 years. What changes in the patient's leukogram can be expected in this case?
a. Basophilia
b. Left shift
c. Leukopenia
d. Eosinophilia
e. Leukocytosis

26. A 38-year-old man died while trying to lift a weight. Autopsy of the body shows a rupture of an extensive aneurysm of the thoracic aorta. The man had a history of visceral syphilis. What pathological process in this case resulted in the decreased strength of the aortic wall, its distension and rupture?
a. Atrophy of the muscular layer
b. Damage to elastic fibers
c. Vascular neoplasms
d. -
e. Endovasculitis

27. A 36-year-old man went mountain climbing on his vacation. At the altitude of over 2000 meters above the sea level he developed increased respiratory rate, tachycardia, and slight dizziness. Two days later the signs returned to normal. This process is called:
a. Inhibition
b. Proliferation
c. Compensation
d. Adaptation

e. Regeneration

28. A patient has undergone a surgery for installation of a mitral valve prosthesis. Choose the drug to prevent thrombus formation in this patient.
a. Dipyridamole
b. Acetylsalicylic acid
c. Warfarin
d. Urokinase
e. Paracetamol

29. As a result of a head injury, a hematoma formed, localized in the area of the middle cranial fossa on the left, causing pupil dilation on the affected side. What nerve is affected in this case?
a. N. trigeminus
b. N. oculomotorius
c. N. trochlearis
d. N. abduceus
e. N. opticus

30. Auscultation shows a pathological noise in the second intercostal region near the sternum. What valve is likely to be damaged?
a. -
b. Tricuspid valve
c. Pulmonary valve
d. Mitral valve
e. Aortic valve

31. Nitroglycerin is used to dilate coronary vessels and reduce heart pain. In the human body, it breaks down, forming nitrogen monoxide (NO). What enzyme will exhibit an increased activity in this case?
a. Cyclooxygenase
b. Phospholipase C
c. Adenylate cyclase
d. Guanylate cyclase
e. Lipoxygenase

32. A person has died of an acute infectious disease accompanied by fever, jaundice, hemorrhagic rash on the skin and mucosa, as well as acute renal failure. Histology of the renal tissues (Romanowsky-Giemsa stain) shows curved bacteria that resemble letters C and S. What bacteria were found?
a. Borrelia
b. Campylobacter
c. Leptospira
d. Spirilla
e. Treponema

33. What drug must be used as an antidote in cases of poisoning caused by narcotic analgesics?
a. Unithiol
b. Protamine sulfate
c. Adrenaline hydrochloride
d. Sodium thiosulfate
e. Naloxone

34. A 55-year-old patient is being monitored by an endocrinologist for disturbed endocrine function of the pancreas, which manifests as a decrease in glucagon levels in the blood. What pancreatic cells are dysfunctional in this case?
a. PP cells of the islets of Langerhans
b. Delta-1 cells of the islets of Langerhans
c. Delta cells of the islets of Langerhans
d. Alpha cells of the islets of Langerhans

e. Beta cells of the islets of Langerhans

35. Human brain produces endogenous peptides that are similar to morphine and can reduce pain perception. Name these peptides:

a. Endorphins

b. Vasopressin

c. Oxytocin

d. Statins

e. Liberins

36. A patient simultaneously presents with high levels of conjugated (direct) and unconjugated (indirect) bilirubin in the blood plasma, while stercobilinogen levels in feces and urine are sharply decreased. What type of jaundice does the patient have?

a. Gilbert's syndrome

b. Hemolytic jaundice

c. Parenchymatous jaundice

d. Jaundice of the newborn

e. Obstructive jaundice

37. In response to muscle stretching, its reflex contraction occurs. This reflex reaction begins with stimulation of the following receptors:

a. Nociceptors

b. Tactile receptors

c. Golgi tendon organ

d. Articular receptors

e. Muscle spindles

38. A man with urethritis was undergoing self-treatment with a penicillin antibiotic for a week, but the treatment did not improve his condition. Bacteriological studies showed that the causative agent of this disease was mycoplasma. Why was the drug, that the patient was taking, ineffective in this case?

a. Mycoplasma membrane contains cholesterol

b. Mycoplasmas have no cell wall

c. Mycoplasmas produce an enzyme that breaks down penicillin

d. The pathogen reproduces inside the cells

e. Mycoplasmas produce no relevant transport proteins

39. Examination has detected a polyp in the distal part of the patient's large intestine. What is the localization of the polyp?

a. Colon descendens

b. Colon sigmoideum

c. Colon transversum

d. Caecum

e. Rectum

40. A patient, who had a severe infectious disease that affected CNS functioning, has instable body temperature that within 24 hours reaches different values (above and below the norm) each 2 hours. Such fluctuations in body temperature can be caused by:

a. Circulatory dysfunction

b. Disturbed cortical processes in the brain

c. Hypoxia

d. Hypothalamic damage

e. Peripheral microcirculatory dysfunction

41. A patient complains of frequent bleeding from the gums. Blood test detects deficiency of blood coagulation factor II (prothrombin). What phase of blood coagulation is primarily disturbed in this patient?

a. Fibrinolysis

b. Thrombin formation

c. Prothrombinase formation

d. Fibrin formation
e. Clot retraction

42. A 38-year-old woman became acutely ill. Her body temperature increased to 40^oC. Roseolae appeared on the skin of her abdomen during the second week after the onset of the disease. On day 18 after the onset of the disease, the signs of acute abdomen were detected and peritonitis was diagnosed, after which the patient died. In the ileum, autopsy detected deep ulcers in the area of group follicles, one of which was perforated. Fibrinopurulent exudate was detected in the abdominal cavity. What is the most likely diagnosis in this case?
a. Giardiasis
b. Amoebiasis
c. Typhoid fever
d. Shigellosis
e. Campylobacter-induced enterocolitis

43. A patient with an open spinal injury presents with a rupture of the right half of the spinal cord. What type of sensitivity can be expected to disappear only on the side, where the rupture has occurred?
a. -
b. Tactile sensitivity
c. Thermal sensitivity
d. Pain sensitivity
e. Proprioceptive sensitivity

44. A 2-year-old child developed seizures because of decreased concentration of calcium ions in blood plasma. What gland has a decreased function in this case, causing this condition?
a. Adrenal cortex
b. Pineal gland
c. Thymus
d. Pituitary gland
e. Parathyroid glands

45. A patient with marked pneumosclerosis after recovery from infiltrative pulmonary tuberculosis developed respiratory insufficiency. What patogenetic type of respiratory insufficiency is it?
a. Restrictive
b. Apneustic
c. Obstructive
d. Reflex
e. Dysregulatory

46. A 60-year-old man suffered a spontaneous rib fracture. X-ray shows multiple foci of bilateral costal osteoporosis. Biopsy material obtained from the place of the fracture shows uniform proliferation of lymphocytic-plasmacytic cells with signs of cellular atypia. Name this disease:
a. Tuberculous osteomyelitis
b. Osteosarcoma
c. Acute osteomyelitis
d. Metastasis of pulmonary carcinoma
e. Multiple myeloma

47. A 43-year-old patient, who had been suffering from tuberculosis for a long time, developed bleeding from the lungs, which resulted in the patient's death. Autopsy detected several oval and round cavities in the lungs. The walls of the cavities were formed by necrotic masses and lung tissue. What form of tuberculosis can be characterized by these pathological changes?
a. Acute cavernous tuberculosis
b. Acute focal tuberculosis
c. Tuberculoma
d. Caseous pneumonia
e. Fibrocavitary tuberculosis

48. Autopsy of the body of a 50-year-old man shows the following: the right lung is moderately dense in all segments, the tissue on section is airless, fine-grained, and dry. The visceral pleura has gray-brown fibrin deposits. What disease can be characterized by these pathological changes?

a. Interstitial pneumonia
b. Pneumofibrosis
c. Croupous pneumonia
d. Tuberculosis
e. Bronchopneumonia

49. Some diseases of large intestine lead to the changes in the quantitative ratio between mucosal epithelial cells. What cell types are normally predominant in the cryptal epithelium of the large intestine?

a. Ciliated columnar epithelial cells
b. Goblet cells
c. Endocrine cells
d. Cells with acidophilic granules
e. Poorly differentiated cells

50. DNA diagnostics-polymerase chain reaction - was used during the forensic investigation of the Russian royal family's remains and of the body of Ukrainian journalist Georgiy Gongadze. Polymerase chain reaction method is based on:

a. Amino acid compositional analysis
b. Nucleotide composition analysis of mRNA
c. Nucleotide composition analysis of tRNA
d. Nucleotide composition analysis of rRNA
e. Gene amplification

51. A patient has been diagnosed with peptic ulcer disease of the stomach and hyperacidity. Endoscopical and bacteriological testing allowed isolating Helicobacter bacteria. What characteristic of these microorganisms allows them to survive in the acidic environment of the stomach?

a. Capsule formation
b. Resistance to vancomycin
c. Oxidase activity
d. Urease activity
e. Catalase activity

52. After bladder catheterization, a large number of fresh erythrocytes appeared in the patient's general urinalysis. This phenomenons most likely has been caused by the damage to the narrowest part of the urethra. What part of the urethra is damaged in this case?

a. Proximal
b. Prostatic
c. Membranous
d. Distal
e. Spongy

53. In an experiment a neuromuscular frog preparation was used to study single contractions of a muscle in response to electrostimulation of the nerve. How will muscle contractions change, after the muscle is processed with a curare-like substance?

a. Increase in force
b. Remain unchanged
c. Increase in duration
d. Decrease in duration
e. Disappear

54. Pressure in a pressure chamber was lowered to 400 mm Hg. How will external respiration change in a person sitting in this chamber?

a. Depth of respirations will increase,  frequency of respirations will decrease
b. Depth and frequency of respirations will decrease

c. Depth of respirations will decrease,  frequency of respirations will increase

d. Depth and frequency of respirations will increase

e. Respiration will remain unchanged

55. A 64-year-old man has signs of acute metabolic and energy exchange problems. Computed tomography detected a tumor in one of the brain regions. What cerebral structure that plays a major role in metabolism regulation can be affected in this case?

a. Reticular formation

b. Red nucleus

c. Thalamus

d. Substantia nigra

e. Hypothalamus

56. During repeated exposure to ultraviolet rays, the skin darkens due to the synthesis of melanin in it, which protects cells from damage. What is the primary mechanism that activates this protection?

a. Inhibition of phenylalanine hydroxylase

b. Inhibition of homogentisic acid oxidase

c. Activation of homogentisic acid oxidase

d. Inhibition of tyrosinase

e. Activation of tyrosinase

57. Due to a bullet wound in the left supraclavicular region, the patient developed motor disturbances in the arm. What nerve structures are damaged in this case?

a. Spinal cord

b. Intercostal nerves

c. Nerve roots

d. Brachial plexus

e. Cervical plexus

58. 12 days after a recovery from tonsillitis, a child developed lumbar pain, slight edema, and urinary syndrome. Renal biopsy was performed. Microscopy shows intracapillary proliferative inflammation, while electronic microscopy detects large subepithelial electron-dense deposits, resembling ''humps''. What renal disease developed in the child?

a. Postinfectious glomerulonephritis

b. Lipoid nephrosis

c. Acute suppurative interstitial nephritis

d. Rapidly progressive glomerulonephritis

e. Membranous glomerulonephritis

59. A 45-year-old woman was diagnosed with parathyroid insufficiency. How will the functioning of the kidneys change with this pathology?

a. Calcium reabsorption in the distal  tubules will decrease

b. Calcium filtration in the glomeruli will  decrease

c. Prostaglandin synthesis will increase

d. Urokinase synthesis will increase

e. Vitamin B_6 synthesis will decrease

60. A patient has been hospitalized with complaints of dry mouth, photophobia, and visual impairment. Objectively, the patient has dry and hyperemic skin, dilated pupils, and tachycardia. Further examination allowed diagnosing the patient with a poisoning caused by belladonna alkaloids. What drug must be prescribed in this case?

a. Insulin

b. Heparin

c. Neostigmine (Proserin)

d. Phenylephrine (Mesaton)

e. Succinylcholine (Dithylin)

61. Autopsy of the body of a 45-year-old woman, who was suffering from upper-body obesity, steroid-induced diabetes mellitus, arterial hypertension, and secondary ovarian dysfunction, shows

hypertrichosis, hirsutism, and striae on the skin of the thighs and abdomen. In the anterior part of the pituitary gland there is a tumor (microscopically it is a basophilic adenoma). In the adrenal glands, hyperplasia of the fascicular zone is observed. What diagnosis is the most likely?

a. Adiposogenital dystrophy
b. Cushing disease
c. Simmonds disease
d. Pituitary dwarfism
e. Cushing syndrome

62. Formation of a large number of immunoglobulins with different antigenic specificity occurs from a small number of genes. What process makes this possible?

a. Gene recombination
b. Replication
c. Deletion
d. Transcription
e. Translocation

63. A patient presents with high blood aldosterone. What physiologically active substance is the likely cause of this development?

a. Cyclic adenosine monophosphate
b. Angiotensin II
c. Cyclic guanosine monophosphate
d. Prostaglandin E2
e. Natriuretic factor

64. A 38-year-old patient died with multiple thromboembolisms of various organs. In the cardiac tissue, macrophage granulomas were detected in the valvular and parietal endocardium with endocardial damage and deposition of thrombotic masses. Macrophage granulomas were detected in the myocardium, as well. These pathological changes are characteristic of the following disease:

a. Essential hypertension
b. Atherosclerosis
c. Systemic lupus erythematosus
d. Infectious myocarditis
e. Rheumatism

65. A child was diagnosed with atypical pneumonia that is resistant to treatment with beta-lactam antibiotics. Inoculation of the child's sputum on a special medium resulted in the growth of microorganisms that formed microscopic colonies with a dense center. What microorganism is the causative agent of pneumonia in this child?

a. Mycoplasma pneumoniae
b. Klebsiella pneumoniae
c. Legionella pneumophila
d. Chlamidia pneumoniae
e. Streptococcus pneumoniae

66. A patient with chronic hepatitis presents with a significant decrease in the synthesis and secretion of bile acids. What process would be most disturbed in the intestine of this patient?

a. Emulsification of fats
b. Glycerin absorption
c. Absorption of amino acids
d. Digestion of carbohydrates
e. Digestion of proteins

67. Autopsy of the body of a 67-year-old man shows signs of fibrinous inflammation in the large intestine. What disease can be characterized by these pathological changes?

a. Balantidiasis
b. Cholera
c. Amoebiasis

d. Dysentery
e. Typhoid fever

68. In the 1970s scientists determined that severe cases of neonatal jaundice are caused by disturbed conjugation of bilirubin in hepatocytes. What substance is used for conjugate formation?
a. Glucuronic acid
b. Sulfuric acid
c. Pyruvic acid
d. Lactic acid
e. Uric acid

69. A woman presents with weight loss, exophthalmus, tachycardia, negative nitrogen balance, high blood glucose and high blood levels of free fatty acids. What dysfunction can be characterized by such changes?
a. Diabetes mellitus
b. Overproduction of growth hormone
c. Adrenal insufficiency
d. Hyperthyroidism
e. Hypothyroidism

70. Before tooth extraction the patient was given conduction anesthesia with lidocaine. After lidocaine was administered, the patient developed edema and hyperemia around the injection site, itching skin, general weakness, hypotension, and motor excitation. What complication occurred in this case?
a. Tolerance
b. Toxic effect
c. Drug dependence
d. Tachyphylaxis
e. Allergic reaction

71. A 39-year-old man underwent a surgery for peptic ulcer disease of the stomach. He died 7 days after the surgery. On autopsy the peritoneal layers are plethoric, dull, and covered with massive yellow-green membranous deposits. The peritoneal cavity contains approximately 300 mL of thick yellow-green fluid. What pathologic process was detected in the peritoneal cavity?
a. Fibrinopurulent peritonitis
b. Peritoneal commissures
c. Serofibrinous peritonitis
d. Fibrinohemorrhagic peritonitis
e. Serous peritonitis

72. A patient presents with impaired sensitivity on the lateral surface of the forearm. What nerve is damaged in this case?
a. N. axillaris
b. N. ulnaris
c. N. radialis
d. N. medianus
e. N. musculocutaneus

73. A microslide shows an organ of cardiovascular system. One of its layers consists of anastomosing fibers. These fibers are made of cells connected by intercalated discs. What organ of cardiovascular system is it?
a. Muscular vein
b. Heart
c. Muscular artery
d. Arteriole
e. Elastic artery

74. During an examination of animal carcasses, a provisional diagnosis of anthrax was made. What rapid diagnostic test must be used to confirm this diagnosis?
a. Hemagglutination inhibition test

b. Thermoprecipitation test
c. Complement fixation test
d. Mantoux test
e. Agglutination test

75. A 36-year-old man provisionally diagnosed with renal tuberculosis has undergone urinary sediment analysis. Microscopy revealed acid-fast bacteria, but Pryce method detected no cord factor. Name the most reliable method of investigation that can confirm or refute this provisional diagnosis:
a. Toxigenicity testing
b. Phage typing of the obtained culture
c. Serological identification of the causative agent
d. Allergy skin test
e. Inoculation of laboratory animals

76. A 71-year-old man with atherosclerosis developed pain in the left foot. He requested no medical assistance. At the time of examination the foot is enlarged in volume, the tissues are flaccid, black, and macerated. Demarcation area is unclear. Make the diagnosis:
a. Moist gangrene
b. Dry gangrene
c. Coagulation necrosis
d. Mummification
e. Sequestrum

77. Autopsy of the body of a 35-year-old drug addicted man with a long history of fibrocavitary pulmonary tuberculosis shows enlarged and dense spleen and kidneys. On section their tissues are grayish and have a ''fatty'' sheen. Microscopically, in the red and white splenic pulp and in the renal glomerular interstitium and mesangium there are deposits of Congo red-positive masses. Diagnose the type of damage to the internal organs:
a. Senile amyloidosis
b. Diffuse hyalinosis
c. Secondary amyloidosis
d. Local tumor-like amyloidosis
e. Idiopathic amyloidosis

78. A 9-year-old boy, who undergoes treatment in the inpatient department, has high blood pressure and problems with kidneys. This condition is caused by high levels of a certain bioactive peptide. Name this peptide:
a. Glucagon
b. Angiotensin II
c. Antidiuretic hormone
d. Insulin
e. Kallidin

79. A patient needs emergency botulism prophylaxis. What should be used for this purpose?
a. Placental \gamma globulin
b. Monovalent antitoxic serum
c. Anatoxin
d. Polyvalent antitoxic serum
e. Interferon

80. During an emotional overload, a 30-year-old woman's heart rate reached 112/min. What structure of the cardiac conduction system has caused this condition?
a. Intraventricular node
b. Bundle of His
c. Sinoatrial node
d. Purkinje fibers
e. Branches of the bundle of His

81. During diabetes mellitus and starvation, the number of acetone bodies in blood increases. These

bodies are used as a source of energy and are synthesized from the following substance:

a. Acetyl-CoA
b. Succinyl-CoA
c. Malate
d. Ketoglutarate
e. Citrate

82. During diabetes mellitus, the content of ketone bodies in the blood is increased, which leads to metabolic acidosis. Ketone bodies are synthesized from:

a. Acetyl-CoA
b. Succinyl-CoA
c. Methylmalonyl-CoA
d. Propionyl-CoA
e. Malonyl-CoA

83. A woman with low blood pressure was parenterally administered a hormone, after which she developed an increase in blood pressure and increased levels of glucose and lipids in her blood. What hormone did she receive?

a. Adrenaline
b. Insulin
c. Glucagon
d. Thyroxine
e. Progesterone

84. A doctor observes that during the first breath taken in by a newborn the volume of the exhaled air is 2-3 times smaller than the volume of the inhaled air. Why does it happen?

a. The vital capacity of the lungs is being formed
b. The inspiratory reserve volume is being formed
c. The tidal volume is being formed
d. The total lung capacity is being formed
e. The functional residual capacity of the lungs is being formed

85. When administered into the human body, dicoumarol causes acute drop in blood levels of prothrombin and other blood coagulation proteins. Dicoumarol is an antivitamin of:

a. Vitamin K
b. Vitamin C
c. Vitamin P
d. Vitamin H
e. Vitamin E

86. A patient with an adenoma in the zona glomerulosa of the adrenal gland (Conn's syndrome) presents with arterial hypertension, convulsive attacks, and polyuria. Name the main link in the pathogenesis of these disorders:

a. Hyposecretion of glucocorticoids
b. Hypersecretion of glucocorticoids
c. Hyperaldosteronism
d. Hypoaldosteronism
e. Hypersecretion of catecholamines

87. Pathomorphology of the gallbladder after cholecystectomy shows that it is enlarged, its walls are thickened, its serous tunic is dull and plethoric; there are viscous yellow-green masses in the gallbladder cavity. Microscopically, a diffuse infiltration of segmented neutrophils is observed in the gallbladder wall. What type of cholecystitis is the most likely in this case?

a. Acute phlegmonous cholecystitis
b. Granulomatous cholecystitis
c. Acute catarrhal cholecystitis
d. Chronic cholecystitis
e. Acute gangrenous cholecystitis

88. The majority of the participants of the Magellan's expedition to America died of vitamin deficiency that manifested as general weakness, subcutaneous hemorrhages, tooth loss, and bleeding gums. What is the name of this vitamin deficiency?

a. Scurvy
b. Rickets
c. Pellagra
d. Biermer's anemia
e. Polyneuritis (Beriberi)

89. A doctor has detected a persistent arterial hypertension in a 45-year-old woman diagnosed with pyelonephritis. What is the mechanism of this condition development?

a. Activation of angiotensinase synthesis in the renal tissues
b. Activation of central cholinergic mechanisms
c. Activation of the renin-angiotensin system
d. A decrease in the partial pressure of oxygen in the renal tissues
e. Activation of acidogenesis and ammonogenesis in the kidneys

90. A patient presents with impaired twilight vision. What vitamin preparation should be prescribed to this patient?

a. Nicotinic acid
b. Pyridoxine hydrochloride
c. Ascorbic acid
d. Cyanocobalamin
e. Retinol acetate

91. A patient was diagnosed with an esophageal foreign body, located at the level of the fourth thoracic vertebra. In which anatomic constriction of the esophagus did the foreign body stop?

a. Bifurcation constriction
b. Pharyngeal constriction
c. Aortic constriction
d. Diaphragmatic constriction
e. Abdominal constriction

92. A 47-year-old man was diagnosed with arthritis of the toe on his right foot and nephroliths consisting of uric acid. The patient is taking allopurinol. What biochemical defect has likely been detected in this patient?

a. Urea synthesis defect
b. Disturbed purine metabolism
c. Disturbed pyrimidine metabolism
d. Disturbed arachidonic acid metabolism
e. Increased leukotriene levels

93. A 40-year-old man suffers from obesity, low body temperature, brittle nails, hair loss, and other trophic disorders. He has pasty face with poor facial expressiveness, thickened nose and lips, decreased sexual function, and impaired memory. His lifestyle is sedentary. What endocrine pathology can be characterized by such clinical presentation?

a. Cretinism
b. Diffuse toxic goiter
c. Myxedema
d. Thyroprival cachexia
e. Thyrotoxicosis

94. A 5-year-old girl for diagnostic purpose underwent Mantoux tuberculin skin test. 48 hours later in the place of tuberculin injection developed a dense papule 1.5 cm in diameter with signs of hyperemia and necrosis. What is the mechanism of hypersensitivity that resulted in these changes?

a. Cellular cytotoxicity
b. Immune complex cytotoxicity
c. Anaphylactic reaction

d. Granulomatosis
e. Antibody-dependent cytotoxicity

95. Systemic arterial pressure of an adult person lowered from 120/70 to 90/50 mm Hg and caused reflexive vasoconstriction. In what organ will the vessels be the most constricted?
a. Intestine
b. Adrenal glands
c. Brain
d. Heart
e. Kidneys

96. An HIV-infected patient presents with suppressed activity of the immune system. The state of immunodeficiency in this patient is mainly caused by the damage to certain cells. Name these cells.
a. Suppressor T-cells
b. Macrophages
c. B-lymphocytes
d. Helper T-cells
e. Killer T-cells

97. Histological microslide of the wall of the eyeball shows a structure with no blood vessels. This morphological feature is characterisic of:
a. Choroid
b. Ciliary body
c. Retina
d. Iris
e. Cornea

98. A 19-year-old patient complains of diarrhea. As a part of complex therapy, the doctor prescribed the patient an antidiarrheal drug that stimulates opioid receptors in the intestine. What drug was prescribed for this patient?
a. Rehydron
b. Linex
c. Furazolidone
d. Loperamide
e. Omnopon (Papaveretum)

99. A tuning fork was used to assess the patient's perception of sounds. When it was placed near the outer ear, the patient was unable to hear the sound of the tuning fork in the right ear. However, when the foot piece of the tuning fork was placed on the mastoid process, the patient was able to perceive its sound. What part of the auditory sensory system is damaged in this case?
a. Middle ear
b. Inferior colliculi
c. Auditory (cochlear) nerve
d. Medial geniculate body
e. Inner ear

100. During gastric resection the patient received mixed anesthesia with tubocurarine chloride muscle relaxant. To restore unassisted respiration in the patient, the patient was given proserin. What pharmacological group does this drug belong to?
a. Angiotensin-converting-enzyme  inhibitors
b. Calcium channel blockers
c. Cholinesterase inhibitors
d. Muscarinic antagonists
e. Muscarinic agonists

101. In practically healthy individuals, moderate physical exertion causes an increase in the systolic pressure and a slight decrease in the diastolic pressure. What causes such changes?
a. Increased tone of the arterioles and increased volume of the blood depot
b. Increased force of cardiac contractions and relaxation of the arterioles due to the effect of lactic

acid
c. Increased renin release due to a decreased blood supply to the kidneys
d. Increased force and rate of cardiac contractions
e. Increased volume of the circulating blood

102. A patient with myocardial infarction has acute heart failure. Among the drugs that increase the force of heart contractions the least dangerous drug in this case will be:
a. Euphyllin (Aminophylline)
b. Isadrine (Isoprenaline)
c. Caffeine
d. Adrenaline
e. Dobutamine

103. When installing an intrauterine contraceptive, the doctor violated the rules of asepsis and the uterine cavity was contaminated with an infection. What uterine membrane will most likely become inflamed in this woman?
a. Parametrium
b. -
c. Perimetrium
d. Endometrium
e. Myometrium

104. A hypertensive crisis occurred in a 68-year-old woman with a long history of essential hypertension. What drug should be prescribed in this case as hypotensive therapy?
a. Nitroglycerin
b. Metoprolol
c. Isadrinum (Isoprenaline)
d. Heparin
e. Magnesium sulfate

105. As the result of a trauma, the semicircular canals in the patient's inner ear were damaged. This person will be unable to respond adequately to the following stimuli:
a. Angularly accelerated motion
b. Sound
c. Cutaneous
d. Linearly accelerated motion
e. Photic

106. After a case of severe infectious disease the patient developed signs of diabetes insipidus, which was indicated by daily urine output increased up to 10 liters. What mechanism of dehydration development is leading in this case?
a. Increased osmolarity of ultrafiltrate
b. Inhibited intestinal absorption of water
c. Decreased renal reabsorption of sodium
d. Decreased plasma oncotic pressure
e. Decreased renal reabsorption of water

107. A 30-year-old man has acute pancreatitis with disturbed extracellular digestion of proteins. This disturbance can be caused by insufficient synthesis and production of the following by the pancreas:
a. Tripsin
b. Pepsin
c. Lipase
d. Dipeptidases
e. Amylase

108. Histology of the lungs of a premature baby shows that the alveoli stick together due to the absence of the surfactant. This condition is associated with the underdevelopment of certain cells in the alveolar wall. Name these cells.
a. Clara cells

b. Fibroblast-like cells
c. Respiratory alveolar cells
d. Secretory alveolar cells
e. Alveolar macrophages

109. ECG of a patient with hyperthyroidism shows an increased heart rate. What ECG element will be shortened, indicating this?
a. P-Q segment
b. P-Q interval
c. QRS complex
d. P-T interval
e. R-R interval

110. Before a surgery the patient was prescribed a synthetic antiprotozoal drug for prevention of wound infection. The prescribed drug is highly effective against Helicobacter pylori. Name this drug:
a. Metronidazole
b. Aciclovir
c. Chingamin (Chloroquine)
d. Doxycycline hydrochloride
e. Isoniazid

111. Autopsy of the body of a deceased man shows dark gray color of the substance that makes up brain and lymph nodes, the liver and spleen are significantly enlarged. Histologically, hemomelanosis and hemosiderosis are observed in these organs. The deceased had a history of periodical bouts of fever. What disease can be characterized by these pathohistological changes?
a. Addison's disease
b. Malaria
c. Hemolytic anemia
d. Septicemia
e. Black pox (hemorrhagic smallpox)

112. In an experiment on lab rats, electrical brain stimulation caused hungry animals to refuse food. What brain structure was stimulated?
a. Hippocampus
b. Globus pallidus
c. Lateral hypothalamic area
d. Amygdaloid nuclei
e. Ventromedial nucleus of the hypothalamus

113. A 52-year-old woman came to the neurologist with complaints of loss of skin sensitivity on the right half of her face in the area of the lower eyelid, nasal arch, and upper lip. What branch of what nerve is damaged in this patient?
a. Chorda tympani branching from the facial nerve
b. Greater petrosal nerve branching from the facial nerve
c. Mandibular branch of the trigeminal nerve
d. Ophthalmic branch of the trigeminal nerve
e. Maxillary branch of the trigeminal nerve

114. An anti-inflammatory drug that blocks cyclooxygenase activity was used in the treatment of a patient. What anti-inflammatory drug is it?
a. Allopurinol
b. Thiamine
c. Analgin (Metamizole sodium)
d. Creatine
e. Aspirin (Acetylsalicylic acid)

115. A patient is suspected to have typhoid fever. For two weeks no laboratory diagnosis was made. What material must be sent to the laboratory for bacteriological analysis during the third week after the onset of the disease?

a. Nasal mucus
b. Gastric lavage waters
c. Sputum
d. Feces and urine
e. Pharyngeal mucus

116. Section shows significant enlargement of the patient's right kidney. There is a nephrolith at the place of incision. Renal pelvic lumen is distended with accumulating urine. Renal parenchyma is substantially thinned out. What is the most correct diagnosis?
a. Pyelectasis
b. Hydronephrosis
c. Nephroblastoma
d. Hydroureteronephrosis
e. Renal cyst

117. During a surgery, a tumor was detected in the patient's stomach in the primary focus of malignancy (within the mucous membrane). There are no metastases in the lymph nodes or distant metastases. What stage of tumor pathogenesis is observed in the patient?
a. Promotion
b. -
c. Transformation
d. Immune suppression of the tumor
e. Initiation

118. What type of food can cause trichinellosis, if it is of poor quality?
a. Unwashed vegetables and fruits
b. Crayfish and crabs
c. Fish
d. Beef
e. Pork

119. Due to a traumatic brain injury, a woman presents with functionally disturbed pineal gland. What functions will be disturbed in this woman?
a. Sleep-wake cycle
b. Heart rate
c. Menstrual cycle
d. Respiratory rate
e. Cardiac cycle

120. As a result of the injury, the spinal cord of a person was damaged with a complete its rupture at the level of the first cervical vertebra. How will the breathing of the patient change?
a. Breathing depth will  increase
b. Breathing will stop
c. Respiratory rate will increase
d. Respiratory rate will decrease
e. Breathing will remain unchanged

121. A baby born 2 days ago has yellowish skin and mucosa. This condition is caused by temporary deficiency of a certain enzyme. Name this enzyme.
a. UDP-glucuronyltransferase
b. Heme synthetase
c. Sulfotransferase
d. Biliverdin reductase
e. Heme oxygenase

122. Carriers of causative agents play a significant role in the spreading of certain diseases. The causative agent of what disease spreads due to the presence of a specific carrier?
a. Trichomoniasis
b. Giardiasis

c. Amoebiasis
d. Malaria
e. Balantidiasis

123. Microscopy of a lung tissue shows an inflamed area that consists of a necrotic focus surrounded by regular rows of epithelioid and lymphoid cells. There are plasma cells, macrophages, and Pirogov-Langhans giant multinucleated cells. Specify the type of such inflammation.
a. Leprosy inflammation
b. Tuberculous inflammation
c. Exudative inflammation
d. Alterative inflammation
e. Typical productive inflammation

124. A man with suspected typhoid fever was admitted to the infectious diseases hospital on the 3rd day of illness. What microbiological method should be used for diagnostics in this case?
a. Metod of isolation of the causative agent from the cerebrospinal fluid
b. Metod of isolation of a bile culture
c. Metod of isolation of a stool culture
d. Metod of isolation of a urine culture
e. Metod of isolation of a blood culture

125. A patient with diabetes mellitus and allergic dermatitis was prescribed a certain fluorinated hormone drug in the ointment dosage form. When the patient asked, how this drug was better than the hydrocortisone ointment, the doctor explained that the prescribed medicine:
a. Had practically no resorptive effect
b. Increased insulin synthesis
c. Had short-term action
d. Was cheaper
e. Was less potent

126. A man who had suffered multiple injuries in a car accident developed shock with acute renal failure. Autopsy of his body shows that the both kidneys are enlarged and edematous, with a pale gray cortical layer and dark red medullary layer. What pathological process had caused renal failure in this case?
a. Acute glomerulonephritis
b. Acute pyelonephritis
c. Necrotic nephrosis
d. Amyloidosis
e. Hydronephrosis

127. A patient diagnosed with essential hypertension died of an acute myocardial infarction. Autopsy revealed a cavity 2 cm in diameter in the right hemisphere of the brain. The cavity is filled with a transparent yellowish liquid. The wall of the cavity is rusty yellow and smooth. What pathology was detected in the brain of the deceased?
a. Tuberculosis
b. -
c. Cyst
d. Echinococcus
e. Abscess

128. A complex of symptoms called pellagra can be characterized by the triad of dermatitis, diarrhea, and dementia and manifests when a certain vitamin is deficient in the body. Name this vitamin.
a. Vitamin C
b. Vitamin B_2
c. Vitamin PP
d. Vitamin B_1
e. Vitamin A

129. After administration of antitetanus serum the patient developed anaphylactic shock. What cells

produce mediators in classic anaphylactic reaction?
a. Eosinophils
b. Mast cells
c. B lymphocytes
d. Neutrophils
e. T lymphocytes

130. The resting potential was increased in accordance with the activation of the ion channels in the outer membrane of the excitable cell. What channels were activated?
a. Calcium channels
b. Potassium channels
c. Chlorine channels
d. Hydrogen channels
e. Sodium channels

131. Respiratory quotient was measured in a patient, who for 10 days was keeping to a strict diet. The patient's respiratory quotient was 1.0. What kind of diet was it?
a. Mainly containing lipids and carbohydrates
b. Mainly containing proteins and lipids
c. Mainly containing proteins and carbohydrates
d. Mainly containing carbohydrates
e. Mixed type

132. Autopsy of the body of a child shows a primary intestinal tuberculosis complex: the primary affect is a jejunal ulcer, there are lymphangitis and regional caseous lymphadenitis. The death occurred as a result of ulcer perforation and development of diffuse peritonitis. What is the route of tuberculosis infection in this child?
a. Contact
b. Aerogenic
c. Alimentary
d. Mixed
e. Transplacental

133. For the last three years a 45-year-old man had been suffering from dry cough, progressing dyspnea, pulmonary failure, and rapid weight loss. Autopsy of his body shows cor pulmonale. The lungs are markedly fibrotic, with cavities that resemble a honeycomb pattern. Histology revealed interstitial fibrosis and marked lymphohistiocytic stromal infiltration with neutrophilic admixture. Make the diagnosis:
a. Dust-induced pneumosclerosis
b. Postinflammatory pneumosclerosis
c. Chronic bullous emphysema
d. Multiple bronchiectasis
e. Bronchial asthma

134. A 65-year-old man developed an attack of retrosternal pain after an emotional reaction caused by anger. ECG shows signs of impaired coronary blood flow. What disorder could have caused this phenomenon?
a. Angiospastic ischemia
b. Venous hyperemia
c. True (capillary) stasis
d. Venous stasis
e. Arterial hyperemia

135. A 38-year-old woman complains of constant thirst, frequent urination, low appetite, and headache. Her urine is colorless, clear, slightly acidic, without glucose. Her 24-hour diuresis is up to 12 liters. This condition can be caused by low levels of a certain hormone. Name this hormone:
a. Atrial natriuretic factor
b. Vasopressin

c. Insulin
d. Noradrenaline
e. Glucagon

136. The surface of the joints is covered with tissue that has no blood vessels. The intercellular substance of this tissue is rich in water, glycosaminoglycans, and proteoglycans. The cells of this tissue form isogenic groups. Name this tissue:
a. Connective tissue proper
b. Reticular tissue
c. Adipose tissue
d. Cartilage tissue
e. Bone tissue

137. A man with type 2 diabetes mellitus has developed hyperglycemic coma (blood glucose levels - 56 mmol/L). What pathological phenomenon is the cause of the brain cell dysfunction in this case?
a. Hypohydration of brain cells
b. Toxic damage
c. Hyperhydration of brain cells (swelling)
d. Energy deficit
e. Ionic imbalance

138. In an experiment on a spinal frog, after increasing the skin area treated with an acid solution, the time of the protective flexion reflex decreased from 10 to 6 seconds. What mechanism underlies the reduction of the reflex time?
a. Excitation radiation by divergent nerve circuits
b. Temporal summation of excitation
c. Spatial summation of excitation
d. Principle of dominance
e. Recirculation of excitation

139. A patient with an occipital head injury was brought into the neurosurgical unit. During the surgery the doctor dissected a part of the dura mater that separates the occipital lobes from the posterior cranial fossa. What anatomical structure was dissected?
a. Diaphragma sellae
b. Septum pellucidum
c. Falx cerebri
d. Tentorium cerebelli
e. Falx cerebelli

140. A man with a disorder of cerebral circulation has problems with swallowing liquid foods. What part of his brain is damaged?
a. Cerebellum
b. Diencephalon
c. Cervical spinal cord
d. Mesencephalon
e. Medulla oblongata

141. Bacteriological study of feces inoculated on Endo medium results in the growth of red colonies with a metallic shine. They were agglutinated on a glass slide, using a polyvalent serum against OK types of bacterial strains. How to determine the pathogenic variant of colibacillus?
a. Based on its morphological  characteristics
b. Based on its antigenic characteristics
c. Based on its cultural characteristics
d. Based on its phage sensitivity
e. Based on its toxigenic characteristics

142. A patient with myocardial infarction in the acute phase has been hospitalized into the cardiology unit. To induce platelet lysis in the patient's coronary vessels during the early hours of infarction, the following enzyme should be used:

a. Chymotrypsin
b. Trypsin
c. Streptokinase
d. Lysozyme
e. Hyaluronidase

143. A 42-year-old patient with a persistent spinal deformity ("beggar's posture") complains of spinal immobility in its cervical region. X-ray of the cervical region shows destruction of the inter-articular cartilages of vertebrae C1--C5 and bony ankyloses of C2, C3, and C4. What is the most likely diagnosis in this case?
a. Osteochondrosis of the cervical spine
b. Duchenne muscular dystrophy
c. Bekhterev disease
d. Rheumatoid arthritis
e. Becker muscular dystrophy

144. A patient developed punctate hemorrhages after a tourniquet had been applied. It occurred due to functional disturbance of the following blood corpuscles:
a. Platelets
b. Monocytes
c. Eosinophils
d. Lymphocytes
e. Neutrophils

145. Excessive intake of carbohydrates (600 g per day) that surpasses the energy needs of a 28-year-old person will activate the process of:
a. Lipogenesis
b. Glycolysis
c. Lipolysis
d. Beta-oxidation of fatty acids
e. Gluconeogenesis

146. An electron micrograph of the red bone marrow shows a megakaryocyte. Its peripheral part of the cytoplasm permeated by demarcation channels. What is the role of these structures?
a. Increase of the cell surface area
b. Cell division
c. Platelet separation
d. Cell destruction
e. Increase of the number of ion channels

147. A man came to a hospital after a head injury. He complains of a loss of previously acquired occupational skills (praxia). What part of the cerebral cortex is damaged in this case?
a. Gyrus temporalis superior
b. Gyrus precentralis
c. Gyrus supramarginalis
d. Gyrus parietalis superior
e. Gyrus angularis

148. Examination detects a dysfunction of the nodes in the patient's cardiac conduction system. In this case, blood circulation disorders have occurred in the basin of the following artery:
a. Right and left coronary arteries
b. Right coronary artery
c. Anterior interventricular branch of the left coronary artery
d. Left coronary artery
e. Circumflex branch of the left coronary artery

149. A patient was prescribed a diuretic as a part of the complex treatment of essential hypertension. Several days later the patient's blood pressure decreased, but signs of hypokalemia appeared. What drug could have caused this complication?

a. Furosemide
b. Metoprolol
c. Clonidine
d. Enalapril
e. Spironolactone

150. What substances are synthesized in the liver and used in other tissues as alternative metabolic fuels?
a. Triacylglycerols
b. Ketone bodies
c. Biogenic amines
d. Nitrogenous bases
e. Lipoproteins

151. In a 40-year-old man, testicular inflammation was complicated by hydrocele testis. A surgery is necessary. What testicular tunic would be the last to be dissected by the surgeon during the operation?
a. Parietal layer of the tunica vaginalis of the testicle
b. Tunica dartos
c. Internal spermatic fascia
d. Cremaster muscle
e. External spermatic fascia

152. One of the causes of pernicious anemia is the disturbed synthesis of transcorrin - Castle's intrinsic factor - in the parietal cells of the stomach. What substance is called Castle's extrinsic factor?
a. Folic acid
b. Riboflavin
c. Biotin
d. Pyridoxine
e. Cobalamin

153. Calcium phosphate crystals form the basis of the inorganic structure of teeth. What hormone regulates calcium homeostasis?
a. Adrenaline
b. Testosterone
c. Aldosterone
d. Vasopressin
e. Parathyroid hormone

154. A patient has hemeralopia (impaired dark adaptation of the eyes). What vitamin supplement has an effect on the synthesis of visual purple and can improve vision?
a. Cyanocobalamin
b. Nicotinic acid
c. Tocopherol acetate
d. Ergocalciferol
e. Retinol acetate

155. A 45-year-old patient came to a doctor with complaints of headache, dizziness, frequent nausea, vomiting, muscle weakness, and pain in the area of the heart. Blood pressure - 170/110 mm Hg. Sodium levels in peripheral blood - 165 mmol/L, potassium levels - 2.5 mmol/L. Computed tomography detected a tumor 1 cm in size in the left adrenal gland. What changes in the acid-base balance would be observed in this case?
a. Respiratory acidosis
b. No acid-base imbalance occurs
c. Metabolic acidosis
d. Respiratory alkalosis
e. Metabolic alkalosis

156. In an experiment a vagus nerve was irritated, which stimulated acetylcholine release into the

synaptic cleft. As a result, the heart rate slowed down. Name the mechanism of a heart rate decrease is this case:

a. Hyperpolarization of cardiomyocyte membranes
b. Increased conduction velocity in the AV node
c. Depolarization of cardiomyocyte membranes
d. Decreased duration of action potential
e. Increased duration of action potential

157. A person with mushroom poisoning, who accidentally ate a fly agaric, was brought into the inpatient department. Beside gastric lavage, activated charcoal, enteral administration of salt-based laxatives, and detoxification infusions the patient was prescribed atropine sulfate injections, which significantly reduced the signs of poisoning. Specify the type of interaction between muscarine (fly agaric alkaloid) and atropine sulfate:

a. Chemo-physical antagonism (antidotism)
b. Indirect functional antagonism
c. -
d. Direct functional one-way antagonism
e. Chemical antagonism

158. A 56-year-old patient complains of an acute pain attack in the area of the right ankle joint. Objectively, the joint is hyperemic, edematous, and hot to the touch. The levels of uric acid in the blood are elevated. For the treatment of this pathology, the doctor prescribed a drug that inhibits xanthine oxidase. What drug is it?

a. Allopurinol
b. Urolesan
c. Diacarb (Acetazolamide)
d. Theophylline
e. Prednisolone

159. A patient suffers from hydrocele testis. What testicular structure is affected, causing this pathology?

a. Tunica vaginalis testis
b. Fascia spermatica externa
c. Fascia cremasterica
d. Fascia spermatica interna
e. Tunica dartos

160. An electronic microphotograph of the biopsy material shows structures containing surfactant, type I alveolocytes, basement membrane, and fenestrated capillary endothelium. What histogematic barrier of the human body has such structures?

a. Blood-thymus barrier
b. Blood-testis barrier
c. Blood-brain barrier
d. Blood-cerebrospinal fluid barrier
e. Blood-air barrier

161. To treat urticaria and remove the itching skin rash, a patient was prescribed dimedrol (diphenhydramine). What mechanism of action ensures that this drug is effective in such cases?

a. Inhibition of histamine synthesis
b. Acceleration of histamine breakdown
c. Independent antagonism with histamine
d. Suppression of histamine release
e. Competitive H1 receptor blockade

162. Human immunodeficiency virus belongs to the family of retroviruses. What is the most characteristic trait of this family of viruses?

a. These are simple viruses that affect only humans
b. The presence of reverse transcriptase enzyme

c. Enzyme-linked immunosorbent assay is needed for antigen detection
d. Radioimmunoassay is needed for antigen detection
e. Nucleic acid is not integrated into the genome of the host

163. A patient with endocarditis presents with a pathology of the valvular apparatus of the inner lining of the heart. What tissues form the heart valves?
a. Loose connective tissue, endothelium
b. Cardiac muscle tissue, endothelium
c. Dense connective tissue, endothelium
d. Hyaline cartilage, endothelium
e. Elastic cartilage, endothelium

164. An experiment was conducted to measure the skin sensitivity threshold. What patches of skin have the highest sensitivity threshold?
a. Dorsal surface of the hand
b. Back
c. Face
d. Shin
e. Shoulder

165. Examination of a surgically excised adrenal gland shows large cells that can be impregnated with a potassium dichromate solution. What hormone is being synthesized by these cells?
a. Cholecystokinin
b. Adrenaline
c. Aldosterone
d. Secretin
e. Thyroxine

166. A patient with heavy metal salt poisoning was hospitalized into the intensive care unit. What antidote should be given to the patient in this case?
a. Proserin (Neostigmine)
b. Naloxone
c. Alloxim
d. Unithiol (Dimercaptopropansulfonate)
e. Atropine sulfate

167. A 45-year-old woman exhibits no signs of diabetes mellitus, but her fasting blood glucose levels are elevated (7.2 mmol/L). What should be measured next?
a. Glycated hemoglobin
b. Urine glucose
c. Residual blood nitrogen
d. Blood urea
e. Glucose tolerance

168. A patient presents with ptosis (drooping eyelid), divergent strabismus, disturbed accommodation, and dilated pupils. It indicates a damage to the nuclei of a certain pair of the cranial nerves. What pair of nerves is damaged?
a. V
b. IV
c. III
d. VII
e. VI

169. A man suffers from acne and inflammatory changes in the skin of his face. Microscopy of a material obtained from the lesion foci reveals living elongated creatures of the phylum Arthropoda type with 4 pairs of reduced limbs. What is the preliminary diagnosis?
a. Pediculosis
b. Allergy
c. Sarcoptes scabiei lesions

d. Flea lesions
e. Demodecosis

170. A patient had her tooth extracted in a dental clinic. Stratified squamous epithelium regenerated two weeks later. What organelles took part in the restoration of the mucosa?
a. Centrosomes
b. Ribosomes
c. Postlysosomes
d. Mitochondria
e. Smooth endoplasmic reticulum

171. A 2-year-old boy without immunization against measles was in a contact with a measles patient. The doctor prescribed this child an immunoglobulin. What type of immunity forms after administration of immunoglobulins?
a. Natural passive
b. Artificial passive
c. -
d. Natural active
e. Artificial active

172. Clinical and biochemical examination of a patient revealed sickle cell anemia. Measurement of what blood component was decisive for the diagnosis in this case?
a. Methemoglobin
b. Hemoglobin A1
c. Hemoglobin C
d. Hemoglobin F
e. Hemoglobin S

173. Histological analysis of a biopsy material obtained from a tuberculosis patient shows a focus of caseous necrosis with irregularly arranged small chromatin granules. These visible changes are a result of:
a. Karyorrhexis
b. Apoptosis
c. Karyopyknosis
d. Karyolysis
e. Mitotic activity of nuclei

174. A 7-year-old boy is diagnosed with anemia. Laboratory analysis detects pyruvate kinase deficiency in his erythrocytes. What process is disturbed in this boy, playing the main role in anemia development in this case?
a. Anaerobic glycolysis
b. Deaminization of amino acids
c. Anaerobic glycogenolysis
d. Gluconeogenesis
e. Decarboxylation of amino acids

175. In a scientific experiment, a structure in one of the cell components has been destroyed, impairing the cell's ability to divide. What structure has been destroyed?
a. Glycocalyx
b. Mitochondria
c. Ribosomes
d. Centrosome
e. Microfibrils

176. What enzyme due to its bactericidal effect prevents inflammation of the oral mucosa, if it becomes damaged?
a. Nuclease
b. Amylase
c. Mucin

d. Lingual lipase
e. Lysozyme